



**A REVIEW OF ISSUES RELATING TO THE DISPOSAL OF URBAN WASTE IN
SYDNEY MELBOURNE AND ADELAIDE
An Environmental History**

by

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This thesis is dedicated to my parents
Doctors Margaret Philippa
and
James Herschel Nicholls

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LIST OF ABBREVIATIONS USED IN TEXT

| | |
|---------|---|
| AAT | Administrative Appeals Tribunal. |
| ACA | Adelaide Council Archival Records |
| ACA TCD | Adelaide Council Archival Records Town Clerks Docket |
| ACC | Adelaide City Council |
| AEC | Australian Environment Council |
| ANZECC | Australian and New Zealand Environment and Conservation Council |
| AMJ | Australian Medical Journal |
| BPEO | Best Practical Environmental Option. |
| CAST | Cessnock Anti Sydney Tips |
| CCC | Cumberland County Council |
| CEPA | Commonwealth Environmental Assessment Agency. |
| CFC's | Chlorofluorocarbons |
| CSIRO | Commonwealth Scientific and Industrial Research Organisation. |
| DCP's | Development Control Plans (NSW). |
| DDT | Dichlorodiphenyl trichloroethane |
| DEH | Department of Environment and Heritage (South Australia). |
| DUAP | Department of Urban Affairs and Planning (NSW). |
| EES | Environmental Effects Statement. |
| EIA | Environmental Impact Assessment |
| EIS | Environmental impact statement |
| EPA | Environmental Protection Authority |
| EPAA | Environmental Planning and Assessment Act (NSW). |
| EPANSW | Environmental Protection Authority New South Wales. |
| EPAVic | Environmental Protection Authority Of Victoria. |
| EPASA | Environmental Protection Authority of South Australia. |
| EPI's | Environmental Protection Instruments (NSW). |
| ERA | Extended regulated area. |
| ERDC | Environment Resources Development Committee (South Australia). |
| ERP | Estimated resident population. |
| ESD | Ecologically Sustainable Development. |
| HCB's | Hexachlorobenzenes |
| HEART | Highbury Environs Against Rubbish Tips |
| HRA | Historical Records of Australia cited in McMartin check |
| HWCC | Hazardous Wastes Consultative Committee |
| IGEA | Intergovernmental Agreement on the Environment. |

| | |
|---------|---|
| ISWB | Inner Sydney Waste Board. |
| IWMP | Industrial Waste Management Policy. |
| JTFIW | Joint Task Force on Intractable Waste. |
| LEP's | Local Environmental Planning Policies (NSW). |
| LH1 | Lucas Heights Landfill 1 |
| LH2 | Lucas Heights Landfill 2 |
| LLCS | Low Level Contaminated Soil. |
| LULU | Locally Unwanted Land Use |
| MCA | Melbourne Council Archival Records |
| MCC | Melbourne City Council |
| MCCS | Metropolitan Council of the City of Sydney |
| MCS | Metropolitan Council of Sydney |
| MFP | Multi Function Polis |
| MLC | Member of the Legislative Council. |
| MMBW | Melbourne Metropolitan Board of Works. |
| MSCC | Metropolitan Sydney City Council |
| MSDB | Metropolitan Sewerage and Drainage Board (NSW). |
| MWDA | Metropolitan Waste Disposal Authority (NSW). |
| MWMC | Metropolitan Waste Management Council (Victoria). |
| NAWMA | North Adelaide Waste Management Authority. |
| NCC | Nature Conservation Committee (NSW). |
| NEPC | National Environmental Protection Council |
| NEPM | National Environmental Protection Measure |
| NIME | Not In My Electorate. |
| NIMBY | Not In My Back Yard. |
| NIMTO | Not In My Term Of Office |
| NREC | Natural Resources and Environment Committee (Victoria). |
| NSWLEC | New South Wales Land and Environment Court. |
| OCS | Office of the Chief Scientist. |
| PAAL | People Against Ardlethan Landfill. |
| PAR | Planning Amendment Report (South Australia). |
| PEO | Protection of the Environment Operations Act (NSW). |
| PCB's | Polychlorinated biphenyls |
| PRO | Public Records Office |
| PROTEA | Protection of the Environment Administration Act (NSW). |
| RAGE | Residents Action Group for the Environment |
| RATWISE | Residents Against Toxic Waste in the South East. |

| | |
|----------|---|
| REP's | Regional Environmental Planning Policies (NSW). |
| SAC | Smoke Abatement Committee (NSW). |
| SCA | Sydney Council Archive |
| SCA CRS | Sydney Council Archive Council Report Series |
| SCAGS | Singleton Citizens Against Sydney's Garbage. |
| SCC | Sydney City Council |
| SCEC | Standing Committee on the Environment and Conservation. |
| SDC | State Development Committee (Victoria). |
| SEPP's | State Environmental Planning Policies (NSW). |
| SMH | Sydney Morning Herald |
| SPCC | State Pollution Control Committee (NSW). |
| SSC | Senate Select Committee. |
| SWAC | State Waste Advisory Council (NSW). |
| TEC | Total Environment Centre (NSW). |
| WA | Works Approval. |
| WCC | Wyndham City Council. |
| WDCSA | Waste Disposal Committee of South Australia. |
| WCED | World Commission on Environment and Development |
| WCN | Waste Crisis Network (NSW). |
| WMA | Waste Management Authority (NSW) |
| WMCSA | Waste Management Commission of South Australia. |
| WMCVic | Waste Management Council Victoria |
| WM&M Act | Waste Management and Minimisation Act (NSW). |
| WMISC | Waste Management Infrastructure Steering Committee (South Australia). |
| WRATD | Werribee Residents Against Toxic Dumps. |
| WRAPS | Waste Recycling and Processing Service (NSW). |
| WSNSW | Waste Service New South Wales. |

ABSTRACT

Since human beings began to live in settled communities the effective disposal of waste has been an issue central to their amenity, if not their survival. The larger and denser a settled population, the greater the volume of waste generated, and the less the available space for its disposal close to source.

Urbanisation began in Australia with European settlement at Port Jackson in New South Wales in 1788. Prior to that time the inhabitants were relatively small groups of widely dispersed, nomadic, hunter gatherers. The majority of the new settlers lived in fixed habitations within defined geographical areas and were in many respects the antithesis of the *ab-original* inhabitants.

This thesis takes an overview of urban waste disposal practices in Sydney, Melbourne and Adelaide since the time of their respective settlement by Europeans through to the year 2000. The narrative identifies how such factors as the growth of representative government, the emergence of a bureaucracy, the visitation of bubonic plague, changed perceptions of risk, and the rise of the environmental movement, have directly influenced urban waste disposal outcomes. Recent events in each of the cities under review illustrate how levels of community opposition to the siting of landfills have taken centre stage in the urban waste disposal debate.

In conclusion, the factors that have influenced urban waste disposal are enumerated. Finally, it is proposed that urban waste disposal in the cities under review falls into four distinctly defined *Epochs* delineated with reference to specific events which have determined how, by whom, where and for what reasons, waste has been disposed of.

DECLARATION

This work contains no material that has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

I give consent to this copy of my thesis, when deposited in the Adelaide University Library, being available for loan and photocopying.

SIGNED _____

DATE 05-08-02

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**Issues Relating to the Disposal of Urban Waste in Sydney
Melbourne and Adelaide**

An Environmental History

PART ONE

Chapter One **Introduction**

Chapter Two **Methodology**

Major Theoretical Themes

Chapter Three **Risk**

Chapter Four **Democracy Bureaucracy, Politics,
Policy, Power, and Public
Participation**

Issues Relating to the Disposal of Urban Waste in Australia

Chapter One Introduction

Along with death and taxes, garbage is one of life's certainties (Rathje, 1992: Cover note),

It is another fact of life that no organism can exist without affecting its environment. To be alive requires energy so all organisms eat... Similarly all organisms produce wastes. While they are biodegradable - - and it is nothing short of astonishing what some organisms will 'feed' upon - - the wastes do alter the environment and potentially affect all other organisms. Consequently the choice confronting humanity is not whether it affects the environment or does not. Rather the choice is how we affect the environment (Lovejoy 2000).

Any consideration of the management of waste in Australia inevitably takes us back to a time when, arguably, there was no *waste stream*, or at least to a point in time when *waste*, in modern terms, was first systematically deposited on our shores. Prior to European footfall, and even before the continent became known to European cartographers by such names as *Terra Australis Incognita*, *Jave la Grande*, *La Australia del Espiritu Santo*, *Terra Australis*, *Nue Holland*¹, or *New Holland*, the land had been occupied for millennia by tribal groups, generically labelled *Aborigines*.

The focus of this research project, as the title indicates, relates to Australia's relatively recent history. The period that begins from the time of European settlement; what Dovers (1994:2) refers to as the third Australia, 'still young at 200 years old'². On the 26th of January 1788, eighteen years after the annexation of New South Wales to the Crown of England by Captain James Cook in 1770, the first permanent white settlement was establishment at Sydney Cove. It is from this date that Australia began to have a waste disposal problem.

Events Leading to the Settlement of Australia

As the historical narrative discloses the circumstances in which Australia was settled, its governance and its rapid urbanisation, are historically unique. The North American Colonies had been lost to England following the Declaration of Independence in 1776 'and by closing that channel, had left a fast increasing number of prisoners on the hands of the Government' (Phillips 1909:1). The settlement and foundation of the Colony of New

¹ From the Official Year Book of the Commonwealth of Australia, 1901-1907, citing the maps produced by French, Portuguese and Spanish explorers and the landing of William Dampier, English buccaneer and captain of the *Cygnat* in 1688.

² Dovers (1994:2) defines the first Australia as the landmass of Pangaea, a part of Gondwanaland dating back 150m years. The second Australia; Aboriginal Australia conceived 50-60 thousand years ago.

South Wales in 1788 was the outcome of what Dr Marion Phillips terms a 'system of *Colonising-Transportation*' (Phillips 1909:1).

The *First Fleet* set sail for the antipodes in May of 1787 arriving at Botany Bay between the 18th and 20th of January 1788 (Crowley 1980). Unhappy with the proposed landing site at Botany Bay, Captain Phillip moved the fleet northwards, within Sydney Heads, to Port Jackson which he reported to be 'the finest harbour in the world, in which a thousand sail of the line may ride in perfect security' (Beaglehole 1788).

On the late afternoon of January the 26th 1788 a fleet of eleven vessels under the command of Captain Arthur Phillip, on the flagship *Sirius*, entered Pt Jackson; present day Sydney Harbour. Over one thousand human beings, from what was then considered to be *the civilised world*, arrived on the shores of *Terra Australis*, or *New Holland* as it was generally known. Phillip, with his nine civil servants, two hundred and eleven officers, sixty-four wives of officers and their children and 736 *reluctant colonists*, disembarked at Port Jackson³. And, in the boldly understated words of William Charles Wentworth in his book *Australasia* (1823) they set about the task of laying the foundations for 'A new Britannia in another world' (Wentworth 1823:22).

The *urbanisation* of Australia had begun. Hitherto, humankind had been living in Australia for at least 50,000 years. To adopt the poetic license of Robert Hughes, on arrival Captain Phillip discovered 'A static culture, frozen by its immemorial primitivism, unchanged in an unchanging landscape', a people 'technologically weak but manually adept' (Hughes, 1987:12). The new arrivals identified the Aboriginal inhabitants of the Cumberland Plains, the *lora*, as *savages*. The aboriginal social order was totally alien to the colonists in pre-European Australia, the majority of whom failed to recognise the fragility of the environment, that the habitat and indigenous social structures were reinforcing, or the harmony that existed between the human and non-human environments. As Powell points out 'the replacement population of white Australians usually engaged in extreme exploitation' (Powell 1976:3). Sixty years after the first settlement the explorer Thomas Mitchell was moved to write that 'We cannot occupy this land without producing change, fully as great to the aborigines, as that which took place on man's fall and expulsion from Eden' (Mitchell 1848:65). Mitchell's statement, quite novel at the time, is now blindingly obvious.

³ These figures suggest there were 1024 or 1025 settlers depending on whether Phillip is counted among the military; a footnote to the first Commonwealth Year Book, 1901 –1914, quotes research by one Dr J F Watson suggesting that 1024 white persons landed from the First Fleet.

As discussed by Kelly (1986:40), when New South Wales was settled there was considerable doubt in the minds of many settlers that the colony could survive. It was variously described as 'the poorest country in the world overrun with large trees, not one acre of cleared ground to be seen'; 'without scruple....the worst country that we have yet seen to this'(1986:40).

Yet Captain Phillip was, in the words of Aplin (1988), an *optimistic visionary* who had an exalted view of the significance of his actions. On the 7th of February 1788 he addressed the officers, soldiers and *settlers* in the following terms:-

Our enterprise was wisely conceived, deliberately devised, and effectively organised --- the sovereign, the parliament, and the people joining to give it their authority, sanction and encouragement. How grand is the prospect which lies before the youthful nation! Enough of honour would it be to occupy the first position, both in regard to time and influence in a country so vast, so beautiful, so fertile, so blessed in climate and rich in all the bounties which nature can confer, enough of merit for any nation would it be to open so extensive and highly favoured country to the occupation of mankind (Flanagan 1862:32)

Many of the settlers saw little future for the penal colony, yet Phillip wrote in his personal account, *The Voyage of Governor Phillip to Botany Bay, 1789*:-

There are few things more pleasing than the contemplation of order and useful arrangement, arising gradually out of tumult and confusion; and perhaps this satisfaction cannot any where be more fully enjoyed than where a settlement of civilized people is fixing itself upon a ...savage coast....and a prospect at least of future regularity is clearly discerned (Aplin 1988:27).

The form of government was autocratic and authoritarian. Phillip, as the first Governor was a militarist autocrat, as were the four governors who succeeded him, a factor that significantly influenced the mode of governance of the colony in its early years⁴. Enid Campbell, writing in 1964, states that 'The form of government employed in New South Wales between 1788 and 1823 was altogether unique; never before had the Crown withheld legislative institutions from colonies governed by English law and assumed to itself or delegated to colonial Governors the authority to make laws for the colony which would otherwise have been entrusted to a colonial legislature' (Campbell, 1964:184). As Troy observes, 'the hierarchical nature of working relations in convict settlements led to a centralised city structure' (Troy 1995:2). Administrative convenience and the limitations of

⁴ Local resentment of the autocratic nature of government led to the appointment of Commissioner Bigge in 1819 to investigate and report on 'the Colony's affairs'. Macquarie was recalled to England in 1822 and in 1823 'the Home Government granted to New South Wales some measure of Constitutional Government' (Phillips 1909:Preface). A form of representative government took a further thirty years to become a reality.

the infrastructure essential to transport and a reliable water supply were determinative of the spread of population within the new colony.

The Disposal of Waste: a brief global historical perspective

Contemporary issues in Australia in relation to the selection of both the means of disposing of urban waste and the siting of waste disposal facilities are of national, and indeed, of international interest and concern.

Since the beginnings of urban settlement humanity has 'moved on from kitchen middens of past centuries to a civilisation where every thousand people, men, women, children and babes discard nearly a ton of rubbish every day of their lives' (Wylie, 1959:9).

The issues faced in Australia in regard to waste disposal, both past and present, were in all probability, not dissimilar to those faced in Europe, America, and Asia. The exception being, of course, that urbanisation only commenced in Australia some two hundred and twelve years ago. Globally though, the issues of waste disposal have been around for millennia yet remain topical, ever changing, and in many instances unresolved. The Bible alludes to pollution and sewage (Duet. 23:12-13) and, even before the time of Moses, there are references in the Zoroastrian religion of the Persians forbidding the 'discharge of organic refuse, or indeed any filth, into the rivers' (Paehlke 1989:24).

Historical records indicate that the Persians had reticulated water in 5000 BC, and that the Minoans (2000-1500 BC) had pottery water pipes and a sewerage system in the palace at Knossos. They also managed their refuse in pits called *kouloura*; earth was added in layers and sprayed with water to enable wastes to ferment or compost before being used to manure land. The Romans took their sanitary system from the Minoans and not from the Greeks (Wylie 1959:11), yet despite the *technology* of the times, the problems of waste disposal remained. An inscription on the outskirts of what was once ancient Rome, referred to by Kirov in his 1971 paper *The Age of Pollution*, reads 'take your refuse further or you will be fined' (Kirov 1971:1). This direction has a familiar resonance even today and is reflective of the adage, *out of sight out of mind*, which for centuries characterised waste management practice in many cultures. The use of organic waste to fertilise fields began in ancient times. During the Saturnalia festival animal dung was ritually spread on fields to honour the god of agriculture, (Wylie 1959:10). This practice continued for centuries beyond Roman times, and effectively disposed of a large portion of pre-industrial *waste streams*.

In England of the Middle Ages, as in all settled and urbanising societies, pollution and the disposal of waste had to be addressed if towns and cities were to survive. Wylie (1959) notes that when the first stone bridge was built over the Thames in 1307, Edward I appointed 'Surveyors' to stop litter being thrown onto the roadway and into the river. At the same time merchants who entered London had to pay 'pontage' to enter and 'stallage' to occupy market sites. The revenue raised was then used to pay the cost of removing their garbage.

The first sanitary legislation was passed by Parliament sitting in Cambridge in 1388 and provided that the townspeople were 'to remove from the streets and landes of towns all swine and all dirt filth and branches of trees and to cause the streets and lanes to be kept clean for the future'. At this time each ward in the city had a 'raker'. Refuse was collected and placed in 'laystalls' in pits on the banks of the Thames 'whence dung boats carried it along the river to be disposed of by methods which remain a mystery' (Wylie 1959:25). This was an age when people simply tossed their garbage out-of-doors, the streets had no footpaths and were badly paved, sloping from the crown to 'kennels', into which the filth ran (Wylie 1959:26).

Prosperity and progress often come at a price. The Romans inadvertently poisoned themselves by using lead, rather than clay, for plumbing and utensils. White lead pastes were used in cosmetics from Tudor to Victorian times and mercury took its toll on unsuspecting milliners as unperceived risks were ignored. In 1556, one Agricola lamented the damage caused by mining...

...fields are devastated by mining operations...woods and groves are cut down for timber.... and the smelting of metals....when the ores are washed the water...poisons the brooks and streams, ...destroys the fish, therefore the inhabitants of these regions on account of the devastation of their fields, woods, groves, brooks, and rivers...find great difficulty in procuring the necessaries of life (Kates, Hohensemer et al. 1985:1).

From the Middle Ages through to pre-industrial 18th century England, urban waste was dominated by organic matter, principally animal manure and human sewage. In the 16th century manure was described as 'almost anything that hath liquidesse, foulness, slatnesse or good moisture in it...every form of dung, animal and human, along with industrial wastes like soot, rope waste, rags, hair, malt waste, dust and bark were used whenever they could be had'. By the end of the 16th century, manuring 'had been brought to a fine and imaginative art' (Wylie 1959: 26).⁵

⁵ Manure remained an important part of the agricultural economy well into the middle of the 19th century. However, in 1844 Von Liebig invented chemical fertiliser, a scientific discovery which in

Progress and invention brought with it a changing urban waste stream and, from an historical perspective, its nature and content has continued to evolve to the present day. As to its disposal, in the absence of regulation and enforcement, people have always tended to dispose of their domestic and other waste in ways that are most 'convenient'. An outcome has been what Schiffer (1987) termed the 'Arlo Guthrie trash-magnet effect'⁶; people 'tend to dump trash where others have previously dumped trash; thus concentrations of trash arise' (Schiffer 1987:62). This has been a fairly universal tendency that Schiffer (1987) and Hughes (1996a, 1996b, 1999, 2000) have traced back to ancient Greek and pre-Mayan times. Everyday experience suggests that the 'trash-magnet effect' remains a contemporary phenomenon.

Waste in Colonial Australia

The evolution of waste management in Australia from colonial times to the present will be shown to be inextricably linked to elements of the country's growth, and administrative and economic development. Port Jackson evolved from a penal settlement into a land of promise and prosperity, as free settlers arrived and progressively outnumbered convicts. Survival and mere subsistence in colonial Australia was slowly replaced by growing prosperity and with it the effluence of affluence. For the first hundred years of white settlement, as reported in the Centennial Supplement to the *Sydney Morning Herald* of the 24th of January 1888, 'The history of Australian progress is a narrative of persevering industry and also incessant struggle'. The incessant struggle for survival in the first century gave way to relative affluence, increased consumption and, correspondingly, the generation of more waste. During the early years following the annexation of Port Jackson, it 'was a small settlement dependent for its food-supply upon other countries...(that within twenty-five years became)...an agricultural colony providing its own food, beginning to establish its own manufactures and exporting wool...It was even able to support a civil establishment without support from the Imperial Treasury' (Phillips 1909:vii) and it developed its own centralising bureaucracy.

With the arrival of the free settlers, agitation began for the establishment the institutions of government as we know them today. All the worst and all the best of England, which included the *out-of-sight-out-of-mind* attitudes that dictated the management of all things considered distasteful, came as part of the European settlers' *emotional and philosophical baggage*.

time lessened the economic demand for manure. In the absence of demand manure became waste.

⁶A reference to the film script based on Guthrie's composition, *Alice's Restaurant*. (<http://www.arlo.net.lyrics/alices>).

Writing in 1852, Lancelott comments on the previous sixty years:-

...the colony has, notwithstanding long protracted droughts, commercial depressions, and political misrule, rapidly advanced to its present great thriving condition. It now is one of our great drains for surplus population, and it can scarcely be deemed a convict settlement, as in 1840, her Majesty-in-Council decreed, that, from and after the 1st of August in that year, the transportation of convicts thereto, should altogether cease (Lancelott 1852: 205).

Environmental history...an introduction

An environmental issue without a past is altogether as mysterious as a person without a past (Dovers 1994:4)

This thesis, as a review of urban waste disposal in Australia, addresses an aspect of Australia's environmental past and is, quintessentially, an Environmental History; a lineal narration of events relating to urban waste disposal in Sydney, Melbourne and Adelaide. James O'Connor characterises environmental history as an end-point in the evolution of historiography, methodologically the culmination of all histories that have gone before it (1997:4-5).

Environmental history has only emerged since the 1970's as a separate interdisciplinary, integrative field of historical writing which aims, in the words of Dovers, to 'examine the past as it relates to environmental and resource issues in the present...it may be pursued to provide a general baseline or to focus more sharply on some problem or place' (1994:6). Environmental history, as a scholarly discipline, is still going through a process of self-definition. While literature over the centuries has described the environment and environmental events, these narratives have 'not occurred often within the discipline of history' (Dovers 1994:5).

Dovers (1994) goes on to describe environmental history as 'the investigation and description of previous states of the bio-physical environment, and the study of human impacts on and relationships with the non-human setting (1994:4). In simple terms, environmental history seeks to explain how and through what agencies or interventions the environment has reached its present state. Environmental history contextualises the environment's ecological transformations as its primary focus and humankind as an instrumental secondary focus forms the transient background to its central themes. The environment becomes the 'constant', the continuum and human beings, although the authors of change, are not the subjects of change.

In this sense environmental history reverses the *hierarchies* implicit in traditional history by placing the environment centre stage and recognising both how it has been influenced by human intervention, and in turn, influenced (subsequent) human behaviour. Worster (1998:290) refers to the naivety of 'old history' that has collected facts, focussing on the resources of the environment, often ignoring human existence 'and has more or less assumed by its general disregard of that fact that we have not been, and are not truly part of, the planet'. Traditional history, from the perspective of environmental history, has missed 'the wood for the trees', and the 'old history' is now being *re-viewed* through the prism of environmentalism.

However, an environmental history is not a history in the traditional sense. It is a subset of traditional history; a re-telling of history from an environmental perspective that 'has a great potential for changing the way we conceive of the past' and manage our environmental future (Worster 1998:viii). Blaschke, writing in 1990, calls it a new 'sub-discipline of history' that recognises that the present state of the environment is the result of historical development. He takes the view that the 'world system has fallen ill' and, in this context, environmental history is seeking to explore environmental behaviour in the past and to discover the 'roots of the present environmental problem(s), in history' (Blaschke 1990:69).

Dovers suggests that environmental history not only offers new perspectives, but is also 'very often inherently interesting; there are good stories to be told' (1994:4). Environmental history is founded in the epistemological assumptions of environmentalism, reflected in the academic discipline of Environmental Studies, which is centred on 'ecology, with its key principles of holism, integrity, diversity, (and) interconnectedness' (Doyle and Walker 1996:10). It is a re-telling of traditional history from a new perspective that 'has a great potential for changing the way we conceive of the past' (Worster 1998:viii). Hence it is essentially eclectic, cross-disciplinary and trans-disciplinary.

Newman (1994:1-10), states that environmental history can also serve to:-

- encourage consideration of the human-environment relationships;
- emphasise the human capacity for environmental change and the power of nature to respond;
- encourage action with care, since the complexity and unpredictability of nature means that human action has unforeseen consequences...environmental impacts often take a long time to become evident...slow and iterative;
- remind people that there is not just *One Big Problem* called "the environment", but also many smaller problems needing attention;
- improve understanding of human environmental impacts and therefore play a role in the struggle to reshape a sustainable human future.

Environmental studies is integral to 'a radical social and political movement. It accepts advocacy and strategic problem solving...undisturbed by radical thought and even political action flowing from its critical approach' (Doyle and Walker 1996:10). It is focussed and purposeful and, as Worster explains:-

It has been born out of a moral purpose, with strong political commitments behind it, but also came as it matured, a scholarly enterprise that had neither any simple, nor any single, moral or political agenda to promote (Worster 1998:290).

This narrative draws on historical and contemporary events that comprise Australia's traditional social, economic and political histories, yet it backgrounds these to the continuum of environmental transformations caused by waste disposal practices since the time of European settlement. In these terms it provides an ideal context for the exploration of the present topic. The scope of environmental history, and the methods applied in its research, will be discussed in detail in the Methodology chapter following.

The Aims of this Research

Australia's history since white settlement has traditionally been written with reference to 'the famous', the explorers and politicians, and to such events as the arrival of the First Fleet, the crossing of the Blue Mountains, Federation, the Depression and the two World Wars. However, as outlined above, this thesis sets out to write a 'history' from a quite different, environmental perspective. Using the methodologies of environmental history, this thesis narrates and reviews a wide range historical events as recorded by others, and seeks to sift out those factors that have catalysed or influenced change in urban waste disposal outcomes in Sydney, Melbourne and Adelaide.

Hence, the resultant document is therefore a synthesis of a vast amount of 'historical' detail, inevitably reliant upon the writing of others, leading to an overview of urban waste disposal practices in the cities under review. The resultant narrative creates a factual record from which causes and effects can be identified and a model postulated. This model it is suggested may have application beyond the immediate context of this study.

The primary Aim of this research project is to identify, and then to analyse, compare and contrast, those factors and events that have precipitated change in urban waste disposal outcomes in three of Australia's major cities over the past two hundred and twelve years. As the chapters that follow will disclose, a range of often interconnected factors and events emerge from the narrative as having influenced waste disposal practices. They include the following: -

- The emergence of responsible and responsive governments;
- The evolution of bureaucratic structures and administrative procedures;
- Population growth and the generation of increasing volumes of waste;
- Proximity of settlements to absorptive locations, waterways and voids;
- Ongoing technological change;
- The role of the media;
- Changing perceptions of risk;
- The changing nature and classification of waste;
- The centralisation and rationalisation of disposal of urban waste;
- The emergence of a (politicised) communal 'environmental conscience';
- The introduction of planning and development controls;
- Cost considerations.

Secondly, and as a direct outcome of the primary aim, this thesis creates a record of the historical continuum, from an environmental perspective, relative to the disposal of urban waste in Australia from white settlement to the year 2000. Although the topic of waste disposal in the cities under review has been addressed in the context of histories by a number of writers, including Butlin (1976), Coward (1988), Fitzgerald (1992), Cannon (1991) and Morton (1996), no comparative environmentally focussed study appears to have been undertaken with specific reference to urban waste disposal across the entire historical time-line since white settlement. This narrative, which collates a wide range of historical detail from a diversity of sources, creates a knowledge-map with respect to a hitherto little examined aspect of Australia's environmental history. By outlining past practices and relating them to contemporary urban waste disposal strategies, this research may assist scholars and planners and in turn stimulate further research.

Thirdly it is proposed by way of an overall conclusion, summarising and integrating the seemingly serendipitous sequence of historical events outlined in the narrative, that a pattern or model emerges in relation to the disposal of urban waste relative to the cities under review. This model postulates that urban waste disposal in Australia falls into four, clearly defined, self-dependent, Epochs. Although this research has been limited to the cities of Sydney, Melbourne and Adelaide, this conclusion may have relevance to other Australian cities and, at the very least, will form a basis for further research of urban waste disposal practices, within these cities themselves, other cities nationally and, perhaps, internationally.

Research Questions

To achieve the above Aims, the research process had been underpinned by three key questions:-

- first, who has decided, over the past two hundred and twelve years, *where* urban waste was to be disposed?
- secondly, how, or through what mechanisms, have those decisions been taken?
- thirdly, why, or on what basis, have those decisions been made?

As Parts Three and Four, Chapters Five to Eleven, will disclose, the answers to these 'who', 'where', 'how' and 'why' questions have differed considerably over the span of Australia's European history. There has been no uniform or single approach to urban waste disposal and hence, the outcomes have varied considerably over time. Furthermore, the nature of waste, and its mode of disposal, has changed markedly.

The first question, *who* decides what will be done with urban waste, involves a review of the roles of individuals, governments and industry in determining its disposal. An examination of notions of autocracy versus democracy, the emergence of representative government, and the nature of authority, and the exercise of power by governments and communities, are aspects of this inquiry. The historical record indicates that, if decision-making is left to *the individual*, little regard may be had to the common good or the wider community.

As observed by Hugh Stretton in *Ideas for Australian Cities*, the ongoing management of cities is as complicated and conflict-ridden as the government of whole nations, and 'Like any other activity of government, town planning can be good, bad or indifferent, and it can distribute very different costs and advantages to different people' (Stretton 1970:2).

The second question, *how* decisions have been made, implemented and enforced, will be analysed in the context of the mechanisms of decision making; the role of politics, political parties and factions, policy formulation, the function of the Bureaucracy, and the exercise of power. Related to these issues, and in parallel with them, the development of the structures of government and regulatory authorities will be shown to have influenced how urban waste has been disposed of over the past two hundred years.

The third line of inquiry, the *why question*, looks at the bases upon which decisions have been taken. The paradigms that underpin beliefs, both scientific and social, have changed dramatically in the last two hundred years. The analysis of risk, risk perceptions and risk communication will be addressed along with such issues as the changing nature and volumes of *waste*, the role of science and technology, and growing concerns for the environment. All of these factors, collectively, will be shown to have influenced why particular strategies for the disposal of urban waste have been formulated and implemented.

Rationale and Justification

The rationale or justification for this research project relates directly to the foregoing Aims and to the epistemology; that personal philosophical stance shaping the process of research. This will be discussed further in the context of the Methodology outlined in the next chapter. As noted, this research project is intended to identify the factors which have influenced, directed and informed, urban waste disposal in Australia since white settlement. In so doing, it is intended to record a largely unexplored aspect of Australia's historical past and to relate it to the present. Hence, the resultant document should serve as a foundation and a springboard for further academic research.

Defining the subject matter and focus of this research has involved numerous choices. The scope of this project, limiting it *locationally* and *temporally*, and also in terms of the relevance of historical facts, and the depths to which inquiries should proceed, has raised many issues.

The nature of waste has varied over time. What 'wastes', and whether the modern day issues relating to the disposal of scheduled or nuclear waste, were to be included in this thesis, needed to be considered. It was apparent, however, during the early days of this research that any attempt to examine the entire history of all aspects of waste and its management across the whole of Australia was far too ambitious and daunting a task. It appeared necessary to focus, as far as possible, on one aspect of the waste stream; the 'urban waste stream'.

At the same time it became apparent that the research would lose an element of its originality if its focus was limited to a single Australian city. The comparisons and contrasts that emerge from the historical sequence of events are a key element of the narrative. Hence, as outlined in the Introduction to this chapter, I have chosen to focus on, and contrast, the colonial settlements at Port Jackson (Sydney), Port Phillip (Melbourne), and Adelaide, later to become the capital cities of the states of New South Wales, Victoria and South Australia respectively.

The choice of Sydney, Melbourne and Adelaide as the foci of research has been assisted by the knowledge that the philosophies driving the initial settlement of each, as colonial outposts, differed considerably. 'Varying even among themselves, the colonies assumed their own character, had their own relatively isolated economies, and had systems of administrative government which differed at least in their balances and emphases' (Finn 1987:2). As Frost and Dingle (1995:14-31) discuss, 'Australia's major cities were characterised by significant variations in their spatial structure and quality of infrastructure'. The variations are explored between, and not within, these cities. The exploration of the social and economic disparities that developed within each of the cities themselves, as a study in Urban Geography, is beyond the scope of this work. Such studies could seed separate theses in themselves.

Another crucial choice was selecting the *time frame* for this study. The temporal parameters, 1788 to the year 2000, have been set on the bases firstly that there was no urban settlement, and hence no urban waste disposal issues, in Australia prior to the arrival of the First Fleet in 1788 and, secondly, that the intended date of submission of this thesis suggested the year 2000 as a logical end point for the discussion. European settlement constituted a cataclysmic change in the history of the continent that is now known as "Australia". Settlement by Europeans heralded the beginning of a totally new era of this country's social, cultural and environmental history. European settlement represents both an end point and a beginning. It simultaneously spelled the deterioration

of many of the Aboriginal cultures in Australia and the beginning of the systematic environmental degradation of the continent that continues to this day.

By choosing 1788 as my beginning point I have increased the enormity of the task but sought to avoid cutting up the *tapestry*; the pitfall alluded to by Simmons (1993:188) when he observed that 'History is like a narrative tapestry: if we cut it up and store some of it in a chest, we will not understand the message'. Only by mounting the whole of the tapestry and taking a total overview, can one hope to gain a view of the entire, environmentally sad picture.

The development of the epistemology underpinning this project can be related to the *evolution* of the Title. The initial working title of this thesis was, *A Critical Analysis Of Issues Relating to the Siting of Landfills and Management Of Waste in Urban Australia*. It became necessary to be modify and 'scope down' this title several times to take account of the fact that *landfills*, as we know them today, are a relatively recent invention and that the word *management* encompasses all dealings with waste, from recycling to minimisation programs. In the same vein 'waste', as an all inclusive word, was in practical terms far too broad as it captured all forms of discarded material; whether categorised as street, urban, industrial, agricultural, prescribed, scheduled, radio-active or nuclear.

This thesis is limited to that municipal solid waste generated and discarded, but not necessarily disposed of within cities, which is generically termed for present purposes, 'urban waste'. What has constituted 'urban waste' has changed over time, and as will be discussed, disposal remote from source will be seen to be a 20th century phenomenon. This thesis does not, for example, examine the related issues of the disposal of trade, industrial, agricultural, or scheduled wastes, many of which include hazardous manufactured synthetic organo-chemical compounds used as pesticides in agriculture, for warfare or in industrial purposes, and are the products of relatively recent technology. Nor does this thesis address the complex issues relating to the storage of radio-active or nuclear wastes.

Many components have been 'defined-out' of what used to be a general undifferentiated waste stream. The late 1960's saw the beginning of the categorisation and regulation of wastes predicated on chemical composition, hazard and tractability; this resulted in wastes at the dangerous end of the risk spectrum, being excluded from the urban or municipal waste stream. This thesis has also been scoped down to omit analysis or assessment of the different technologies of waste disposal, the history of recycling, resource recovery, and waste minimisation, any one of which could found a thesis in itself.

What is Waste?

Semantically *waste*, a generic and changeable term, is elusive and difficult to define. Coffel's Encyclopedia of Garbage (1996) defines a vast range of chemical and organic wastes and their production, uses, effects and destruction producing what William Rathje refers to in the Introduction as 'highly fortified food for thought'. An abbreviated definition of *waste* proposed by Coffel is 'materials discarded as worthless, damaged, defective, used up or superfluous during or at the end of a process' (Coffel 1996:282). Coffel however does not define 'urban waste', a term used interchangeably in this text with 'municipal waste'.

Waste takes many forms. Waste may be adjectively qualified with reference to its source, whether it is industrial, agricultural, domestic, urban or municipal, nuclear, radio active, or thermal. Waste may be visible or invisible to naked eye and may include, for example, noise emissions. Given its breadth of meaning the word *waste* may also be qualified by such adjectives as liquid, solid, gaseous, putrescible, or inert: factors that relate to its physical description or characteristics. Macdonald and her colleagues have defined 'solid waste', which forms the mainstream of urban or municipal waste, as 'Non-hazardous municipal, domestic, commercial and industrial waste'. Post-consumer waste has been described by the same authors as 'Products and materials which have been discarded by their ultimate consumers' (Macdonald et al 1996: vi) that find their way into the municipal or urban 'solid waste' stream.

Taking a broader view of what substances constitute *waste* appears to be both subjective and contextual. Waste is generally considered to be that which has no value and hence is discarded. However, definitions have changed over time and it will be seen that contemporary 'formal' definitions of waste no longer use *economic value* as a criterion. A substance or an object may have value yet still be considered waste, refuse or garbage. As discussed above, Coffel's (1996) definition of 'waste' incorporates the word 'superfluous'. This takes account of the fact that something may have value, yet be *subjectively* superfluous in the hands of its current holder, and for that reason it is discarded. Hence 'waste' can be defined as that which is thrown-away or discarded; this definition goes beyond notions of *value* and can include 'Cadillacs in the desert' as well as any spent object (subjectively) considered totally devoid of worth at a point in time when it is disposed of.

The Australian Chemical Industry Council defined waste matter in 1971 as 'the unavoidable materials for which there is no economic demand and for which disposal is

required' (Hubick 1991:1). As Hubick points out a difficulty in defining 'waste' whatever its derivation, and whether a solid, a residue or liquid, turns on whether it is perceived as a resource or something to be discarded with or without some form of treatment. A broad definition of waste he cites is:-

any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other **discarded material**, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities...(USA Office of Technology Assessment: 1986, Hubick 1991:11) (Emphasis added).

From yet another perspective, English Common Law gave 'waste' a quite different definition relative to uncultivated or unused land, or to 'whatever does lasting damage to the freehold or inheritance of land or anything which alters the nature of the property' (Osborn:1954:353). Contemporary legislative definitions, that underpin mandatory requirements, are more in tune with everyday understanding of waste and contrast with the industry definitions. In 1970 the *Environmental Protection Act* in New South Wales, section 4, stated that waste includes:-

- (a) any matter whether solid, liquid, gaseous or radio-active which is discharged, emitted or deposited in the environment in such volume, constituency or manner as to cause an alteration in the environment;
- (b) any discarded, rejected, unwanted, surplus or abandoned matter;
- (c) any otherwise discarded, rejected, unwanted, surplus or abandoned matter intended for-
 - (i) recycling, reprocessing, recovery or purification by separate operation from that which produced the matter; or
 - (ii) sale; and
- d) any matter prescribed to be waste.

Various other statutory definitions of waste now state specifically that *value* is not a factor in the definition of what constitutes waste.

...any matter, irrespective of value, that is discarded or left over in the course of industrial, commercial, domestic or other activities (*South Australian Waste Management Act* 1987).

...waste includes any solid, liquid or gas (or combination thereof) that is left over, surplus or an unwanted by-product from any business or domestic activity, whether of value or not;...(*Environmental Protection Act*, 1995, South Australia, s.3).

In terms of the National Environmental Protection Measure (NEPM)⁷ on the Movement of Prescribed Wastes between States and Territories (1998):-

Waste means any:

- (a) discarded, rejected, unwanted, surplus or abandoned matter; or
- (b) otherwise discarded, rejected, unwanted, surplus or abandoned matter intended for:
 - i. recycling, reprocessing, recovery, reuse, or purification by.....a.....separate operation from that which produced the matter; or
 - ii. sale, whether of value or not. (NEPC 1998)

Waste in the context of this thesis, is urban or municipal post-consumer (solid) waste. The adjectives 'urban' or 'municipal' simply provide *boundaries* to the source of the waste but do not necessarily help in providing a totally unambiguous definition of the waste itself. Historically, urban waste included every form of known waste, yet in the contemporary context it is essentially the solid waste or refuse generated by the inhabitants of a city, that form part of the waste stream and that (now) go to landfill. Hence it does not extend to wastes that may be characterised as 'hard to get rid of' or described as scheduled, intractable, industrial, agricultural or nuclear. In an age of waste minimisation and resource recovery, such materials as glass, paper, plastics, metal cans and 'green waste' should not, ideally, go to landfill and should also be excluded from this definition. The urban waste stream remains complex, however, the difficulties in ensuring its safe disposal in recent years have not been so much in how to dispose of it, but in where; socio-political rather than technological.

This thesis looks at the linkages and relationships, over time, between the disposal of waste generated within the cities reviewed and the factors that have driven those changes. As the narrative in Chapters Five to Eleven will disclose, there is a broad lineal relationship between what is termed the urban *waste stream*, once simple and now more complex, and advances in technology. The management of this waste stream may be characterised as risk management and, as technology has advanced and changed, so too have the risks associated with waste disposal. Correspondingly, community perceptions of risk have also changed. These perceptions, in part at least, have been offset as technology has sought to assuage community concern by inventing safer waste disposal options. Against this complex background risk related community concerns about waste disposal have entered the political and regulatory domains and become part of what will be discussed as the 'policy cycle'.

⁷ A NEPM is a broad framework setting statutory instrument defined in the National Environment Protection Council legislation. Full details to be found at ><http://www.nepc.gov.au><.

The Categorisation and Regulation of Waste

Broad, catch-all definitions of 'waste' reflective of its composition are important as composition is, (or should be), determinative of modes of safe disposal. As will be discussed in some detail, during the periods described in this thesis as the First, and Second Epochs of Urban Waste Disposal, up until about 1900, there was no formalised categorisation of waste as virtually the entire undifferentiated urban waste stream went to municipal landfills. The exceptions related to limited incineration and sea dumping which became more common during the Third Epoch when waste was categorised or 'sorted' as flammable or non-flammable, sinkable or non-sinkable. In the Fourth Epoch there was a gradual return to landfill and, initially at least, there was only limited categorisation of the waste stream. Many municipalities took a conscious decision to dispose of dangerous liquid wastes using the 'absorption method' that involved 'co-dumping' hazardous liquids with absorptive domestic wastes. Yet later in the Fourth Epoch, by the 1970's, there was considerable concern generated in communities about such practices. The composition of the waste stream, and the risks it posed, became central to its regulation.

In what appears to have been one of the earliest legislative attempts to define wastes, an imperial decree by Napoleon I in 1810 divided *noxious trades*, with reference to their products⁸, into three classes. Later in the same century a General Order of the Local Government Board of London, issued on the 13th of March 1880, defined *noxious* as *productive of injury*. *Offensive* was defined in same context as *causing anger, disgusting, [sic] displeasing, disagreeable, noisome, causing pain*; classification was hardly scientific in today's terms. Today, familiar descriptors for waste include such terms as, organic, non-organic, chemical, inert, putrescible, toxic, intractable, hazardous, and radio-active.

It is perhaps also worth noting, at this early stage, that not all wastes are pollutants. Axiomatically, many pollutants may be useful chemical compounds in every day use that are generally not categorised as wastes. However, those wastes that do pollute create genuine problems in the environment and clearly such wastes need to be identified and categorised for a safe disposal regime to be effective. Problematic wastes, the so called intractable wastes, tend to be the engineered organic-chemical compounds, substances such as, organo-chlorines which are toxic and do not degrade easily (Sabine pers.comm. 2000).

⁸ Discussed, Report of Commissioners, Noxious and Offensive Trades Inquiry, New South Wales, 1882.

The Australian and New Zealand Environment and Conservation Council (ANZECC)⁹, in the opening lines of the November 1992 Draft National Strategy for the Management of Scheduled Waste, states 'Scheduled, or hard to get rid of, waste is an important but small component of the waste stream in Australia...[that]....was previously called *intractable waste* but is now scheduled waste in recognition of it being part of the larger waste stream'(ANZECC 1992:1). In the same document 'scheduled waste' is defined as 'a material or article containing chemicals exceeding the threshold concentration and threshold quantity, which are organic in nature, resistant to degradation, toxic and bioaccumulative'¹⁰. While issues relating to the disposal of *scheduled waste* will be discussed briefly, it is not dealt with as an aspect of urban waste and hence is not central to this thesis. The issues relating to *intractable* or *scheduled waste* in Australia could well form a substantial research project in their own right.

Reflective of the fact that definition and categorisation of substances is often extremely difficult, the present day tendency is for legislators to (unconsciously) follow the example of Napoleon I, and seek precision through the listing or scheduling of wastes with reference to both their chemical composition and physical attributes. Typical of this approach is the provision of Schedules A and B to the National Environmental Protection Measure (NEPM) issued on the 26th of June 1998, by the Australian National Environmental Council (NEPC)¹¹. Schedule A is in two parts. List 1: *Waste Categories* alphabetically lists some sixty waste substances. By way of example, the first two substances are generic; *acidic solutions* and *animal effluent and residue*. Schedule A, List 2, *Characteristics of Controlled Wastes*, further categorises wastes in physical terms, for example, as solid or liquid, explosive, flammable, oxidizing, poisonous, infectious or corrosive. Schedule B simply sets out the requirement to document wastes that are transported with reference to Schedule A, List 1 and List 2 (NEPM 1998).

The Waste Stream

Coffel in the Encyclopedia of Garbage defines the waste stream as the 'flow of solid, liquid or gaseous waste products from their source to their point of final deposition, or, in the case of air or water pollution, until dilution, the action of sunlight, wind, water and the metabolic processes of living things have neutralised the contaminants (1996:283).

⁹ ANZECC was created in 1991. See discussion Chapter Eight.

¹⁰ Also discussed in Environment Australia (1997) *Appropriate Technologies for the Treatment of Scheduled Wastes*. [On-line] < <http://www.environment.gov.au/portfolio> > Accessed 12 May 1998.

¹¹ See discussion in Chapter Eight.

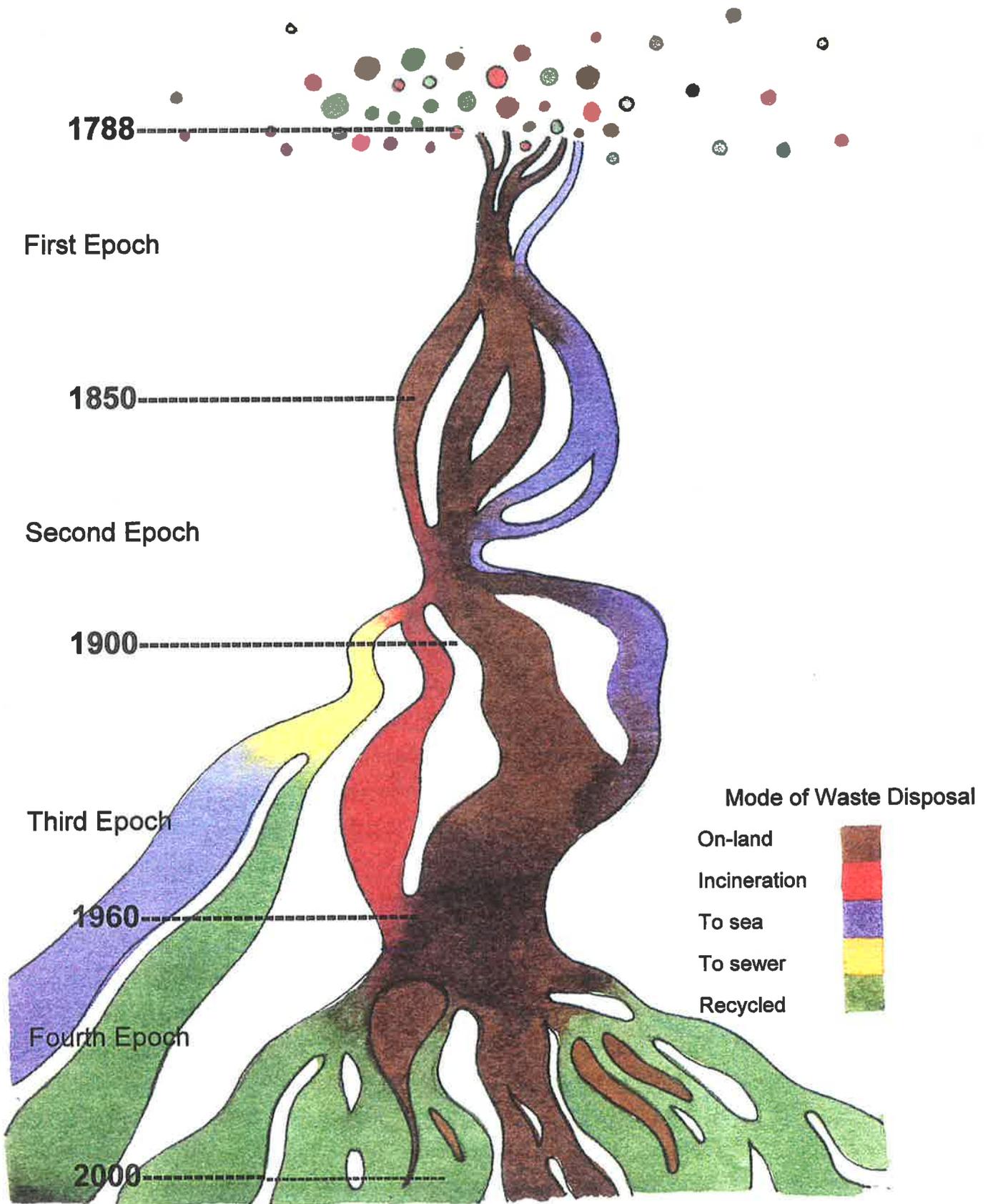
The waste stream, as a metaphor or semantic construct, can be visualised as a river having many sources and feeding many tributaries. The expression is useful as it captures the image of a single *virtual river*, a confluence of unwanted matter running through the landscape. The *waste stream* has changed over time, as is reflected by the time lines in the diagram following. It is a *stream* that has many tributaries flowing into it, and others branching away from it, and some rejoining it. But, unlike the streams of poetic repose, the waste stream does not 'run somewhere safe to sea'¹², or anywhere safe for that matter; a theme central to this narrative.

It is very difficult to measure, other than through the broadest of guesstimates, how much waste was generated in the late 18th, 19th and early 20th centuries in urban Australia, and of that, how much went to on-land disposal sites. Based on the generalisation that prosperity was linked to increased production and brought with it increased consumption, which in turn generated increasing volumes of waste, it can be safely assumed that the *waste stream* steadily increased not only in size but also in content. The points at which waste entered the waste stream, and the number and varieties of its tributaries, also changed. By the late 19th century, most sewage in the cities under review had gone *underground*; thereby reducing the surface waste stream. In the 20th century changes in the waste stream can be related to the introduction, and later the banning, of urban incineration, the banning of sea dumping, and the reintroduction of on-land disposal of urban waste. Late in the 20th century the introduction of waste minimisation and recycling strategies deflected large volumes of discarded material from the waste stream.

Only in recent years has statistical data relating to waste volumes become available. This was, as stated earlier, largely as a result of waste minimisation programs. Consultants, Hudson and Associates, undertook a landfill audit in South Australia in the year 2000. They concluded that 'Within metropolitan Adelaide, approximately 960,000 tonnes of waste were disposed to landfill in 1998-99 rising from a sixteen year low of 860,000 tonnes in 1995-96' (Department for Environment and Heritage S A 2000:4)¹³. However, as will be discussed in Chapter Two, detailed quantitative aspects of either the nature or volume of urban waste are not central to this discussion.

¹² 'That even the weariest river
Winds somewhere safe to sea.' Swinburne, A C, from Thwaite (ed), (1984) Six Centuries of English Verse. London, Thames Methuen p186.

¹³ Similar data are available, for the relatively recent past, with respect to the other States of Australia.



THE WASTE STREAM

(Artwork S. Ninham 2001)

Population

The *sine qua non* of waste generation is that without human beings there are no waste disposal problems. Hence population numbers, their concentration in a given place, and levels of affluence and consumption, are key factors in the urban waste disposal discourse. Waste discarded by people living in settled communities has a cumulative effect; the larger and denser a population the more the waste generated and the less the space available close to source for its disposal. Coward, in the Preface to his environmental history of Sydney, comments that:-

Cities produce waste...they grow and become more complex and produce more waste at the same time the absorptive capacity of the physical environment diminishes. Concentrations of people produce concentrations of wastes (Coward 1988:Preface).

Butlin, in *Sydney's Environmental Amenity 1970-1975*, observes:

In Sydney, as in other large and growing centres, city populations degrade the quality of the natural environment in two main ways.....they create massive waste flows in a restricted area that has a limited capacity to assimilate them.....The second form of degradation comes from the physical displacement of the natural environment (Butlin 1976).

As discussed by Paul and Anne Ehrlich (1990), the 'impact of any human group on the environment can be usefully viewed as the product of three different factors'; population, affluence and technology. While the broad proposition put forward by the Ehrlichs appears simplistic, when looked at in terms of the urban waste stream, the population and its consumption of resources, that is, its affluence, clearly impact on the amount of waste generated. Equally, the extent to which technology generates consumables, and can ameliorate the impacts of a population on an environment, can also be related to the issues of urban waste disposal. While population data is available, no precise data exists with respect to the impact of the other variables, to expand on the Ehrlichs' hypothesis.

At the time of the first white settlement in Australia, the Aboriginal population was small, diffuse and nomadic; 'The pattern of white settlement contrasts with the diffuseness of the Aborigines who were much more evenly distributed across the entire continent over a wide range of environments' (Holmes, 1976:28). These nomadic people discarded only organic wastes and accumulated few possessions. They remained on the move in pursuit of game, often returning to particular sites at regular intervals as evidenced by the existence of middens; arguably, huge dumps of inert organic waste.¹⁴ Aspects of Aboriginal waste management will be discussed further in Chapter Five.

¹⁴ Shell middens, accumulations of shells, left by hundreds of generations of Aborigines at many places in Australia. They are often found in coastal areas and by lakes.

When the First Fleet arrived there were perhaps 300,000 Aborigines in the whole of Australia, however, this is subject to considerable conjecture. It is thought that there were about 600 tribes of between 250 to 750 persons (Holmes 1976:26-27). Robert Hughes suggests a continental average of one person to every ten square miles with about three per square mile on the Cumberland Plains. (Hughes 1987). Whether the population was closer to 300,000 or 600,000 in an area of 7.6m square kilometres, the population was both diffuse and sparse and, this incidentally, 'should have served as a warning about the long-term carrying capacity of Australia' (Holmes, 1976: 27). By 1890 it was estimated that there were only 50,000 Aborigines left living in the whole of Australia (Flannery 1995).

Once again, it is to be noted that this is primarily a qualitative as opposed to a quantitative analysis of events, hence there will be no attempt to correlate precise population numbers to precise volumes of waste generated. The data are simply not available, other than with respect to the past forty or so years. Even so, at different points in the discussion, as the narrative will indicate, overviews of the growth of populations in the cities under review provide very useful contextual information.

The initial European population that disembarked from the First Fleet was 1030, give or take five or six people¹⁵. While the variation in these numbers is not critical to this narrative, the rate of population growth is significant. By 1800 the population of New South Wales had risen to 3,780 and by 1810 it was 7,585. Ten years later in 1820 it had jumped to 23,784, and after a further ten years, to 33,900 (Knibbs, 1908).

European Australia was from the outset a highly urbanised society. By 1841 the populations of the colonies of New South Wales, Port Phillip District and South Australia, centred mainly on their capitals, Sydney, Melbourne and Adelaide, were 76,766, 11,738 and (approx) 9,000, respectively. The white population of the whole of Australia at this time was 127,306 (Government Statistician 1904).

A single event, which put the seal on Australia's self-sufficiency and survival as a nation, was the discovery of gold in New South Wales and Victoria in 1851; 'one of the most influential factors in bringing about the rapid settlement of the country' (Knibbs 1908). Gold brought enormous wealth and with it, and because of it, a rapid influx of settlers. In the ten years, 1840 to 1850, the population increases for the whole of Australia was 214,948. In the following ten years to 1860 there were 740,229 arrivals. Most of the

¹⁵ Dr J F Watson, Editor of the Historical Records of Australia suggests the 'original nucleus' was 1024 (white) persons. See footnote page 86, Knibbs, 1915, Official Year Book Commonwealth of Australia, Melbourne. AGP.

settlers initially headed straight for the gold fields but, as the lure of gold dwindled, there was inevitable flow back to the cities. The city populations continued to grow. Statistical data on population numbers in Sydney, Melbourne and Adelaide, as a percentage of the overall population in the Colony/State, are as follows¹⁶:-

| | 1871 | | 1901 | | 1933 | | 1961 | | 1981 | |
|-----------|---------|----|--------|----|--------|----|--------|----|--------|----|
| | Number* | % | Number | % | Number | % | Number | % | Number | % |
| Sydney | 138 | 27 | 482 | 36 | 1235 | 48 | 2183 | 56 | 2985 | 58 |
| Melbourne | 191 | 26 | 478 | 40 | 996 | 56 | 1911 | 65 | 2323 | 71 |
| Adelaide | 43 | 23 | 162 | 45 | 313 | 54 | 587 | 79 | 952 | 72 |

*All population numbers x 1000.

Dissertation Structure and Outline of Narrative

Overview

As an environmental history this thesis is a retrospective, *lineal review*, of *environmental* events from 1788 to the year 2000. For ease of exposition the narrative has been divided into four parts.

Part One, comprising Chapters One to Four, introduces the subject matter of the thesis, the methodologies applied in its research and writing up, and the major theoretical themes that underpin the narrative. Part Two, Chapters Five, Six and Seven, is an historical narrative detailing urban waste disposal in Sydney, Melbourne and Adelaide, from 1788 to 1850, 1850 to 1900 and 1900 to 1960, respectively. These periods are proposed as the first second and third epochs of urban waste disposal in Australia. Part Three, Chapters Eight to Eleven, completes the historical narrative from 1960 through to the year 2000; the proposed fourth epoch of urban waste disposal¹⁷. Part Four concludes the narrative with a review of the research questions and a synthesis of the Aims that endeavours to relate the theoretical concepts outlined in Chapters Three and Four to the historical narrative.

¹⁶Sources; P Spearitt Melbourne and Sydney at the Census cited in Davidson. J., (Ed). The Sydney-Melbourne Book (1986); Australians. A Historical Atlas (1987) ed Camm et al., Sydney. Fairfax Syme and Weldon.

¹⁷ The division of the historical record into epochs, eras or phases is not novel. As will be discussed Jaensch (1992) undertakes a stepwise analysis the emergence of the modern political party system beginning in the 1890's and Halligan characterises the development of Australian Governmental regimes in five principal phases (Halligan 1992). Christoff analyses environmental governance in Australia in terms of three distinct periods (Christoff 1999).

PART ONE Chapters One, Two, Three and Four

Chapter One

Chapter One introduces and contextualises the research topic in time and place. In setting the context, this chapter outlines the events leading to the European settlement of Australia and then addresses the key issues upon which the research has been based. The Aims, Research Questions, and the Rationale and Justification of this research project are outlined along with definitions of *waste*, the nature of an environmental history, and the relevance of population variables are touched on.

This chapter foreshadows the conclusions contained in Chapter Twelve by giving a brief outline of the Aims of this research. These include the identification of the factors that have influenced urban waste disposal outcomes, the creation of an historical record based largely on the writings of others, and the formulation of the proposition that, on taking a global view of urban waste disposal from the year 1788, four distinct epochs or eras emerge.

Chapter Two

Chapter Two discusses the pluralistic methodologies applied in researching and writing-up this project. The purposes of a *Methodology* and its 'personal' nature are discussed along with the notions of objectivism, constructionism and subjectivism as applied to research methodologies generally. The inter-disciplinary nature of this thesis, as an environmental history, has led to a composite of methodologies being applied.

As this is 'a history', and more particularly an 'environmental history', the nature of history itself as a 'contested concept' is explored in some detail. The relevance and 'weight' to be applied in interpreting the work of historians, upon which much of this narrative relies, is considered. History is interpreted in this thesis as a series of *ruptures and discontinuities*; a methodological approach attributed to Foucault in his earlier works. Finally, Chapter Two touches on and discusses the various 'modes of investigation' applied in searching out the issues that comprise the ensuing historical narrative.

Chapter Three

Chapter Three is the first of two chapters which review the academic literature underpinning the major theoretical themes that run through the historical narrative detailed in Part Two and Part Three. The inter-related issues of risk, its perception, measurement, categorisation and communication are explored in detail. The perception of naturally occurring risks and the range of 'manufactured' risks have changed over time due to scientific and technological developments.

These changes in turn have varied the *risk calculus* with respect to urban waste management over the past two hundred years. It is suggested that, in terms of human response, a risk is a risk perceived, and that by this definition the identification of risks over the 19th and 20th century has varied markedly. Correspondingly, the responses to risks have also changed significantly over the past two centuries. It is postulated that an understanding of 'risk' is central to addressing the why of urban waste disposal. Furthermore, waste disposal strategies, to be effective, turn on the effective management and communication of risk.

Chapter Four

Chapter Four extends the literature review to an analysis of the theoretical discourse surrounding the interrelated aspects of bureaucracy, politics, policy formulation, power, democracy, and the changing role of formal and informal public participation. Changes in the perception and application of each, it is suggested, has influenced or directed urban waste disposal outcomes in the cities under review. Who has made or makes decisions, and how, and on what basis, and through what mechanisms decisions have been implemented, are recurrent issues relevant to an understanding of both historical and contemporary urban waste disposal issues.

The proposed First Epoch of Waste Disposal will be seen to have been characterised by autocracy and the Second by the introduction of forms of democracy. Risk and risk perception, along with changes in the political and administrative arenas, directly influenced the transitions from the Second to the Third and the Third to the Fourth Epochs.

PART TWO The Historical Narrative Chapters Five to Seven

Part Two, as the beginning of the historical narrative, seeks to 'provide a bridge between the abstract and the historically concrete', between the past and the present (Halligan and Power 1992:19). Chapters Five to Seven explore waste disposal events in Sydney, Melbourne and Adelaide; what are proposed as the first three epochs of urban waste disposal; 1788 to 1850, 1850 to 1900 and 1900 to 1960, respectively. There is no attempt to *reinvent* or *rewrite history*, but simply narrate the historical record as documented by others. There is a recognition, implicit in this approach, that at any point in time the present is built on the sediments of the past and that the *path dependent* nature of the political, social, and administrative processes that have influenced the disposal of urban waste become apparent as the historical narrative is reviewed (Frost and Dingle 1993, Troy 1995).

Chapter Five The First Epoch of Urban Waste Disposal in Australia

Chapter Five examines the period from 1788 to 1850, the First Epoch of Urban Waste Disposal, looking in turn at each Sydney, Melbourne and Adelaide from the time of permanent white settlement through to the middle of the 19th century. The philosophies underpinning the establishment of each of the colonies centred on Sydney Melbourne and Adelaide, and the physical circumstances of their settlement, were quite distinct. However, in a number of fundamental respects, they had much in common and applied similar, unsatisfactory, solutions to meet their waste disposal needs.

Waste disposal was often driven as much by happenstance as expediency. An *out-of-mind-out- of-sight* philosophy was applied, seemingly predicated on the belief that waste was both inevitable and largely benign, and that, given the vastness of the landscape, it could be harmlessly absorbed. Sydney utilised its harbour, and later, its stone quarries and brick pits. Adelaide and Melbourne used swamps, quarries, and large areas designated as Crown Land, later to be parks and gardens, close to their hubs of settlement. The use of these places that became the first waste dumps, without regard to the environment, gave rise to a belief that continued throughout the 19th century, namely, that there would never be any shortage of available waste disposal sites in and around Australian cities.

The critical, if not the main, consideration with respect to the disposal of urban waste in the first years of colonial settlement, was the preservation of a pure and unpolluted water supply. This was a practical factor that generally determined where waste was not dumped at a time when risk was seen in *miasmatic* terms; *viz* if material had a stench it was injurious to health (Cipolla 1992); noxious vapours were thought to spread disease. Waste management during the 19th century was, and remained, an aspect of health administration.

Autocratic rule had the practical advantage of promoting administrative efficiency at the expense of democracy and personal amenity. This meant that there was neither formal nor informal participation in the processes of decision-making. However, as the foundations of responsible government slowly emerged in Sydney, Melbourne and Adelaide after 1840, municipal government became a reality, and brought with it administrative accountability and the regulation of sanitation and waste disposal. It is proposed that these transitions in the governance of the colonies, which began in the late 1840's and extended through into the early 1850's, marked the beginning of a new era of waste management, the *Second Epoch of Urban Waste Disposal*.

Chapter Six The Second Epoch of Urban Waste Disposal in Australia

This chapter addresses the period from the middle of the 19th century through to the eve of the 20th century. Governments became less autocratic and authoritarian in an era characterised by the introduction of representative forms of government. Land taxes were imposed and there was the pro-active management of waste disposal at a municipal level.

It was also a time of Report and Inquiry into the past mismanagement of urban waste disposal. Governments, both in Australia and Britain, began to resort to the use of Royal Commissions 'when wishing to avoid making awkward decisions' (Clapp 1994:80). The Melbourne Corporation began an inquiry into the state of the city's health and sanitation as early as 1847. The *Sydney Morning Herald*, Melbourne *Punch* magazine, and a number of commentators began to rail against the putrid state of the living environment and the inaction of authorities.

Sydney Harbour, which had been Sydney's first dump and self-flushing sewer, was the subject of the *Commission to Inquire into the Condition of (the) Harbour of Port Jackson (1866)*. The most significant Reports, which will be discussed in some detail, are those of Pell in Sydney, Allen and Gresswell in Melbourne, and Rees in Adelaide. These reports are very useful and informative sources of data as they describe the existing degraded state of the environment and propose measures to rectify what are seen as the shortcomings of contemporary practices. Government regulation was largely driven by public reaction to the fear of the perceived risks of pestilence. Typhoid, cholera, and bubonic plague appeared to kill indiscriminately. As a consequence, as epidemics persisted, urban waste disposal, as an aspect of the wider issue of health administration, was pushed to greater significance on bureaucratic agendas as the 19th century progressed.

This was a time of technological and social reform. The emergence of efficient means of global communication meant that reforms elsewhere in the world, including sanitary reforms, were coming to the attention of bureaucrats in the Australian colonies. The ideas of the English health reformer Dr Edwin Chadwick, who identified the impediments to effective waste management in English cities during the 1830's and 1840's, gained currency in Australia.

The late 19th and early 20th centuries witnessed the dawning of a new Scientific Age. Technology was changing and the interconnectedness of nature, of natural events and the impact of human interventions was being recognised and documented. In 1858, the

American H.D.Thoreau coined the term 'ecology', and in 1869 the German biologist Ernst Haeckel is credited with giving it a scientific context; 'all the various relations of animals and plants to one another and to the outer world' (cited in Clapp 1994:4).

As the 19th century came to a close, Sydney, Melbourne and Adelaide had both reticulated water and sewerage systems yet, despite the warnings of such reformers as Pell, Gresswell, Allen and Rees, most urban waste was still being disposed of to convenient out-of-the-way places and to smouldering tips. It was to take a seemingly catastrophic event to jolt politicians and bureaucrats into taking effective action to reform colonial waste disposal practices.

Chapter Seven The Third Epoch of Urban Waste Disposal in Australia

Arguably, the most significant event in Australian history at the beginning of the 20th century was the Federation of the Australian colonies and the *birth* of the States of the Commonwealth of Australia. However, this event did not, at that time, impact directly on waste disposal practices.

The transition to the Third Epoch in 1900 was both sudden and clearly defined. The single significant event that promoted change in urban waste disposal practices was the outbreak of bubonic plague, first in Adelaide, then Sydney and later Melbourne. Plague catalysed radical change. In Sydney the persistence of Dr Ashburton Thompson overrode even the wishes of the Premier of the day.

As will be discussed in Chapter Seven, Thompson rejected the conclusions of the Indian Plague Commission proceeding on the basis that the flea, as the vector for the disease, could be linked to the rat and to the festering piles of garbage left to rot around the city (Cumpston and McCallum 1926:9., and Coward 1988). The *pestilent rat*, and the clean up of garbage, became the anxious preoccupations of City Fathers during the first ten of so years of the 20th century. The *visitation* of the plague put fear and dread into the hearts of the citizenry creating a 'dread factor', which, in modern day terms, would place fear of bubonic plague at the apex of risk classifications.

The political and bureaucratic responses to the dreaded threat posed by bubonic plague were to utilise what was, at the time, the most 'modern' engineering technology available in the form of Refuse Destructors. Technology came to the rescue at a time when a scientific paradigm shift debunked the miasmatic theory in favour of germ theory and Sydney, Melbourne and Adelaide installed inner city Destructors. Incineration of waste

was seen as cost effective and expedient in an age when, despite some clean air concerns, smoking chimneystacks in the centre of cities were an accepted norm that could be accommodated by contemporary perceptions of risk.

This *Third Epoch* covers the period of two World Wars punctuated by the Great Depression. It is a period that witnessed a volte-face in perceptions of risk and of the acceptability of incineration. By the early 1950's both the nature and volume of waste generated changed and with it the ability of existing Destructors to meet demand to dispose of it reached breaking point. Destructors became too costly to repair and progressively it was recognised that the cheapest and most practical solution to the urban waste problem was on-land disposal.

Changing perceptions of risk meant that the dangers of toxic fumes caused by a new generation of manufactured wastes made the use of the old city centred Destructors unacceptable. This factor, combined with the fact that land on the (then) outskirts of cities was cheap and plentiful, and changes in the infrastructure and mechanisms of transport, made the haulage of urban waste to the fringes of cities feasible and economic and led to the reintroduction of land-fill and the use of controlled tipping as the principal means of disposing of urban waste.

PART THREE The Fourth Epoch of Urban Waste Disposal in Australia

Part Three, chapters eight through to eleven, addresses the final period of the historical narrative, the years 1960 to 2000. Chapter Eight looks at the emergent role of the Commonwealth Government in environmental issues, and the three chapters that follow address waste disposal issues in Sydney, Melbourne and Adelaide, respectively. The transition to the Fourth Epoch corresponds to the reintroduction of on-land waste disposal and the decommissioning of incinerators in parallel with changes in the balances of power in Australian society.

The Commonwealth Government began to take charge of the wider environmental agenda in the late sixties, and Canberra sought to impose a uniformity of response to environmental issues across the country, despite its lack of a direct head of environmental power under the Constitution. At the same time the rise of the Environmental Movement, greater public involvement in grassroots environmental issues, and public rejection of unwanted land uses, all contributed to the politicisation of what became the 'waste debate'. Politicians, bureaucrats and the electorate became more sophisticated in propelling environmental issues onto and off political agendas with the result that an

issue, such as the siting of a landfill, could threaten a government with only a marginal hold on power.

This was a time that saw the emergence of what Paehlke terms the *new environmentalism*. The recognition and dissemination of the view that 'Everything fits together--- the physical, chemical, biological, social, political, economic, and philosophical worlds---and must be understood as a whole' (Paehlke, 1989: 31-32) was a key to environmental awareness. In Australia 'there was a burgeoning of new voluntary environmental groups, and new arguments concerning the importance of institutional change entered the political agenda' (Papadakis, 1997: 453). It also corresponds to the full flowering of the era of rampant consumerism, commercialism and what *Life Magazine* dubbed the *throwaway society* in 1955 (Rathje and Murphy 1992). Collective, rampant materialism began to generate increasing quantities of waste and a new range of *manufactured* risks emerged as the price of post war growth and prosperity.

Such authors such as Rachel Carson¹⁸ and Ralph Nader became household names. In 1962 the publication of Rachel Carson's book *Silent Spring* triggered an upsurge in public concern about the environment. People were given words to describe four life threatening processes; bio-accumulation, natural resistance, natural dispersion, and biochemical interaction of toxic substances. Nader, in *Unsafe at Any Speed*, opened consumers' eyes to *imposed risks*; only when a risk was known could it be addressed (Nader 1965), and thereby become less feared.

Cities began to be recognised as parts of complex ecosystems that exhibit a multiplicity of ecological relationships (Hughes 1996a, 1996b). People began to write extensively on environmental issues within cities that became more complex as the cities themselves expanded. Urban Geography emerged as a distinct discipline as the issues of sustainability, and provision of essential services, came into the spotlight. Environmental Studies as a distinct academic discipline was born at this time, and along with it, Environmental History.

Part Four of this narrative takes the *waste debate* to the close of the 20th century. Waste disposal issues in each of the cities under review are examined. 'Sustainable development' and the creation of environmental protection agencies, legislative interventions, and the use of environmental impact assessment procedures in each of the

¹⁸ Rachel Carson's *Silent Spring* was first published in 1962. Ralph Nader wrote *Unsafe at Any Speed* which was published in 1965 and the National Geographic magazine began to run articles on pollution and landfills.

cities, are also discussed. What was referred to as 'controlled tipping' became 'sanitary landfill' and, through the mechanisms of inquiry, review and report, Sydney, Melbourne and Adelaide regionalised, rationalised and coordinated their waste disposal administrations. Waste disposal became corporatised and commercialised. Volumes of urban waste increased, and available land to dispose of it close to population centres corresponding diminished. Consequently waste disposal sites began to be located further (and further) from the sources of generation of waste. Even so actually siting new landfills in late twentieth century Australia proved to be highly controversial.

The end of the Fourth Epoch and the beginning of what may be termed the Fifth Epoch of Urban Waste Disposal is marked by the introduction of long-haul waste disposal solutions for Australian cities.

PART FOUR Chapter Twelve

The final part of this thesis takes a global overview of the preceding narrative. It summarises, synthesises and integrates. Events are compared and contrasted on the temporal and spatial planes outlined in the historical narrative. Urban waste disposal practices in Sydney, Melbourne and Adelaide, past and present, are reviewed in terms of the Research Questions and the Aims and key outcomes are identified. The final conclusion to this research project is that there appear to be four historically distinct epochs of urban waste disposal practice in Australia between 1788 and 2000 that are referable to the social and political events outlined in this environmental history.

In taking an overview, the significance of the historical events and the factors that have influenced waste disposal practices are isolated and discussed. Incidental to this process, the efficacy of differing initiatives pursued by Governments over the past two hundred years, can be identified. Contemporary issues are discussed and it is suggested that the relatively recent 'de-municipalisation' and corporatisation of urban waste disposal services, which has been promoted and facilitated by Governments, is paradoxical in the present *environmentally* charged climate of reduce, reuse and recycle. The fiscal contradictions inherent to the aspirations of public and private sector organisations stand out; the more waste collected and going to landfill the greater the profits for private landfill operators.

Issues Relating to the Disposal of Urban Waste in Australia

Chapter Two Methodology

Introduction

As discussed in the preceding chapter, this thesis is an examination of a *transect* of Australia's history since European settlement to the year two thousand. It seeks to identify, extract and analyse intact, a single continuous 'environmental' thread from the apparently seamless tapestry of Australia's traditional 'European' history. This chapter introduces the plurality of methods that collectively comprise the methodology utilised in this undertaking.

Any Methodology, as a *process*, is a composite of methods. As the late Michael Crotty (1998) stated, it is *an action plan*, reflecting the choices of methods used to attain stated outcomes. Crotty goes on to describe *methods* as the 'techniques or procedures used to gather and analyse data' (Crotty 1998:2-9). Paraphrasing the *Shorter Oxford Dictionary* (1973), 'a method is a mode of investigation, a procedure for attaining an object' (SOE 1973:1317), which, in turn, is underpinned and informed by an epistemology; an individuals 'grounds' for knowledge or personal theory of knowledge, embedded in one's theoretical perspectives that direct strategic choices.

As a strategy or action plan, a methodology embodies the process or design adopted by a particular author. Crotty encapsulated the concept of methodology by adopting the words of Shakespeare:-

.....many arrows, loosed several ways
Fly to one mark (Shakespeare *Henry V* cited in Crotty 1998:1)

This methodology is by its nature a distinctly personal monograph within an otherwise impersonal document. No two writers use specifically identical methodologies and, over time, a single writer may use several methodologies. This leads me to the conclusion that, rather than using the impersonal third person of the substantive research component of this thesis to describe my methodology, it appears appropriate to address my methodology in the personalised first person as it outlines my methods, my action plan and my techniques, in achieving my stated aims.

Roland Barthes conveyed this fundamentally personal aspect of the process of writing, incorporating concepts of ownership, sharing and giving away, when he stated, 'Writing must go hand in hand with silence; to write is in a sense to become still as death, to become someone to whom the last word is denied; to write is to offer others from the start, that last word' (1972:Preface). The choice of a 'first person methodology' in writing an environmental history also appears to be consistent with the personal elements of environmental studies, strategic problem solving and advocacy, discussed by Walker and Doyle (1996).

To adapt a concept used by Crotty (1998), a *methodology* is *scaffolding* to the thesis writer, but can also be useful to the reader as an aid to making sense of the final structure, the end product. Equally, the author's own interpretive role, in incorporating the work of numerous other writers, relies to a degree on an understanding of the philosophical perspectives, and methods, which have informed those works.

My methodology of research differs from my methodology of disquisition. In writing-up the outcomes of my research, as a means of maintaining continuity and, as far as possible, readability, I have adopted what Wittgenstein metaphorically described as a narratological approach (Flyvbjerg 1998:7). In talking to his students, Wittgenstein stated, 'I am like a guide showing you how to find your way round London'. In the same vein, the process adopted in this research has been both iterative and explorative, and the outcome is a sequential narration of events. The emphasis, in the words of Flyvbjerg, is 'on narratology before epistemology' (Flyvbjerg 1998:7); the former becomes the latter, the grounds of knowledge.

At its core, as stated in Chapter One, this research project is a lineal narration of historical events from an environmental perspective and is in essence an environmental history. It examines the continuum of events relative to the disposal of urban waste within defined spatial and temporal parameters. It is not a technological treatise. As an environmentally focussed, sociological study, it relies on qualitative rather than quantitative processes of assessment and analysis. This dichotomy, the categorisation of research methods as either quantitative or qualitative, is referred to by Crotty as the Great Divide. The quantitative approach can be linked to the positivism, empiricism and objectivity of science, while the latter is more akin to the subjectivist and constructionist world views that I will discuss below. Crotty acknowledges that research methods can be either, or, or both, 'without this being in any way problematic' (Crotty 1998:14-16).

Hence this thesis is not intended to be a *quantitative* register of waste disposal facilities, a catalogue of wastes, or a ledger of their varieties and volumes, but a review of the broad issues relating to their disposal. While quantitative issues cannot be ignored, the empirical assumptions of science and quantitative analysis of data, a thesis in themselves, are intentionally not addressed directly. Yet, as in all aspects of social research, there is always a multiplicity of approaches (Neuman 1997), the dominant approach in this thesis being qualitative, as is reflected in the narrative that follows.

Objectivism, Constructionism and Subjectivism

Objectivism, constructionism and subjectivism, as outlined by Crotty (1998), are omnibus terms that capture the range of differing philosophical approaches which inform research. In the words of Bernstein (1883), objectivism is 'the philosophical doctrine that there exists an objective world whose nature is independent of the subjects trying to apprehend it' (Dryzek 1990:8-9). Yet, 'The difficulties generated for scientific inquiry by unconscious bias and tacit value orientations are rarely overcome by devout resolutions to eliminate bias. They are usually overcome, often only gradually, through the self-corrective mechanisms of science as a social enterprise' (Ernst Nagel in Lowrance 1985:489).

Objectivism can be linked to positivism, empiricism and all those other approaches that suggest the existence of a meaningful reality independent of consciousness and experience. It is the safe and sure stance traditionally adopted by Newtonian science, and for example, it ties into Lord Kelvin's maxim, that *if it can be measured it exists*. It is the theoretical perspective of absolute certainty. Yet, arguably, nothing is certain in this world.

Constructionism, by contrast, contends that meaning does not exist 'objectively' or independently of reality, but is 'constructed'. A context constructs a truth. A conclusion reflected in the fact that as one moves from culture to culture, or from era to era, as Crotty points out, meaning may be constructed differently. These philosophical pigeon-holes are themselves *constructed* and often the margins between them are not clearly delineated. For example, the miasmatic theory that was central to 19th century waste management, as an overarching conceptual construct, was a dominant scientific paradigm for centuries. It helped scientists, and others, make sense of the world and was endowed with the scientific objectivity of the times. Contemporary wisdom says they happened to be wrong.

Subjectivism, the third philosophical umbrella discussed by Crotty, is based on the premise that meaning does not exist independently, nor is it constructed, but it is imposed by the subject on the object. For example a dream, or a religious or nationalistic belief, may be superimposed on the narrative. Subjectivism is not pure narration but is heavily coloured by an interpretive gloss imposed by an author. This is clearly evident from reading some 17th and 18th century historical sources that imparted what has been termed, imperial history. That is, historical narrative which seeks to create order out of chaos, to justify and legitimise (Carter 1997). By way of example, to imperial history, all but the most obvious aspects of Australian Aboriginal culture were invisible. In contemporary writing, subjectivism is key to the structuralist, post-structuralist and post-modernist discourses (Crotty 1998:2-9). Arguably, adopting a subjectivist stance to its extreme, there can be as many interpretations of an event as there are observers.

The epistemological stance adopted in this research, as foreshadowed above, while taking note of the scientific empiricism inherent to objectivism, (particularly in the realms of the scientific analysis of matters relating to the disposal of urban waste), owes more to the fluid scepticism, and to the questioning of events inherent to constructionism and subjectivism, than to the certainties of pure objectivism.

What is History?

History is a contested concept. Southgate (1996:1) citing Plato, 'sets the cat among the pigeons' with the statement that 'The life that is unexamined is not worth living'. This is a rather harsh assessment given that history tends to take a global view of events at any given time and implicitly recognises the lack of relevance of the repetitive, semi-conscious, semi-automated actions, the sum total of which comprise the lives of the majority of human beings. History generally seeks to take an overview of life's events by recording the collective outcomes of the many lives and incidents that define issues at a macro rather than a micro level.

It was asserted in the 1830's, in opposition to the moralising histories of the time, that the role of the historian was 'simply to show how it really was' (Ranke cited in Carr 1987:8). However, many writers argue that 'history' is often distorted in its telling by the limits of human recollection, an absence of objectivity and the paucity of primary data. This in turn leads to the rhetorical question, 'how much history actually 'occurs' in its telling and re-telling?'

The 19th century has been described as an age of 'facts' (Carr 1987), a belief which at the time led the historian Acton to state in 1896 with reference to the compilation of the Cambridge Modern History that:-

It is a unique opportunity of recording, in the way most useful to the greatest number, the fullness of the knowledge which the nineteenth century is about to bequeath...Ultimate history we cannot have in this generation; but we can dispose of conventional history, and show the point we have reached on the road from one to the other, now that all information is within reach, and every problem has become capable of solution (cited in Carr 1987:7).

However, O'Connor argues that an historian is rarely simply an amanuensis, like everybody else, he or she has 'an ax to grind' (1997:4). Carr states (1987:8) that 'history consciously or unconsciously, reflects our position in time and forms part of our answer to the broader question [of] what view we take of the society in which we live'.

This leads to the suggestion that there can be no such thing as an 'ultimate history', and illustrates that 'history' cannot respond to a single definition, particularly as the aims, objectives, central concepts and claims of validity made by its practitioners vary greatly. As will be discussed, environmental history is a relative new-comer to the field of history. Given its eclectic breadth, it is argued by O'Connor to be the 'only true "general" history; in principle, a totalising history (1997:12).

In his *Constitutional History of Modern Britain*, Keir (1943 cited in McMinn 1979:v) defines his aims as twofold, namely, 'to describe the structure and working of the main organs of government during successive stages of their growth' and to interpret 'their evolution with reference to the political and social conditions and the currents of thought and opinion by which it has been determined'. By this definition, history goes beyond gleaning the facts and involves several levels of subjective interpretation. In contrast to the view of Keir, Butterfield (1931), adopts Ranke's view of one hundred years earlier by taking a deceptively uncomplicated view of the role the historian in the narration of past events by stating that:-

...as much as the historian can do [is] to trace with some probability the sequence of events from one generation to another, without seeking to draw the incalculably complex diagram of causes and effects for ever interlacing down to the third or fourth generations. (Butterfield 1963:20).

The historian is essentially the observer, watching the moving scene. Like the traveller he describes an unknown country to us who cannot visit it; and like the traveller he deals with the tangible, the concrete, the particular; he is not greatly concerned with philosophy or abstract reasoning (Butterfield 1963:66).

As Touraine forewarns however, 'Too often authors, while they think they are describing collective actions or historical events, express very crudely their own opinions (Touraine 1985:749). Yet, 'Fact finding is value laden in the social sciences as in other sciences, but, again, probably in a more immediate and obvious way' (Gunnar Myrdal 1969 in Lowrance 1985). The pitfall of historians, in Carter's words, occurs where 'description does not simply reproduce the events: it narrates them, clarifies and orders them' (Carter 1987:xiv). The dilemma for the writer, as *history's secretary*, is the extent to which narration 'colludes in history's own wish to see chaos yield to order'. Ideally, the historian is an 'impartial onlooker, simply repeating what happened' (Carter 1987:xv).

Many historians, consciously or unconsciously, compromise their objectivity. A conclusion that may be applied to much of the historical record of the period from 1788 to, say, 1900, that can be characterised as *imperial history*. As noted above, *imperial history* rendered the Aborigines virtually invisible. In the words of Carter (1987:7), imperial history aims 'not to understand or interpret [but] to legitimate'. It seeks to offset the 'unlawful usurpation and constitutional illegitimacy' of the founders of the colonies (Carter 1987:xvi).

Carter is stating, in effect, that the narration of history suffers from *selective blindness*. While my intention is to transcend this condition, Lowrance has argued that 'A disinterested social science has never existed and, for logical reasons can never exist...the only way in which we can strive to *objectivity* in theoretical analysis is to expose the valuations to full light, make them conscious, specific, and explicit, and permit them to determine the theoretical research' (Lowrance 1985:55).

O'Connor (1997:5-7) takes a refreshing overview of history by positing a 'family tree of historiography' culminating in the late twentieth century with environmental history. He categorises past histories with reference to their philosophical stance or emphasis. The histories of the eighteenth century are characterised as political, legal and constitutional, focussing on those factors that created the framework for private property, property rights and civil liberties. Later histories recorded the technical and industrial revolutions in the late eighteenth and early nineteenth centuries. These 'revolutions' set in motion political revolution and reform that in turn created the possibility of capitalist growth. By the late nineteenth century history was preoccupied with the growth of a specifically capitalist society and culture. In this context, O'Connor (1997) refers to the 'commodification of fictitious commodities, land and labour', and the creation of multi-ethnic societies. This 'shift' has inspired social and cultural histories.

As we near the top of this historiographical 'family tree', histories have begun to address the capitalisation of nature and struggles over nature that have developed within the frameworks of 'evolving capitalist legal systems and economic and social/cultural imperatives' (O'Connor 1997:5-7). On O'Connor's analysis, histories have moved through three major phases, political, economic, and social and cultural, leading to environmental history which he sees as the 'culmination of (or more modestly, the missing link in) all past history writing in the capitalist epoch' (1997:28). O'Connor sees environmental history as 'constantly negotiating and reconstituting itself, as it sublates the other three types of history which themselves change with advances in environmental history and ecological science. Environmental history is traditional history 'widened, deepened and made more inclusive' (1997:28)¹.

Despite the fact that O'Connor writes from a North American perspective and makes no attempt to look back before the eighteenth century to the histories' of the ancients, or, for that matter, to the relatively more recent ecclesiastical histories of the Middle Ages, his analysis is extremely constructive in giving a contemporary context to environmental history. Environmental history draws on many diverse sources and can be seen, in his words, to be the culmination of all histories that have preceded it.

The Methodology of Environmental History

The scope of environmental history can be related to its multiple sources and, as Doyle and Walker (1996:10) state, 'It is eclectic and interdisciplinary in its methodology'. The scope of environmental history, as Dovers (1994:5) points out, can be defined in 'an embarrassingly wide and over ambitious fashion...a real history of the environment would include too much--- the history of the planet and the life on it as well as that of human society'. Hence it may draw on the geological and biophysical record on the one hand and traditional history on the other.

The sources of environmental history are diverse, as Blaschke (1990:70) indicates. Social customs, codes of law, land registers, court proceedings and topographical field maps may be useful sources. The names of places and of parcels of land may provide ecological clues as to past uses. Equally, statistical data may quantify impacts as will scientific analysis of site material. In particular for this research the reports of Royal Commissions, public inquiries, and environmental assessment of sites, have yielded up valuable data.

¹ I note in passing that O'Connor's use of the word *sublate*, which the Shorter Oxford English Dictionary (1993:2168) states is 'to remove, take away', or in logic 'to deny, contradict, disaffirm', appears too strong. In context he appears to be using *sublate* as a synonym for subsume or incorporate.

The very conjunction of the words, 'environment' and 'history', each a *catch-all* word in themselves, suggests the hybrid nature of this new discipline. As can be inferred from Newman (1994:5), the methodological approaches adopted in environmental histories vary markedly as some researchers 'concentrate more on history than environment, addressing social, economic and political change, while others take an ecological focus and look more at environment than history'. While traditional 'histories' tend to be referenced to single social disciplines, environmental history is 'tightly inter-woven with other histories: social, economic and political' (Dovers 1994:3). They can also spill over into the ecological realms of science.

Simmons (1993) emphasises this interdisciplinary nature of environmental history and distinguishes it from the traditional, mono-focal, anthropocentric, social and political histories of the past:-

It is truly interdisciplinary, with dimensions not only in history, archaeology and geography, but in the earth, biological and medical sciences, and born of one of the oldest inter-disciplinary alliances of modern academic times, that between history and geography, which themselves live astride the boundaries between the social sciences and, respectively, the humanities and the natural science (Simmons 1993:viii).

In describing environmental history, Worster (1998:293) refers to the three levels on which it proceeds, and to the three clusters of issues addressed by this 'new history...drawing on a range of outside disciplines and employing special methods of analysis'.

The first deals with nature itself, as organised and functioning in past times...The second level in this history brings in the socioeconomic realm as it interacts with the environment. Power to make decisions locating the configurations of power is part of this level of analysis. Then, forming the third level of for the historian is the more intangible and uniquely human type of encounter...perceptions of ethics, laws, myths, and other structures of meaning become part of an individual's or group's dialogue with nature (Worster 1998:293).

O'Connor (1997), is in agreement with other writers in taking the view that the multiplicity of the methods applicable to environmental history reflect the breadth of its subject matter. He characterises environmental history very broadly as totalising, general or universal history:-

.....the study of how human agency shapes and modifies "nature" and constructs built environments and spatial configurations, and how natural and cultural environments enable and constrain human activity, and, conversely how human activity enables and constrains cultural development and "nature's economy" (O'Connor 1997:9).

Environmental history can be characterised as 'transdisciplinary', with the implication that its methodologies may straddle both the quantitative and qualitative domains. As stated earlier, in the face of this dichotomy, this thesis leans in the direction of the social sciences; more towards the 'social history' within 'environmental history'. Hence, the methodologies that have been applied can be related to those of social rather than scientific research. The overall state of 'urban landscapes', which carry a record of the past (mis)management of the environment, has certainly been considered but not scientifically measured or analysed, given the 'qualitative' methodology adopted in this thesis.

History as Successive Ruptures and Discontinuities

Without suggesting that Foucault limited himself to a single method of inquiry or research, or wishing to enter the giddy academic labyrinth of post-modernism, my methodology is indebted to *tools of research* ascribed to Foucault in his analysis of history and, in particular, his *archaeologies*. In assessing the historical past, my methodology has been most *significantly informed* by a device utilised by Foucault in his *archaeologies*, namely, viewing history through what he termed its *ruptures* and *discontinuities*.

It has been sceptically suggested that there is no such thing as a *Foucaultian method* (Megill 1985:7), given the apparently unmethodological approach(es) adopted by him. Yet in the words of Kendall and Wickham (1999:vi), it is possible to draw on the *spirit of his inquiries*. Foucault is seen by them as a most careful investigator who avoids assumptions of progress (and regress), and who does 'not allow history to settle on a patch of sensibleness' but rather 'looks for contingencies rather than causes' and 'selects a problem rather than an historical period for investigation' (Kendall and Wickham 1999:5-22). They go on to assert that Foucault's *suspension of judgement* lies at the heart of all modern intellectual inquiry (1999:13).

The pitfalls of traditional classical historical research, alluded to by Touraine (1985) and Carter (1997), can be attributed in part to the adoption of an *integrative* approach that seeks to create *continuities* where none exist by mapping out a smooth succession of past historical events. In contrast to this, the counter-force of post-modernist methodology, adopted by Foucault in challenging conventional certainties, focuses more on identifying the *ruptures* and *discontinuities* in the temporal succession of events and eschews this *gloss*.

An insight into the approach attributed to Foucault can be gained by outlining the differences between what has been termed a *total history* and a *general history*. While a *total history* looks for 'the overarching principles which govern the development of an epoch', a *general history* 'eschews the totalising theme, concentrating instead on the describing differences, transformations, continuities, mutations and so forth' (Kendall and Wickham 1999:24).

In his book *Critical and Effective Histories: Foucault's methods and historical sociology*, Dean (1994) states:-

A total history seeks a governing principle of a civilisation, epoch or society, which accounts for its coherence; it seeks to establish an homogeneous network of relations and causality across a clearly defined set of spatial and temporal coordinates; it imposes a totalistic form of transformation, and is able to divide history into definite, cohesive periods and stages'. 'A general history, on the other hand is that form of critical history..... Rather than a generative principle, such a history seeks series, divisions, differences of temporality and level, forms of continuity and mutation, different types of transitions and events, possible relations and so on. [It] would be a non-reductive, non-totalising, one which specifies its own terrain... [It] 'opens up an attention to detail, grain, and complexity, and the specification of form of relation which is indispensable if that enterprise is to move beyond caricatures of historical periodisation passing for a science of social development (Dean 1994:93-4).

Thomas Flynn (1994:28-29) characterises all of Foucault's works as *histories of a sort*, much the same as this thesis is a *history of a sort*. In discussing Foucault's *mapping of history*, he looks at his writings, dividing them into three broad categories. Foucault's early works, his *archaeologies*, were followed by his *genealogies* and, finally, appearing at the time of his death, *problematizations*. Foucault's method is characterised by Flynn as individualistic 'based on a profound distrust of essences, natures, and other kinds of unifying, totalising, and exclusionary thought that threatens individual freedom and creativity' (Flynn 1994:39).

Flynn (1994:29) suggests that, in his early works, Foucault did not study the *arche* or *origins*, but rather the *archive*; the 'systems that establish statements (*enonces*), as events (with their own conditions and domain of appearance) and as things (with their own possibility and field of use)'. Michael Payne (1997:44) describes Foucault's archaeologies as analyses of systems of knowledge, 'the investigation of truth as a system of procedures governing forms of discourse'. The *genealogies* he interprets as 'a focus on the mutual relations between systems of truth and modalities of power' (Payne 1997: 44).

In 1973 Foucault, in *The Order of Things, An Archaeology of the Human Sciences*, expresses his work as an *archaeological* inquiry rather than a history. He explains that 'what I am attempting to bring to light is the epistemological field, the *episteme* in which knowledge, envisaged apart from all criteria having reference to its rational value or to its objective forms, grounds its positivity and thereby manifests a history which is not that of its growing perfection, but rather that of its conditions of possibility;' (Foucault 1973:xxii)².

In 1972 Foucault published *The Archaeology of Knowledge* in which he states that:-

History in its traditional form, undertook to 'memorize' the monuments of the past, transform them into documents, and lend speech to those traces which, in themselves, are often not verbal, or which say in silence something other than what they actually say; in our time, history is that which transforms documents into monuments (Foucault 1972:8).

Foucault challenged history in its classical form;

...the raw material of history, which presented itself in the form of dispersed events- decisions, accidents, initiatives, discoveries; the material, which through analysis, had to be rearranged, reduced, effaced in order to reveal the continuity of events (Foucault, 1972:8).

Later in the same work Foucault goes on to state that:-

Archaeology does not set out to treat as simultaneous what is given as successive; it does not try to freeze time and substitute for its flux of events correlations that outline a motionless figure. What it suspends is the theme that succession is an absolute: a primary, indissociable sequence to which discourse is subjected by the law of its finitude (Foucault 1972:169).

Carmen Luke picks up this theme stating that 'we must learn to read below the manifest text if we are to ever get at the politics of truth by which science produces knowledge about the social and the human subject (Luke 1990:ix). In discussing Foucault's notion that 'archaeology does not seek to freeze the continuous flow of history in synchronic systems that remain motionless between one transformation and the next', Luke highlights the fact that he attempts to 'determine the extent and the form of the gap that separates knowledge transformations' (Foucault 1972 cited in Luke 1990:20).

² Foucault examines what he interprets as the two great *discontinuities* of Western culture, the beginning of the Classical Age in the middle of the seventeenth century, and the beginning of the Modern Age at the beginning of the nineteenth century.

In *The Archaeology of Knowledge* Foucault discusses what can be termed the *reflexive* nature of historical research:-

The notion of discontinuity is a paradoxical one: because it is both an instrument and an object of research; because it divides up the field of which it is the effect; because it enables the historian to individualise different domains but can be established only by comparing those domains. And because, in the final analysis, perhaps, it is not simply a concept present in the discourse of the historian, but something that the historian secretly supposes to be present: on what basis, in fact, could he speak without this discontinuity that offers him history - and his own history - as an object?' (Foucault, 1972:9).

Foucault (1972:4-10) contends that the existence of *discontinuities* has led classical historians to introduce abstractions as they attempt to construct the notion of a *total history* which 'seeks to reconstitute the overall form of a civilisation...the face of the period' which 'assumes the existence of a system of homogenous relations waiting to be found'. Foucault further identifies the phenomena of rupture and discontinuity as enabling historians 'to distinguish sedimentary data; linear successions'.

At its broadest level, this thesis is about the relationship between changing 'systems', and the historical discontinuities that they reflect. As discussed by Ulrich Beck (1992:10) in the context of 'risk' we are presently 'witnessing not the end but the beginning of modernity' and 'we are experiencing a transformation of the foundations of change' (1992:14). The *epochs* of discontinuity that are identified and discussed in this thesis in relation to urban waste disposal are systemic changes that can be related to scientific and social paradigm shifts over a period of two centuries, rather than the macro-paradigm shifts reflected in the epistemes of Foucault's discourse. The archaeological methodology of Foucault's history of knowledge and the notion of historic ruptures and discontinuities, which reject a neat structuralist parceling of knowledge at various historic junctures, fits comfortably with my attempt (in Luke's words) to 'read below the manifest text' (Luke 1990:ix).

This narrative looks at the lineal flow of *history* from 1788 to the year 2000, and highlights the *ruptures* and the *discontinuities* in what is far from being a seamless whole. Yet, in terms of the *total/general history* dichotomy, described by Dean (1994), while the method of inquiry is consistent with a critical *general history*, creating a terrain of its own, the final synthesis, the creation of neat epochs, appears to reflect the coherence of a *total history*. This conclusion, which creates its own discontinuity, highlights the fundamentally *individual* nature of the processes of writing and research discussed above.

Knowledge: The Paradigm as a shared theoretical perspective

In analysing the *discontinuities* and *ruptures* of history relative to urban waste disposal in Australia over the past two hundred years, the concept of the *paradigm shift*, outlined by Kuhn (1962), has presented itself as a useful tool. In this regard, I have found it useful to link the Foucaultian concepts of rupture and discontinuity to Kuhn's theory of paradigm shift.

The physicist, Thomas S Kuhn (1962:23) introduced the concepts of *the paradigm* as 'an accepted model or pattern' in discussing the paradoxes of scientific progress in his book *Structures of Scientific Revolutions*. Considered by some commentators as 'extremely loose and variable...a paradigm is a shorthand description of a world view, the collection of values, beliefs, habits, and norms which form the frame of reference of a collectivity of people – those who share a nation, a religion, a social class' (Gutting 1980:1).

Derived from the Greek word *paradeigma*, a pattern, I interpret a *paradigm* with reference, and deference, to Kuhn, as a shared pattern of understanding which forms a basis of any aspect of belief, at any one time, in any one place. Its *looseness* can be understood from its etymology. It is simply *a pattern* of belief that informs, orders and reinforces the elucidation of a particular topic, a segment of knowledge. Kuhn's theories have not been without challenge. An antithetical view is that progress in science 'is essentially an anarchic enterprise' (Feyerabend 1975:17). The middle ground characterises science, like politics and life in general, to be *iterative to a point*. An argument that can be usefully applied to aspects of the history of urban waste disposal.

The relevance of Kuhn lies in the fact that the concept of *paradigm shifts* pioneered by him has been logically extended to the social and political sciences by such writers as Lowrance (1985), Capra (1982), and Ball (1984). Capra (1994:335) defined a *social paradigm* as 'a constellation of concepts, values perceptions, and practices shared by a community, which form a particular vision of reality that is the basis of the way the community organises itself.

Any philosophical perspective, or paradigm, can be categorised as a *contested concept*. 'Any particular use of any concept of commonsense or of the natural sciences is liable to be contested for reasons better or worse' (Gallie 1956:167-169). He goes on to state that the use of these 'concepts,... inevitably involves endless disputes about their proper uses on the part of their users'. Yet inevitably all researchers and writers, consciously or unconsciously, carry epistemological baggage. Attainment of pure objectivism is clearly a contested concept in itself. Every individual, and every age, has dominant, embedded, theoretical perceptions or paradigms that inform knowledge at the personal, and the shared levels, respectively.

In-general terms therefore, a paradigm is a matrix of beliefs that shape and inform a view of reality. These universal, (or at least widely held), beliefs form a plateau of knowledge at any particular time. However, when a particular view becomes untenable a paradigm shift is then said to occur; an existing matrix of beliefs is displaced by a new paradigm. Capra (1982:11) has defined a paradigm shift as 'a profound change in the thoughts, perceptions, and values that form a particular vision of reality'. Historically, empirical science has had the positivist, objectivist desire to create 'order out of chaos', to elucidate rather than change (Crotty 1998:35). Newton articulated his laws of gravity; both explanatory and predictive of an aspect of the workings of the physical universe (Wall 1999:10). Yet while the concept of the scientific paradigm asserts the authority of science (Gutting 1980), the paradigm shift acknowledges that science is not infallible or immutable.

Modes of Investigation

Turning now to the practical issues that have moulded the outcomes of this research project, my primary research tools have been library based literature review, archival research and the use of formal and informal interview processes. The review of literature, reflecting the nature of this project as an environmental history, has been broadly based and interdisciplinary. Literature review aims to disclose 'facts', identify conflict, and suggest explanations that can explain or reconcile such conflict (Dooley 1984:295). As will be discussed at some length in the two chapters that follow, the key concepts or themes underpinning this narrative encompass a wide range of contested interpretations extending from perceptions of risk, risk analysis and risk communication (Chapter 3) to democratic and political theory, notions of power and bureaucracy, and the role of public participation (chapter 4).

A difficulty inherent to my literature based research methodology arises from a paucity of data in relation to the 'everyday' aspects of life, and, in this instance, waste disposal. Ordinary, everyday events are often simply 'lost', they lie in a 'blind spot', are simply not seen, and hence are not recorded. Others matters considered too dirty or disgusting to mention may be consciously overlooked. Even one hundred years after white settlement, the centenary edition of the *Sydney Morning Herald* conceded that 'It is difficult for us to form a vivid conception of the state of things...' (SMH 24 Jan. 1888:5).

Victorian prudery has no doubt played its part in hiding some of the 'dirty' history of the nineteenth century. The period under discussion in this thesis extends from Georgian through Victorian times and then on to the 20th century. The exposition of life's *taboos* and *unpleasantnesses* in the nineteenth century, an age when the piano leg remained covered in *respectable* households, was extremely constrained by the moralising conventions of the day. It is not surprising, therefore, that the discussion of refuse by the chroniclers of early Australia, whether in the form of excrement or domestic peelings, was circumspect at best, if not taboo in the absolute.

Many of the contemporary nineteenth century histories appear to have been blind to *filth* and the *lower functions*. The anthropologist, Mary Douglas observes that,

According to the rule of distance from physiological origin (or purity rule) the more the social situation exerts pressure on persons involved in it, the more the social demand for conformity tends to be expressed by a demand of physical control. Bodily processes are more ignored and more firmly set outside the social discourse, the more the latter is important. A natural way of investing a social occasion with dignity is to hide organic processes (Douglas 1973:12).

Writing largely for English audiences, the journals, diaries, letters and reminiscences that formed colonial literature spoke of hardship, heat, and God-fearing perseverance. Victorian prudery dictated that the detritus of life, the mud, the filth, the flies and the offal, and matters pertaining to the disposal of urban waste, were left to the local newspapers and such satirical magazines as Sydney and Melbourne *Punch*.

Only in relatively recent years have such authors as Cannon (1983, 1991), Dunstan (1985), Fitzgerald (1987, 1991, 1992), Finn (1987), Coward (1988), and Dovers (1994) really got amongst the 'filth' of colonial urban Australia. More recently, it is only with the emergence of environmental histories, that a discipline of research and writing has moved directly to examine and interpret the changes wrought over time to the landscape.

Archival Research

Archival research has played a significant role in tracing the course of urban waste disposal in the cities under review. Archives, in the words of Dooley (1984:97-99) are 'the ongoing records kept by society for purposes other than scholarly.' They are the accumulated outcomes of counted and indexed data derived from such 'social systems as the economy, health, law and criminal justice, journalism and politics'. Archival material may have been collected unobtrusively over time or may be the outcome of such publicised events as the national census. Archival material is often collected from anonymous sources, a factor which may either support or challenge its reliability and validity.

Archival material, unlike social literature which aims to both discover and interpret 'facts', has the advantage that it is often raw and unedited data which is extensive, valid, reliable, un-reactive and bias free. These characteristics are re-enforced by the fact that it is generally collected and stored by public agencies. Yet, as by definition archival material is not primarily collected for the purposes of research, it is often truncated, and as between archival sites, is not standardised. Overall though, such materials as Council Records, including minutes of committee meetings and reports, have proven invaluable to this research.

Archival research led me to city council archives and university libraries in Sydney Melbourne and Adelaide, and also to municipal and departmental libraries in each of those cities. Records of council proceedings relating to the Sydney, Melbourne and Adelaide councils were sourced from the Sydney Council Archive (SCA), the Melbourne Council Archive (MCA) in the La Trobe Collection of the State Library of Victoria, and the Adelaide Council Archive (ACA). These records have been cited with reference to source; SCA, MCA and ACA, respectively. In addition, the libraries of each of the environmental protection agencies in Sydney, Melbourne and Adelaide, and such government departments as Planning SA in South Australia and Waste Service NSW at Chatswood, proved invaluable. The Mitchell Library in Sydney, the La Trobe Collection at the State Library of Victoria and the Barr Smith Library in Adelaide were extremely useful. The Environment Centre, Friends of the Earth and Greenpeace in Sydney, and the offices and resources of Recycle 2000 in East Melbourne and Ecorecycle in South Australia, also gave me access to material. Such community groups as the Dumps Coalition in South Australia, the Werribee Residents Against Toxic Dumps (WRATD) and Highbury Environs

Against Refuse Tips (HEART), opened their doors and their documents to me. Apart from direct access to libraries and archives, recourse to the World Wide Web assisted in the process of identifying issues and tracking down relevant library sourced texts. In Part Two of this thesis, the emphasis of the research was on uncovering the historical past from 1788 to 1959. This called for archival research, review of the literature and, in some instances, interviewing individuals. By contrast, researching Parts Three went beyond reliance on what others have written. Researching contemporary issues, which offers the ability to see *for one's self*, to interview participants, to attend meetings, read contemporary records, attend public meetings, and visit sites, dictated different methods of research.

The *active* interview process, involving meetings with numerous subjects, followed the pattern of an initial telephone call or a letter followed by 'phone contact to confirm a mutually convenient meeting time. Depending on the feelings of the interviewee, many interviews were taped; the option in many instances being for the subject to have control of the tape recorder. Interviews were generally semi-structured but led to a follow-up letter, or a further interview, seeking clarification of issues touched on in earlier interviews.

The choice of interview subjects was *investigative*, and *iterative*. An initial exploratory inquiry telephone call was made to city councils and to such offices as state environmental protection agencies, in each of the states. These inquiries led me to individuals in Council offices, city archives, State planning departments, and to those individuals involved in promoting or opposing landfill-siting proposals. An interview with one person generally led to the recommendation that I talk to a nominated third person to expand on a particular issue. Most key subjects were interviewed three or four times over a three year period, as the issues relating to landfill siting in each of the cities under review remained both fluid and contentious between 1997 and 2000.

The interview material gathered was voluminous. However, only a small proportion has been incorporated into the text as will appear from Part Three. These interviews were particularly useful in providing background information that assisted in locating documentation, mainly in the form of consultants Reports and the outcomes of formal Inquiries. Observation, of a non-participatory type, involved site visits to *contentious* landfill sites at Wingfield, Mallala, Kalbeeba, Werribee and Niddrie and attending meetings of WRATD at Werribee and the Dumps Coalition at Kalbeeba.

Key interview subjects including, Dr Derek Mullins of the Department of Urban Affairs and Planning (NSW), Helen Fitzgerald historian to the City of Sydney, staff at the Friends of the Earth and Total Environment Centre in Sydney, Hilary Oliver of Cessnock Anti Sydney Tips (CAST), Jenna Pullman of the City of Melbourne Archives, Colin McIntosh and Toni Meek of the EPA (Vic) and Brod Street of the Department of Infrastructure, in Melbourne, Max Harvey, Dean McMullin and Sharon Jamieson of the EPA in Adelaide, Peter Kopli of Planning SA, Michael Lorenz of the City of Adelaide and Robert Thornton of the City of Adelaide Archives. All were exceedingly cordial, accommodating and patient in leading me up the steep learning curve of waste disposal issues. *Activists*, Shirley Humphrey of the Dumps Coalition, Jos van den Berg of the Friends of Steel Creek and Harry van Moorst of WRATD, and Cheryl Leue of HEART gave their time generously.

This essentially fluid, iterative, research process was applied to both the historical and contemporary aspects of my research and enabled me to trace the waste disposal discourse from sources to outcomes. With the advantages of 'retro-synthesis', contextualising issues in time and place was a key to understanding the mechanisms that led to outcomes both good and bad. Locating historical documents and records via data bases, and through archivists and librarians, led me to libraries and other repositories in Sydney, Melbourne and Adelaide.

Exploration of recent events, siting conflicts in Sydney, Melbourne and Adelaide, tended to focus on the individual participants, the regulators, proponents and opponents, who in turn led me to documentation. Finally, the review of the literature relative to the issues relied largely on utilising computer databases that in turn directed me to the various archives and libraries I have mentioned above. On my part, I stored and collated all of my bibliographic and interview data using an extremely useful computer based program, *EndNote*. The next two chapters detail the outcomes of my literary research with respect to the major theoretical themes that lie behind the historical narrative which follows in Parts Three and Four.

Chapter Three Major Theoretical Themes Part One

Risk

Introduction

Understanding 'risk' and 'perception of risk' is a key to comprehending the 'Who', 'How' and 'Why' of urban waste disposal; the Research Questions posed in Chapter One. This chapter is structured around a broad discussion of the literature relating to the inter-woven issues of risk, its perception, classification and management. The risks posed by waste and the appropriateness of disposal methods, the siting of waste disposal facilities, their design and ongoing management, are issues that lie at the core of this thesis. The resolution of environmental problems often distils down to the issue of how risks are distributed, or redistributed (Coenen et al. 1998).

Changing perceptions of risk have clearly influenced changing waste management practices. Risk evaluations, whether personal, collective, formal or informal, are generally determinative of why or on what basis decisions have been taken. In the same vein, where waste has been disposed of is often referable to levels of concern in the adjacent communities, whether ranging from anxiety through complacency to apathy. The efficacy and intensity of community participation is often linked to, and reflective of, individual or communal risk evaluations, whether valid or invalid. These evaluations can be linked to community reactions that in turn may direct political and administrative responses.

In terms of the Research Questions, *who* has taken, or driven, urban waste disposal decisions, and *where* it is disposed of, has often turned on the extent to which 'risk' has been perceived. This will be particularly evident from the discussions that follow in relation to the responses to the bubonic plague in 1900 and, in more recent times, to the issues of proximity to residential areas and pollution, especially air pollution, since the 1960's. *How*, and through what mechanisms urban waste has been disposed of can be related to the mechanisms of government, policy making and policy administration on one hand and, on the other, the quite unrelated considerations of the availability of suitable, and economically acceptable means of disposal, relative to the perceived risk. *Why* certain key waste disposal decisions have been taken can often be related to the degree to which a risk has been perceived or not perceived. The narrative will illustrate that the level of risk related fear or dread within a community, whether justified or not, is instrumental in the rejection of some landfill siting proposals while allowing other less desirably sited landfills to be approved or to continue to operate.

It will be seen from the discussion in the next chapter that the linkages between risk perception, and why and how decisions have been taken, and by whom, is closely intertwined not only with the 'risk issues' but also to the mechanisms of democracy, the role of politics, the processes of policy making, bureaucracy, and the exercise of power.

Defining Risk

Put simply, risk is the measure of the likelihood of the occurrence of a hazard (Cutter 1993). Garbage, trash, sewage, refuse, or any waste, however described, and the places where it is dumped, stored or deposited, are often perceived as synonymous with risk; that 'interactive phenomenon that involve(s) both the biophysical and social worlds' (Kasperson and Kasperson 1996:96).

'Our attitudes towards risk vary according to what has happened to us, what we expect, what we feel, what we know, and what we care about' (Teuber 1990:235). As will be discussed in further detail later in this chapter, our past experiences condition our responses to risk. Park (1993:24) discusses the notion of the *prison of experience*, to describe the way in which past experiences influence our view of risk and hazard threat. Perceptions of risk have changed significantly over time, and, in many respects and as this narrative will illustrate, the way in which *waste* had been dealt with can be directly correlated to those changes in perception.

Risk has ceased to be a stroke of fate and become a calculable occurrence intrinsic to the logic of technological development (Alario 1993:280).

Traditionally risk has referred to the chance or probability that some (usually undesirable) event will occur, with the word *gravity* being used to describe the event's consequences. In current practice risk is taken to mean an expected value arrived at by multiplying consequences by the probability that they will occur (Krier 1996:176).

Mary Douglas (1990) identifies *risk* as the modern mutation of a word which once applied to games of chance and meant the prospect not only of loss, but also of gain. Douglas contrasts risk with sin or taboo that she relates to past or completed events. In so far as 'risk' is predictive or future looking, stochastic, it has become a *forensic tool* used to evaluate the likelihood of both the event occurring and the magnitude of its outcomes.

Risk is characterised by Harding (1998) as a form of *uncertainty*. In so far as risk is measurable, or at least calculable within known parameters; the system in question is 'basically well known, and the chances of different outcomes can be defined and quantified by structured analysis of mechanisms and probabilities' (Wynne 1992, Harding 1998:165). Harding goes on to state that risk, as a form of uncertainty, can be contrasted

with indeterminacy and ignorance, and 'refers loosely to a combination of probability, or frequency, of occurrence of a defined hazard and the magnitude of the consequences of the occurrence'. Risk assessment is an extremely subjective process.

As society becomes more technologically complex and individuals more sensitised to some dangers, and desensitised to others, the *risk calculus* becomes more complex. *Risk* can be analysed, categorised and defined objectively and subjectively with reference to social, cultural and scientific disciplines, and each view may produce a different outcome. Living at the end of the 20th century, in an age of doubt and scepticism, we implicitly, indirectly, make trade-offs in our societal policy choices which Calabresi refers to as *tragic choices*, between dollars and lifestyles (Calabresi in Bazelon 1979). Risk is seen as inevitable, yet compensation in monetary terms may make the unacceptable acceptable, or at least, tolerable.

Ulrich Beck sets the contemporary scene with the observation that there is no such thing as *zero risk* in modern society. We live in a *Risk Society* (Beck, 1992). Axiomatically, the definition of *Homo prudens* is correspondingly elusive, given that many would argue that life and progress are about taking risks. One of the challenges of modern society, therefore, is to determine how to live with risk; deciding how hazards are to be managed and what risks can be tolerated as the price of *progress*. The management of risk, which implies a determination of what is *tolerable risk*, is therefore a critical issue in many of life's contexts, including the management of hazards and hence the siting of waste management facilities, whether they be incinerators or landfills.

However, *science* is often at odds with the conclusions reached by individuals in assessing risks. The perception and assessment risk in a given situation, defined in the mind of the observer as a risk or threat, whether real or unreal, actual or prospective, and however biased, skewed or ill founded, rational or irrational, becomes the reality of the risk perceived by that individual (Thompson 1998).

John Adams, in his 1995 book simply entitled *Risk*, acknowledges the complexities of attempting to define risk. Echoing Heisenberg's *Uncertainty Principle*, Adams discusses the *reflexivity of risk*; 'the world and our perceptions of it are *constantly* being transformed by our effect on the world' (Adams 1995:x). The awareness of risk, and the actual or implicit measurement of the risk, may induce behavioural responses which alter the reality of the risk. In a sense, an unidentified hazard is perceived as no risk at all. However, once perceived, a risk can be estimated, reduced or avoided.

Uncertainty is a critical aspect of the risk equation. Adams quotes Frank Knight; 'if you don't know for sure what will happen, but you know the odds, that's risk';... 'if you don't even know the odds, that's uncertainty' (Adams 1995:25). Uncertainty plays a role in the individual calibration of risk. Risk is not always discernible, or if identified, is not always measurable. Limits to our collective or in-built data bases, linked to sheer necessity, means that we have to take decisions without knowing all the consequences of our actions.

In defining risk Beck (1992) states very broadly that risks are defined as the probabilities of physical harm due to given technological or other processes. He then adds three qualifications, supported by Adam's culturally constructed concept of risk. Risks, Beck argues, are always created and effected in social systems, for example, by organisations and institutions which are supposed to control the risky activity; secondly, the magnitude of physical risks is therefore a direct function of the quality of social relations and processes and, thirdly, the primary risk, even for the most technologically intensive activities, is therefore that of social dependency upon institutions and actors who may well be, and arguably are, increasingly alien, obscure and inaccessible to most people affected by the risks in question. The Beck analysis appears to place humanity, communities and individuals, at the mercy of a Leviathan (Beck, 1992).

As appears, the definition of risk becomes particularly difficult at the interface of the subjective response, and the objective fact. As Dostoevsky observed in *Notes from the Underground*, 'reason is an excellent thing...but reason is only reason and satisfies only the rational side of man's nature, while will is a manifestation of the whole life' (Dostoevsky 1960 Translation in Adams 1995:19).

Risk perception is often beyond reason. This is particularly evident when dealing with what are loosely termed 'emotional' issues. Emotion though is *elastic* and even harder to measure than risk itself. Individuals are *emotional* about their health and well-being, and often even more so about the health and well-being of *significant others* in their lives, their partners and children. People may be *emotional* about their *way of life* and any thing that challenges it may be perceived as a *risk*. In the absence of concrete parameters to such fluid responses, the classification of the varying perceptions of risk becomes very complex.

Changing Perceptions of Risk

As the discussion will illustrate in the Chapters that follow, changing perceptions of risk have directly influenced the way in which waste has been disposed of. The truism that a *risk is a risk perceived* is illustrated by the fact that many things have changed over time from being considered benign to being (inherently) dangerous, and *vice versa*. Concepts of risk, and acceptable risk, have changed dramatically over the past two hundred years. In the 19th century, medicinal preparations using arsenic and mercury and other heavy metals, now known to be dangerous, were in regular use. Mercury sealed the fate of many 'as mad as a hatter' milliners. Lead was equally, if not more, dangerous and was commonly used in domestic plumbing, paints and children's pencils. Lead arsenate, Paris Green, was one of many common domestic insecticides. Canned foods were routinely preserved with sulphides, boric acid and formaldehyde, and the tins themselves were generally lined or sealed with lead amalgams (Lowrance 1976:6-8). Carcinogens, as real a hundred years ago as now, had yet to be identified. The risks posed by these and many other substances were not appreciated; hence they existed for centuries independently of any notion of *risk*.

Ewald (1991:199) observes that 'Nothing is a risk in itself; there is no risk in reality. But on the other hand anything can be a risk; it all depends on how one analyses the danger, considers the event'. Risk, as perceived by opponents and proponents alike, and as defined by science, is now pivotal to any discussion in relation to the siting of landfills or other waste management facilities. A closer review of historical events later in this study will illustrate that, for as long as Australia has been settled by Europeans, waste disposal sites, whether incinerators or landfills, have become the psychological focal points for the concentration of *risk anxieties* in communities. These anxieties straddle the shorter-term issues of danger to personal health and safety and longer-term environmental concerns.

Sensitivity to risk as *danger* is an intuitive, primal human response yet, it is far from uniform across individuals or communities. Saul Alinsky makes the salient observation that 'The Chinese write the word for 'crisis' with two characters. One means 'danger' and the other means 'opportunity' (Alinsky 1946:38). Danger is fear of the future and is often used as a synonym for 'risk' (Ewald 1991). It is *predictive* or *future looking*, and carries with it negative connotations.

John Adams (1995:7-10) postulated that we all come equipped with 'risk thermostats'; 'risk' is detriment, 'a numerical measure of the expected harm or loss associated with an adverse event'.

The ability to sense and avoid harmful environmental conditions is necessary for the survival of all living organisms. Survival is aided by an ability to codify and learn from past experience. Humans have the additional capability that allows them to alter their environment as well as respond to it. This capacity both creates and reduces risk (Slovic 1987:285).

In an article entitled *Theories of Risk Perception: Who Fears What and Why?* (Wildavsky and Dake 1990: 41-60) it is argued that cultural selection of risk was not linked to objective risk measurements or the physical reality of risk. Rather, 'the selection of risk reflected moral, political, economic, and power positions that were all value-laden and culturally constructed' (Cutter 1993:22). Cutter goes on to state that the cultural forces that either down played or amplified risks were used as social forces that controlled social groups. The fact that oppositional groups in communities tend to politicise issues to gain visibility adds a political dimension to risk definition also. This is exemplified by a number of the recent landfill siting disputes that will be discussed in later chapters.

The conclusion, from a sociological perspective, is that what is identified or classified by individuals or communities as dangerous or risky is a sociological rather than a technical outcome. Adams echoes Cutter in stating that risk is *culturally constructed* particularly where issues of health and safety are unresolved; 'all risks are conditional' (Adams 1995:14).

Risk and Science

Science can define a risk, or uncertainties, only by artificially 'freezing' a surrounding context which may or may not be this way in real-life situations. The resultant knowledge is, therefore, conditional knowledge depending on whether these pre-analytical assumptions might turn out to be valid (Wynne 1992 in Harding 1998:166).

Classical Newtonian science has problems in the risk arena. Risk, and in particular the lack of measurability of risk in many instances, poses a fundamental conflict for the positivist scientific mind. Lord Kelvin's dictum that 'Anything that exists, exists in some quantity and can therefore be measured' lies at the nub of the conundrum. The *Kelvinistic* view of risk is at odds with the 'relativistic, airy-fairy nonsense that risk is culturally constructed' (cited in Adams 1995:10).

It is therefore not surprising that *risk definition* has become a point of tension between sociology and science. Cutter quotes Bazelon in the sociology versus science debate:

In primitive [sic] societieschoices were often made by the tribal witch doctor. When the need to choose between cherished but conflicting values threatened to disrupt society, the simplest path was decision by a shaman, or wizard, who claimed special and miraculous insight. In our time shamans carry the title of doctor instead of wizard, and wear lab coats and black robes instead of religious garb (Bazelon 1979:277 in Cutter 1993:33).

As indicated, there are philosophical, sociological, and scientific complexities inherent in any discussion of *risk*. As these appear to revolve around the indeterminacy of risk and the related issues of *risk definition*, *risk perception* and *risk measurement*, it may be useful to adopt these headings as trig points for discussion in attempting to traverse this difficult terrain; the landscape of risk.

Risk and Hazard

Risk is often seen as synonymous with hazard. Yet the subtle distinction lies in risk being the *actual exposure* to a (pre-existing) hazard that might be naturally occurring, or human-induced (Smith 1996). As stated earlier, Cutter (1993) defines risk as 'the measure of the likelihood of occurrence of hazard.' Perhaps the word *occurrence* in the above context might best be interpreted as *activation*. Yet 'hazard' is a broad concept that encapsulates the *probability* that an event may or may not happen, and includes the impact or magnitude of that happening as well as the social or political contexts of the event.

Citing Kates and Kasperson (1983), Cutter expounds the view that 'Hazards are threats to people and the things they value, whereas risks are measures of the threat of the hazards' (Cutter 1993:2). Smith discusses the increasing paradox between science as a *societal benefactor*, and science the hazard generator (Smith 1996:3).

Risk is Hazard plus Outrage

Sandman (1993:1-12) offers a more controversial view of *risk*. Sandman, as an entrepreneurial public speaker, risk consultant and corporate risk manager, has made a business of quelling public outrage over what can be mildly described as *undesirable developments*. He is to public outrage what Red Adair was to oil well fires, and is often employed by proponents to set strategies for the siting of LULU's, (Locally Unwanted Land Uses). Landfills are LULU's *par excellence*.

Sandman pithily defines risk through the eyes of the risk receiver as a function of *hazard plus outrage*. He takes the stance that *the public often misperceives the hazard...the experts often misperceive the outrage*. 'But the overarching problem is that the public cares too little about the hazard and the experts care too little about the outrage.' His perspective focuses on outcomes predicated on the assertion that, 'The natural state of humankind vis-a-vis risk is apathy' (Sandman 1993: 1-12). Individuals are often not concerned with risks that don't occur in their own backyards; an element of the NIMBY (Not In My Back Yard), syndrome which will be discussed further in this chapter.

Sandman's approach appears to be mechanistic. The observable, often emotional responses of the public are, for Sandman as mediator and social facilitator, the issues that have to be dealt with to allay community concerns. He represents the case on behalf of the *risk creator* and hence is often not concerned about addressing the removal or reduction of the hazard or risk generator; the landfill or the nuclear power plant.

Sandman acknowledges that 'Outrage exerts an enormous influence on the priorities and actions of legislators, regulators and regulated industries...' (Sandman 1993:11). Outrage is usually an outer limit of risk tolerance or acceptability. He goes on to identify no fewer than thirty five components of outrage which are, on his analysis, the components of (perception of) risk. The ten dominant elements in Sandman's analysis are whether the perceived risk is:

- | | |
|---|---|
| <input type="checkbox"/> voluntary or coerced; | <input type="checkbox"/> chronic or catastrophic |
| <input type="checkbox"/> natural or industrial | <input type="checkbox"/> knowable or not knowable |
| <input type="checkbox"/> familiar or exotic | <input type="checkbox"/> controlled by me or by others |
| <input type="checkbox"/> not memorable or memorable | <input type="checkbox"/> fair or unfair |
| <input type="checkbox"/> not dreaded or dreaded | <input type="checkbox"/> morally irrelevant or relevant . |

(Sandman 1993:71)

The fact that a community may have the waste from other communities dumped in its *back yard* against its collective will; that the waste may be a cocktail of noxious industrial products with unpredictable long or short term impacts over which they, as a community, have no control, may seem to them at the very least very unfair. Sandman defines the NIMBY syndrome as 'fundamentally a response to unfairness' (Sandman 1993:41). The elements of these definitions will be discussed in the context of the risk issues relating to the siting waste management facilities.

Perceptions of Risk and Risk Classification

Waste can be characterised as a risk on the basis of clinical or scientific assessment. The smell of refuse, the dust generated by garbage trucks, or noise from increased levels of traffic may constitute a perceived risk. Human perception 'in a narrow sense, is the actual receipt of environmental stimuli from one of our five sensory perceptrors' (Cutter 1993:13). Adams(1995) postulate that we are equipped with *risk thermostats* emphasises the subjectivity of risk and ties in with the concepts of hazard knowledge and heuristics.

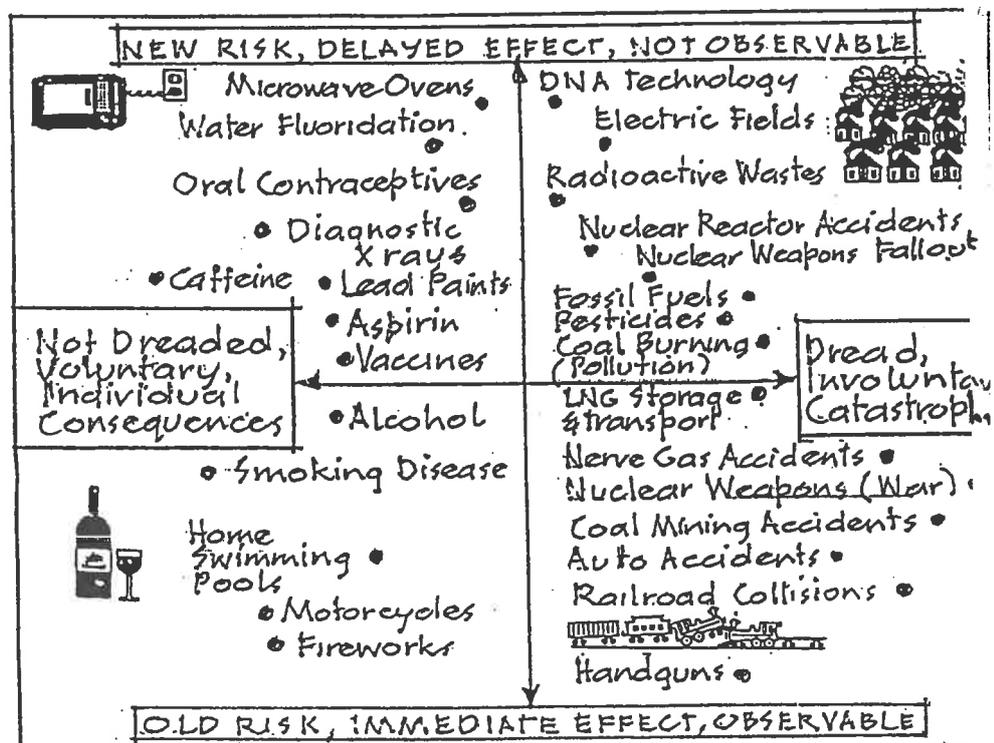
Hazard knowledge is linked to experience. An individual's grasp of facts about survival, nature and technology are linked to his or her *in-built* personalised assessment processes, or *heuristics*; the cognitive, fluid 'rules of thumb, which influence the way the data we perceive is processed. Heuristics, as they relate to risks, affect attitudes, and hence responses, to potential hazards (Johnson 1999). In every day life 'people rely on a limited number of heuristic principles which reduce complex tasks of assessing probabilities and predicting values to simpler judgemental operations' (Tversky and Kahneman 1974:1124). The authors go on to state that, while heuristics are quite useful, they can lead to *severe and systematic* errors due to the subjective nature of the assessment and the possibility of bias.

Within certain parameters which determine basic 'common sense', risk assessment is subjective. Hence the personal calibration of a risk will turn on such factors as the age, life experience and the physical fitness of individuals, most of whom can identify the totally safe from the potentially fatal. Jumping off a one metre high rock ledge into deep water contrasts with a leap off the top of Sydney Harbour Bridge. Not to be able to make that judgement could be symptomatic of a psychological dysfunction.

Personal perceptions of risk, as outcomes that are guided by subjective risk assessments, are determinative of the fact that there is no such thing as absolute objectivity in the risk arena. *Risk* is riddled with relativity and indeterminacy and, as Adams states, there 'are as many frames of reference (for a particular risk) as there are observers' (Adams 1995:29). These individual 'frames of reference' are behavioural, and often learnt in so far as personal experience and knowledge acquisition generally sensitise us all to risks that then exist in 'the archives of our minds' (Cutter 1993). We modify our behaviour in terms of our past experience and behaviour.

The 'macro' risks conjured up by the mention of Love Canal, Chernobyl, Bhopal, Maralinga, Exxon Valdez, or the more personalised risks posed by a loaded gun, a saucepan of boiling water or a syringe in the sand, are all subliminally acknowledged and heuristically assessed. We seek to manage our survival by endeavouring to totally avoid some risks or to compensate for risks that are unavoidable. Yet, if we are unaware of a risk, or being aware of it, fail to calibrate it correctly, death or injury may follow.

It is only in the last forty years that the taxonomy of risk has been systematically analysed. Ralph Nader, in his acclaimed work *Unsafe at Any Speed*, distinguished voluntary from involuntary risk (Nader 1965). Driving a vehicle was identified as inherently risky or dangerous, yet individuals continue to drive on busy highways and on rough back roads, optimistically believing that if the risk is (seemingly) within their control it becomes more acceptable. When an individual is a passenger in an aircraft, he or she may experience more fear, that is, consider it more risky, than driving a car. This response is attributed to the fact that the aircraft is outside a passenger's control. We tend to accept the *familiar*, routinely ignoring the dangers of driving at high speeds, cigarette smoking and sunbaking. This was highlighted by Chauncey Starr in his text *Social Benefit versus Technological Risk* in 1969 which explored voluntary and involuntary risk and concluded, *inter alia*, that 'society arrives at a balance between risks and benefits by trial and error' (Starr 1969:16). These themes have also been examined by (Cutter 1993) who defines risk categories in terms of low-probability/high-consequence events, such as 747 collisions, and events like the Three Mile Island nuclear accident, which she compares with high-probability/low-consequence events such as smog or water pollution. The former have an element of unpredictability, the latter periodicity/predictability. The psychometric paradigm developed by Cutter is a composite model based the work of Lichtenstein (1978), Fischhoff (1978) and Slovic (1987).



Two dimensional risk characterisation map. (Source: Cutter 1993:19, Figure 2.2).

This model is predicated on the contentious assertion that perceptions of risk are in fact quantifiable and predictable. Quoting Slovic (1987) Cutter states that the psychometric paradigm 'utilises a taxonomy of hazards to produce quantitative measurements of risk perceptions and attitudes or, more precisely, a cognitive map of risk.' 'Risks are viewed as more acceptable if they are familiar, controllable, have low catastrophic potential and/or are equally shared' (Cutter 1993:15 et seq.).

Cutter (1993:20) postulates that the disturbance, or the social impact, of an accident is predictably less if it occurs in a familiar and well-known system in contrast to the level of angst or disturbance if it occurs in a little known system. This is an interpretation that links back into the notion of the 'unknown' and 'dread' factors in risk perception; the converse of Nader's (1965) conclusions that focus on acceptance of the familiar.

Measurement of Risk

Science can be used as both a source of certainty or a source of uncertainty. As will be seen, from the discussions that follow in Chapters Eight to Eleven, it has been used as both a sword and a shield in the planning arena by proponents and opponents in landfill siting contests. Science is argued as an absolute by some individuals while others support the view put forward by Lowrance (1985:42) that it is 'eternally provisional, and is a matter of consensus; the scientifically true is what scientists endorse as being true'. To this can be added the 'benefit of the doubt' rule incorporated in the *Precautionary Principle* that will be discussed in further detail later in this chapter.

Risk as perceived by individuals and as defined by science is critical to issues relating to the siting and management of landfills. The formal processes of landfill siting, principally environmental impact assessment, seek to advise and inform decision makers and the community. Proponents rely heavily on the empiricism of science to address what they often characterise as the unfounded emotive oppositional responses generated as a consequence of community (mis)perceptions.

In any discussion of risk there is a confluence of the behavioural and empirical sciences. 'Wherever the evidence is inconclusive, the scientific vacuum is filled by the assertion of contradictory certitudes' (Adams 1995:45). Inference and belief, seasoned with emotion, take the place of objective facts. Scientists challenge what they perceive as the indeterminate and woolly notions of the behaviourists who are concerned with ethereal notions of perception and response. Yet 'cultural theory warns that everyone will never agree about risk' (Adams 1995:ix). Even when it is identified, individuals may not be able

to agree about the measurement of a particular risk. *Risk* has a complex social dimension as 'both the adverse nature of particular events and their probability are inherently subjective.

As stated earlier, such writers as Adams argue that risk is *socially constructed*. The aetiology of risk lies in the domains of both 'the technical' and the 'non technical'. One aspect of the difficulty about risk is that the perception is often generated beyond the bounds of scientific measurement. Yet 'the experts' are often preoccupied with measurement as reflected in the traditional, 'if measurable', methodology of science reflected in the words of Lord Kelvin referred to earlier (cited in Adams 1995:10). Yet it might still be argued that 'Overall, science pursues two precariously consonant objectives at once; preserving orthodox knowledge and carefully building on it, all the while striving to supersede it with more powerful knowledge' (Lowrance 1985:48).

Managing technological hazards

The paradox is that people tend to put their *heads in the sand* and create their own thresholds of risk (Kaminstein 1991, Douglas 1990) with respect to many obvious every day risks, yet enter the emotive arena of high outrage when confronted with an easily imagined, but low probability, catastrophic risk. We live in a world that glamorises cigarette smoking and travelling at high speed, yet cannot accept that waste must be put somewhere. 'In contrast to the virtues of *the de minimus* approach that proposed to ignore very low levels of hazard, our society seems to have adopted a *de ignoramus* approach that avoids knowing about many hazards' (Kates 1986 in Cutter 1993:60).

Logic and reason, as discussed earlier, are often left out of the risk equation. Genuine hazards can be glibly ignored while imagined threats are given credibility and gain a life of their own. There is no limit to human credulity. Risks 'can be changed, magnified, dramatised or minimised within knowledge and to that extent they are particularly open to social definition and construction' (Adams 1995:181). *Affluence generates effluence* and indeed the *stuff of risk*, hazardous waste, is continually being generated in ever increasing volumes annually, in Australia and elsewhere.

Adams states that the members of Beck's *Risk Society* are egalitarian and 'march under the banner *I am afraid*. the commonality of anxiety takes the place of the commonality of need...[and] solidarity from anxiety arises and becomes a political force'. In this context Beck is characterised as a fatalist. 'One has exchanged an interest in attaining the good for a concern to prevent the worst.' In Beck's 'Risk Society' the sense of reward associated with risk taking has been replaced with anxiety (Adams 1995:181).

Clearly, *risk* is both scientifically and socially based, and arises at many points in the environmental decision making process. The environment, by its nature is complex and so intricately interconnected that ranges of outcomes, and consequences of actions, are often difficult to predict. This leads to *uncertainty* and to the *unknowability* of certain risks; a factor that has led to the formulation of what is known as the *precautionary principle*. The courts have defined the precautionary principle as 'The commonsense principle that caution should be exercised where scientific opinion is divided or scientific information is incomplete' (Sackville J. *In the Matter of the Friends of the Hinchinbrook Society Inc. v Minister of Environment* (1997) 93 LGERA 249).

The precautionary principle is applied in assessing the acceptability of a risk to the environment in the formalised processes of Environmental Impact Assessment. It is also invoked in the context of Environmentally Sustainable Development (ESD) which is defined as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs, (WCED, 1987). These issues will be focussed on in further detail in Chapter Eight¹.

In essence the precautionary principle, 'is directed towards the prevention of serious and irreversible harm to the environment in situations of scientific uncertainty. Its premise is that where uncertainty or ignorance exists concerning the nature or scope of environmental harm (whether this follows from policies, decisions or activities), decision makers should be cautious' (Stein J. in *Leatch v National Parks and Wildlife Service and Shoalhaven City Council* (1993) 81 LGERA 282). The precautionary principle, as enunciated in the Intergovernmental Agreement on the Environment (1992), states that:-

Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:

- (i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment; and
- (ii) an assessment of the risk-weighted consequences of various options.

Acceptable Risk

Given the acknowledged inevitability of risk, the questions of risk management and the determination of what is a tolerable or acceptable level of risk come into focus. In a World Wide Web based article entitled *Acceptable Risk: A Conceptual Proposal*, Fischhoff draws

¹ See also: Harding, R., Ed. (1998). Environmental Decision Making.

on the findings of the American EPA's review of vinyl chloride. Fischhoff comments that 'No fixed level of risk could be identified as acceptable in all cases and under all regulatory programs.' He goes on to state that 'acceptability of risk is a relative concept and involves a consideration of different factors'. These factors include the 'certainty and severity of the risk; the reversibility of the health effect; the knowledge or familiarity of the risk; whether the risk is voluntarily accepted or involuntarily imposed; whether individuals are compensated for their exposure to the risk; the disadvantages of the activity; and the risks and advantages of any alternatives' (Fischhoff 1994).

The parameters of acceptability outlined by Fischhoff are echoed in the analysis of risk by Cutter, Sandman and others, discussed earlier in this chapter. The observations by Fischhoff reinforce the conclusion that individual perceptions of risk are subjective and hence variable. The two dimensional *risk characterisation map*, (Cutter 1993), can be adapted to chart the *acceptability* of a risk. The 'familiar, not dreaded, voluntary risk quadrant' is the most acceptable of risks. Acceptability becomes part of each individual's risk identification continuum and therefore cannot be predicted as a certain or uniform outcome. Many individuals manage to blanket out concerns related to the common, everyday risks. This is no better illustrated by the irony of groups of smokers standing outside protest meetings, or at barricades passionately opposing the proposed siting of a landfill as they inhale yet another lung full of smoke. Perhaps this serves to illustrate human responses to accepted versus non-accepted risks.

Many environmental risks are inescapable. In some instances this may be due to a lack of knowledge due to the limitations of technology. Many environmental responses or outcomes may take years to become evident. Heimann makes the point in the preface to his work, *Acceptable Risks, Politics Policy and Risky Technology*, that 'complex and risky technologies are an engine for economic growth in our society' however, 'these new technologies also pose many problems for political leaders and policy makers responsible for overseeing them' (Heimann 1997:Preface). Hence, acceptability is often a benefit to detriment *trade-off* where the length of the 'pay back' period is also a part of the calculus. As Fischhoff points out, these *trade-offs* are a matter of relativity (Fischhoff 1994). Higher income may come with greater job risks or inconvenience. Ease of access to employment may mean living in a polluted industrial area. The erroneous 19th century belief that sulphurous smoke was beneficial to health made living near a brick kiln acceptable to

many individuals. An affordable building block may result in living next to an unpleasant site, made the more acceptable by a tangible trade-off in the form of cash compensation².

To transform what is perceived by nearby residents as a marginally intolerable siting proposal into a tolerable proposal may involve proponents in offering 'incentives' to local residents, either to gain their support or at least their passive acquiescence. Such *incentives*, or trade-offs, may relate to agreed optimum noise, dust or safety levels, or a site remediation agreements. It is equally true that industries tend to seek out the most risk tolerant environments to build their risky operations (Fischhoff 1994). As discussion in later chapters will show, landfill proponents in Australia have been extremely 'geographically selective' in relation to siting, and have rarely taken the initiative of offering monetary compensation to nearby residents unless compelled to do so.

Fischhoff invokes a variant of the Pareto improvement principle which suggests that 'an action is acceptable if its excess of benefits over risks is sufficiently great that those that *win* from the action could compensate losers' (Fischhoff 1994). Industry however, as experience shows, is very slow to part with its spoils. The large net benefits that flow to industry are not automatically redistributed to communities that unwillingly host such enterprises. In the context of landfills, communities *playing host* to a landfill generally have to endure the hazards and daily suffer small net losses. The reality is that minimisation of risk and compensation for dis-benefit rarely flow to *host communities*; a theme of Robert Bullard's exposé, *Dumping in Dixie* (Bullard 1994).

No risk, actual or potential, can be addressed unless it is recognised. Only then can it be negated or *off-set*. In this regard, the role played in the last thirty years by environmental protection agencies around Australia, and the relatively new environment courts, has become progressively more significant. Before the advent of environment courts and environmental protection agencies, compensation was a matter for the civil courts on the basis of proven loss. Today, a defendant breaching regulatory environmental guidelines can face heavy fines and also be liable for the costs of remediation.

²Medlow Road landfill in South Australia (to be discussed in a later chapter) and the Third Runway proposal at Sydney airport come readily to mind.

Communication in the Waste Debate

The daily press and the telegraph, which in a moment spread inventions over the whole earth, fabricate more myths in one day than could have formerly been done in a century (Karl Marx 1871 in Cohen 1981:5).

The level of public response to a risk associated with a proposal is directly linked to its perception. Perception is linked to communication, (or non-communication). Hence, the manner in which a risk is communicated is generally a key determinant of whether *the public* will accept or reject a given proposal. This is no more true than in relation to the siting of waste disposal facilities. A proposed landfill may be doomed from the outset, however much planning technology, management expertise, or money is brought to bear, if a vocal, organised and politically well-connected host community oppose it. This factor has been proven by numerous failed siting attempts. Two that come readily to mind are the CSR proposals at Werribee in Victoria and Highbury in South Australia that will be discussed in Chapters Ten and Eleven respectively.

The Media is a critical determinant in the communication of risk as it can either talk-up or talk-down, amplify, minimise or ignore, potential hazards and hence the acceptability of a proposal. Awareness of the risks by the public is often skewed through the reportage of disasters and worst case scenarios, and as the technologies of communication have developed, so too has the perception of risk among communities. During the time-line under discussion in this thesis, 'communication' has gone from the personal to the electronic, from hardcopy to cyber copy, and from hand-mail to e-mail. Knowledge is now communicated in a multiplicity of formats. A potential *risk* may be conveyed in a range of *languages*, a film, a photograph, or a *sound bite*, may be the medium of communication of a catastrophe. And as discussed in the context of heuristics, how a *risk message* is perceived and processed by an individual is the outcome of a subjective, innate and often intuitive response.

Edelman states that 'Language, we are told by the linguists, anthropologists and social psychologists who have studied it, is not to be conceived as something that conveys meaning in itself. Its meanings are always a function of the context from which it issues, of the disparate needs and interests of the audiences involved, and of their respective modes of perception' (Edelman 1964:130). Hence, whether the medium of communication is face to face, by radio or television, meaning can be 'augmented' or even manipulated. In addition to the medium of communication, the 'language' of communication will impact on the comprehensibility of the message. In regard to 'risk' the message may be dampened, embellished, edited up or edited down by the manner in which it is presented.

Risk communications are often not presented in plain English text. The message can often be shrouded in jargonised technical scientific language and given added 'integrity' by this seemingly precise and objective format. Alternatively legal language, the imperative, administrative tongue, may be used in the same way to add credibility (Edelman 1964). To sweeten the pill of acceptability these *formal* languages are often intermingled with informal commentary. The language of a Ministerial Statement, or the formal tone of a consultant's report, or an Environmental Impact Statement, may 'colour' the content of a report. The use of formal, scientific, or other *languages* may serve to include some individuals and exclude others from the debate and thereby reinforce power relationships. In the introduction to the book, *Media: An Introductory Analysis of American Mass Communications*, Sandman (1982), states that, in very broad terms, 'Communication involves the sharing of information, attitudes and experiences'. He goes on to draw a distinction between interpersonal and mass communication. Branden Johnson makes the point that to simply focus on the media in the context of 'hazard knowledge' is to ignore the 'potentially potent distributor of hazard information: social networks' (Johnson 1999:np).

Sandman describes interpersonal communication as 'a delicate process controlled jointly by the source and the receiver' (Sandman 1982:1). Sandman draws the distinction between public and personal communication; 'mass communication is much more brutal and one sided...there is nothing individual about the mass message, there are fewer feedback loops and the audience is more likely to twist the message through selective attention, perception and retention' (Sandman 1982:3). Mass communication is one sided; there may be no direct right of reply.

Clearly the language or 'rhetoric of risk' operates at the levels of personal and impersonal communication of risk issues and, if selectively used, is particularly powerful in drawing out emotional responses. In discussions with landfill siting proponents and opponents alike, and in perusing their literature, ranges of words regularly recur. These words include *dump*, *noxious* and *toxic*; and in combination, 'noxious toxic dump', which roll forcefully off oppositional tongues (Van Moorst 1998:pers comm). The use of such words as 'garbage' and 'trash' also carry emotive weight. Oppositional groups also appear to seek out 'catchy', often hard sounding acronyms, such as RAGE, WRATD and RATWISE, to headline their oppositional response. By contrast, however, contemporary landfill proponents and operators use a different language. Universally they prefer the use of the word 'landfill' to 'dump', but more commonly will adopt the common 'soft' expressions such as, *sanitary landfill* or *waste management facility*. Proponents themselves also seek to 'soften' their public image by using such names as Enviroguard and Pathline.

The use of *selective language* is not a new phenomenon. In 1932 the Lord Mayor of Sydney, Hagon, lamented that, if only if they could think of a name that did not 'have the negative connotations attached to (the word) 'destroyer', they might find a suitable place' to locate it. The suggestion at the time was that the word *receptorium* be used in place of destroyer (Fitzgerald 1992:267). In the *enlightened* 1950's, landfilling was referred to as 'controlled tipping' rather than 'dumping'. The words leachate, auditing and monitoring, not seen in the pre 1950's press, are now commonly used in the context of site management issues.

Appropriateness of language, as this researcher discovered, is often 'contextual'. How a 'thing' or place is described or named may be determinative of its public perception in terms of its perceived risk. The unintentional use of the word 'dump'³ in interviewing an industry representative with respect to the Tullamarine site sparked a personal reprimand (Batagol 1998:pers.comm). In the same vein, reference to the Wingfield site in South Australia as 'Mount Wingfield' was totally unacceptable to the Adelaide City Council (Lorenz 1998: pers.comm).

Apart from the emotive use of language in describing sites, the residents of a location that host a landfill will often suffer 'taint by association', embarrassment or ridicule. Werribee residents, who have endured the stigma of a sewage farm for decades, argued that they didn't want a 'toxic dump' as well. Issues of community image and social identity arise and hence, not surprisingly, it is now common practice to avoid using geographical place names for (potentially) unwanted land uses. As will be discussed, two recently sited landfills have been given 'soft' names, Woodlawn and Ravenhall.

Clearly 'language is not neutral, but a highly constructive mediator' (Fowler 1991:1). Communication, and the selective use of language, has become an important component of the 'waste debate'.

³ With reference to the use of the word 'dump'; '(my client) is very sensitive about that word...use the word landfill. Dump is pejorative language'. Her reasoning was that 'a dump' is essentially an unmanaged, unlicensed site where rubbish is literally 'dumped' illegally' (Batagol 1998 pers comm.).

Democracy, Bureaucracy, Politics, Policy, Power, and Formal and Informal Public Participation

Introduction

The safe disposal of urban waste in Australia is a *managed process* which to be effective, involves coordinated action and consensus between the government, its agencies, the business sector and the public. While the concepts of risk and risk assessment are at the cutting edge of waste definition, there are equally cogent, but sometimes less obvious forces, at work which determine issues relating to the disposal of urban waste. These often indiscernible forces operate within the confines of democracy and the structures of government administration and are manifested through the *interplays* between politicians, bureaucrats and the community. The outcomes of these interplays are expressions of power wrought through policy formulation and the day-to-day decision-making processes within all levels of government administration.

This chapter will examine the interrelated concepts of bureaucracy, politics, policy, power, and democracy. It will seek to explore their derivation, application and relevance to the subtleties of decision making that lie behind what is posited as one of urbanised societies' most complex and recurrent environmental issues, the disposal of urban waste.

The Governance of Waste

Governance, is an omnifarious¹ word which relates to 'the exercise of political power to manage a nation's affairs' (Weller 2000:3); the function of governing. Transposing this term to the present context, an analysis of the *governance of waste* encapsulates an examination of the notions of democracy and bureaucracy, the role of politics, the formulation of policy and the exercise of power implicit to urban waste management issues.

As the historical narrative of the *ruptures* and *discontinuities* that comprise the history of urban waste disposal in Australia will disclose in Chapters Five to Eleven, there have been significant *power-shifts* between governments and their communities since colonial times to the present. *Who* has taken decisions, *how* and through what mechanisms those decisions have been taken and, *why* and on what basis they have been taken, can be directly related to this notion of governance.

¹ Of all kinds and forms, exceedingly various (SOE 1973:1445).

In the words of Bentley (1908) cited in Considine (1994:4) 'all phenomena of government are phenomena of groups pressing one another, forming one another and pushing out new groups and group representatives (the organs and agencies of government) to mediate adjustments'.

The autocratic penal regime of the early years of colonial settlement in New South Wales approximated to a military dictatorship, an effective tyranny. Initially there was no *separation of powers*. The executive, judicial and legislative functions of government largely resided in the Governor. In a sense *the state*, through gubernatorial power was omnipotent, a factor thought necessary to facilitate the efficient organisation of colonial life, consistent with the contemporary writing of such political theorists as Thomas Hobbes (Jacoby 1973: 37-38). The transitions in the exercise of power by governments in the first century of colonisation will be discussed in Chapters Five and Six.

However, as mentioned earlier, despite significant changes in the systems of government across Australia in January, 1901, with the adoption of a *common-wealth* Australian Constitution, these events had no discernible impact of waste disposal outcomes at that time. The Constitution formalised power-sharing arrangements between the newly formed States and the Commonwealth Government; the latter having limited specified powers enumerated in section 51. All other powers, formerly vested in the colonial legislatures, remained with the State Governments. It is relevant to note that there was no mention of the word *environment* in the Constitution and no direct power in the Commonwealth government to administer what we now call *environmental issues*.

The mechanisms of the federal government, reflecting elements of the English and American models, was a *hybrid system* referred to at the time by some commentators as the *washminster mutation* (Parkin and Summers 1997: 5-21).

The Australian system of government melds notions of ministerial responsibility, drawn from the House of Commons in the Palace of Westminster in London, with a federal Senate modeled on American practice. It includes a governor-general, as representative of the Queen, and a powerful executive that reflects party domination of the parliament. This unique system, given national expression in the Commonwealth Constitution of 1900, combines parliamentary government with federal institutions (Bridgman and Davis 1998: 8).

Political parties, as we know them today, were slow to evolve in colonial Australia. Initially, there were no political parties in the colonies. In fact, any form of opposition to the autocratic governors during the early years of white settlement, in Port Jackson and Port Phillip, could have been treated as seditious if not treasonous. The early colonial representative governments, which came into being with the creation of elected

legislatures, were unstable coalitions of convenience. They were often riddled with small self-interest groups that led to factionalism. By the 1880's, after thirty years of responsible government, the divisive and destructive factions that characterised early Ministries, began to coalesce into political parties and by '1910 the party system across Australia had gelled into Labour and Liberal, dominating ----- at times monopolising ---- electoral and parliamentary contests' (Jaensch 1992:124). Jaensch takes the view that following the creation of these two major parties Australia's social history up until 1945 was one of *peculiar homogeneity*. He goes on to comment 'that the shape of the party system appears virtually unchanged' well into the 1990's (Jaensch 1992:37).

The *political management* of Australia has correspondingly gone through an evolutionary process from the days of white settlement to the year 2000. Indeed, Halligan and Power (1992) have postulated five distinct phases in the development of *governmental regimes*. Halligan and Power (1992:19) describe the period 1788 until the 1850's as the *colonial gubernatorial* phase. This led into an era of *responsible government* and *democratic patronage* that extended into the 1880's. From the 1880's through until 1920, (which covers the period during which incineration of urban waste was developed and introduced), is characterised as a period of *innovation and reform*. The period from the 1920's through the 1960's is seen as a period of *consolidation and centralization* of political management. This then gave way to the 'ferment' of the 1970's. While these 'phases' do not neatly coincide with Epochs of Urban Waste Disposal proposed in the Conclusions to this thesis, they provide useful points of reference to changes in the political and administrative spheres of government that will be seen to have influenced urban waste management practices during the period under discussion.

As will be discussed in the narrative that follows, the executive, or bureaucratic, branches of government have also gone through processes of change that reflect the evolution of political management. Halligan and Power (1992:19-25) extend their analysis to the executive branches of government describing the period of *innovation and reform* (1880's to 1920's) as 'technicist' at a time of rapid urbanisation. The period from the 1920's to the 1940's is described as 'bureaucratist' and this in turn was followed by the 'administrationist' period up until the 1960's that saw the beginning of the modern welfare state. Peter Christoff (1999:34-59), in discussing the governance of the urban environment, identifies three waves of urban environmental regulation which cover the periods, 1880 to 1900, 1960 to the mid 1970's and from 1990 to 1999. These waves of change will be discussed in later chapters.

While the historical narrative will illustrate that there was a number of public protests with respect to waste disposal issues prior to the 1970's, it was not until this time, of 'ferment' that communities really became organised to resist unwanted waste related siting proposals. The last twenty years in particular have witnessed extreme responses from hitherto ostensibly placid and complacent communities. Formal, and more often, very active informal public participation is now virtually synonymous with any landfill siting proposal. These community responses, discussed in Chapters Nine to Eleven, run in parallel with the social activism and protest with respect to wider human rights and the environmental issues discussed by such authors as Tim Bonyhady in *Places Worth Keeping* (1993).

The stability of government in Australia has accommodated the spawning of *social movements* and other *pressure groups*. *Social movements*, 'the form in which new combinations of people inject themselves into politics and challenge dominant ideas and a given constellation of power' (Doyle and McEachern 1998:6-7), have played an increasingly significant role in shaping the policy responses of politicians to urban waste disposal issues. An outcome that eventuated was public consultation, as formalised public participation, in planning decisions, facilitated through the introduction of Environmental Impact Assessment (EIA). Informal public participation, bottom-up and often reactionary was accommodated and tolerated and became progressively more effective in influencing government decision making processes in relation to the siting of waste disposal facilities as will be discussed in later chapters.

Democracy

To call governments democratic is always a misleading piece of propaganda.
(Macchiavelli's Discourses cited in Flyvbjerg 1998)

Democracy is yet another essentially contested or 'internally complex' concept. It can *exist in degrees* and is generally described by reference to its features, namely it:-

- should ensure that the majority of citizens get to choose who governs them;
- should promote the equality of all irrespective of race, colour or creed, and ensure that any citizen is eligible to attain a position of political leadership; and,
- should enable the continuous active participation of citizens in political life (Gallie 1956:184).

Yet, given the collective apathy of society, perhaps the words *has the potential to* could be substituted for *should*. Sklar (1996:23) sees democracy as a concept like *development*; both are universal goals and collective aspirations, in the late twentieth century.

A starting point of most textbook discussions of democracy is often an etymological reference to the Greek word *demokratia* which is interpreted as, meaning *government by the people* or *power of the people* (Hadenius 1992:6; Sklar 1996:26). However, the precise translation of *demokratia* is a little misleading historically, as in classical Athenian democracy it was only a very select group of people who got to vote. Three quarters of the population, slaves and women, missed out. At best we can conclude that the Greeks gave us the word, and only partially at least, the concept! Walker in 1966 stated that 'In short, classical democratic theory is held to be unrealistic; first because it employs conceptions of the nature of man and the operation of society that are utopian and, second, because it does not provide adequate operational definitions of its key concepts' (Walker 1966:285).

Democracy, to quote one of the American *founding fathers*, Jefferson, meant 'government by consent of the governed'. Joseph Schumpeter, writing in 1942, opined that '...the democratic method is that institutional arrangement for arriving at political decisions in which individuals acquire the power to decide by means of a competitive struggle for the people's vote' (cited in Walker 1966:286). By any definition the colony of New South Wales, under the autocratic rule of its early military governors, was totally undemocratic.

The American jurist Wendell Holmes sardonically commented, 'democracy is what the crowd wants', yet democracy comes at a price. Democracy in its purest form gives individual choice and autonomy. As we can see from the lessons of history, democracy as applied across the globe sets its own constraints and may put limits on freedom and popular government. 'Democracy is jealous of liberty and liberty, at times, fears democracy (Crick 1972:56). The tyranny of public opinion and majoritarianism, undeniable facets of democracy, may be antithetical to democracy and highlight its fragility. Schattschneider (1960), political theorist, academic and activist, sees conflict, organisation and leadership as the ingredients of a working definition of democracy; the relations of government and business largely determine the character of the regime (at p141). Picking up on the same theme, Adamany (1972:1331-1335) asserts that 'the dynamics of politics has its origin in strife'.

From a British perspective, Lord Hailsham recognised two forms of democracy. Centralised democracy, otherwise termed elective dictatorship and limited government; together amounting to freedom under the law (Hailsham 1978:9). Such is our acceptance of representative government that a government having a majority of one can assert its will over the whole.

Lord Hailsham is drawn to the dangers of democracy, namely:-

...that men and women are beginning to realise that representative institutions are not necessarily guardians of freedom but can themselves become engines of tyranny. They can be manipulated by minorities, taken over by extremists, motivated by the self interest of organised millions (Hailsham, 1978:13)

As seen through the eyes of that mythical Australian construct, *the ordinary bloke*, democracy is simply *the right to have a say, and to be given a fair go*. Australians live under forms of liberal democracy that operate at federal, state and local government levels. It has been argued by Walker (1966) that democracy, to work effectively and produce stable government, depends on *widespread apathy and general political incompetence*.

Perhaps the most salient aspect of 'Australian democracy' is that it sustains political systems that are tolerant. Yet, politics is the 'perpetual wrecker of ordered procedure, the great undoer of best laid plans, introduces chance and circumstance to the policy process...for behind policy is mischievous politics...responsible for the *volte face*; the floor crossing and the seeming unholy alliances that give colour to what we term *politics*' (Davis, Wanna, Warhurst & Weller 1993:7-8).

The democratic process, viewed in institutional terms, should ensure efficiency in policy-making and public administration, but at the same time be responsive to the wishes of the community. Democracy should be 'inclusive' of the majority; political leaders who shape policy should gain and retain the mandate of the majority of their constituents. Yet it is clear that if Dahl's *apolitical clay*, the retiring and disinterested public, all sought to actively participate in government, the system simply could not work (Walker 1966).

Adamany (1972:1325) in discussing Schattschneider's political philosophy, defines democracy as a *moral system* and goes on to state that (ideally) it is 'a competitive political system in which competing leaders and organisations define the alternatives of public policy in such a way that the public can participate in the decision making process'. As will be discussed in the chapters that follow, the decision-making processes leading to the siting or non-siting of landfills to serve urban Australia have often failed to match-up with the purest ideals of democracy. It will be seen that governments have often caved into the will of vocal minorities, blocked or over-ridden public participation, or, alternatively, chosen a path of least resistance in the face of a retiring and disinterested, not participating, constituency.

In the context of the resolution of urban waste disposal issues, autocracy gave way to forms of representative government and there was a power-shift from Government House to the Legislative Chamber in the mid nineteenth century, as will be discussed in the next chapter.

The centralised, militaristic form of government in colonial New South Wales simply reflected the fact that it was at its foundation, for all intents and purposes, a prison. Autocracy and non-participatory forms of government suited the colonial style of military government not only in New South Wales but also in all other colonies. The 'cash-strapped' colonial administrations were pre-occupied with expediency in the guise of administrative efficiency, and the rights of individuals came a poor second to appeasing Whitehall, keeping order, and minimising costs.

It was only by a series of incremental changes, reflected in gradual power-shifts and policy changes over a period of nearly one hundred years, that the electorate gained ascendancy through the introduction, by degrees, of representative government. As will be discussed, only through representative governments did communities get to influence such matters of common concern as waste disposal. The processes of policy formulation, which are a form of exercise of power, can be characterised and analysed in terms of 'the democratic process'. While governments cannot hope to represent and give effect to the wishes of all constituents, ideally, a democratic form of government will take the majoritarian approach, provided it is for the good of the wider community. Ideally, democracy is about ensuring order and equity.

The Paradoxes of Democracy

Many decisions in relation to urban waste disposal have been taken in the face of localised opposition, yet justified on the basis of good to the wider community. Equally, there are examples of the good of the wider community being subjugated to the wishes of powerful minorities, as will be discussed in the context of recent landfill siting decisions in Melbourne. Democracy may be undemocratic in so far as a majority of one can rule the whole. From another perspective, democracy carries within its tolerant tenets the seeds for its own destruction as, arguably, the suppression of exercises of power in the form of opposition is of itself undemocratic.

Political parties, as a manifestation of democracy, represent a coalescence, and often a compromise, of individual's interests. Schattschneider observed that by the time interest groups have come together and organised they have 'also developed some kind of political bias because organisation is the mobilization of bias in preparation for action'

(Schattschneider 1960:30). Yet there is never any suggestion that such groups, whether they be political parties or aggregates of individuals, represent all interests 'as within the single dimension of a vote the voter can only express the crudest of choices' (Lindblom 1980:107).

Another paradox of democracy is that 'the modern democratic state exhibits undemocratic tendencies due largely to the concentration of power in a few. This is an administrative necessity given the complexity of post-industrial society; complexity is continually surpassing itself; Leviathan extracts sacrifices from democracy' (Paehlke 1990:7). Elections clearly afford the *right to have a say*, but generally, only once every few years. At this most simplistic level, the medium of democracy is the ballot box. Yet the paradox is that in voting the voters hand over their rights to a representative; an acknowledgment that direct participatory democracy is simply not practical.

The relationship between democracy and power is such that power in the hands of the community may be publicly portrayed as subversive, negative and restrictive. Manifestations of power may challenge "democracy" yet, arguably, these are intrinsic to, and not antithetical to democracy. As mentioned above, to suppress the exercise of power is arguably undemocratic. In its *disruptive mode*, Nietzsche and Foucault would agree that power is productive and positive; it is dynamic and not simply a static mono-dimensional entity.

Flyvbjerg (1998) interprets Foucault's view of power as conflict centred. This is not to say that power is synonymous with conflict. A democracy, once empowered, can tolerate and will often thrive on a level conflict. The *divide and rule* philosophy may assist political aspirants in situations of controlled, often contrived, controversy. Flyvbjerg (1988) also contends that in many autocratic single party regimes, conflicts have been viewed as dangerous and potentially destructive of social order and therefore in need of being suppressed. However, he makes the point that social conflicts are valuable in holding modern democratic societies together. They are the pillars that uphold democratic societies. A society that denies the opportunity for open debate and that suppresses *conflict* may not develop the *democratic elasticity* to survive. Hence the paradox.

Bureaucracy

The need to manage waste was critical to the survival of the colonies, and while this was initially achieved through the dominant power vested in the governor, it later became the responsibility of elected representatives, and their administrative delegates, bureaucrats,

colonial civil servants and municipal officers. Derived from the French *bureau*, and the Greek *kratos*; the word bureaucracy literally, and quite aptly, means 'rule from the desk' (Jaensch 1992: 189). 'The term bureaucracy refers to the fact that man's existence is directed and controlled by central agencies; not only is he unable to escape from the regulation and manipulation, he seems to depend on it' (Jacoby 1973: 1).

Bureaucracies are characterised by distinct elements:-

- a pyramid hierarchy of authority and commensurate responsibility;
- specialisation of tasks;
- impersonality with authority vested in the office rather than the office holder;
- operation according to rules and regulation;
- selection and promotion of personnel without favouritism; and,
- the use of written records (from Parkin 1981:273 and Jaensch 1992:189).

The involvement of *the state* in the social and economic life of the Australian colonies was a central factor in each of the infant settlements. Clearly, as the population of each of the new towns of Sydney, Melbourne and Adelaide grew, the mechanisms of government also grew, as did the volume of urban waste and the need to dispose of it.

The *state* was *centralised, omnicompetent and authoritative* (Davis et al. 1988:15). As settlements expanded this led to the natural development of an administrative wing, the public service, to serve, (and control), the public's needs. The class conscious, stratified civil service of colonial times was imbued with, and reflected, the sense of *noblesse oblige* of the Victorian times. Tinges of both a remote aloofness and patrician care still linger in the upper echelons of the public bureaucracy.

The nine civil servants that accompanied Captain Phillip on the *First Fleet* were the beginnings of an emergent administrative bureaucracy (McMartin 1983:41), yet could not be described as such. As discussed earlier, all power was vested in Phillip himself, the coalescence of administrative, judicial and legislative functions. In a sense the military, the marines, and warders, were the bureaucracy of colonial Australia.

Bureaucracy exists in a realm of its own, it is not a creature of democracy; it may in fact seek to smother a democracy. As conceived by Weber, bureaucracy is a power system of the first order aimed at producing efficiency and, just as excessive power in the political sphere leading to a dictatorship is a threat to democracy (Weber in Jacoby 1973), so too can excess of power in the bureaucracy be anti-democratic (Blau and Meyer 1987:13-14).

Even dictatorial forms of government recognise that bureaucracies are essential to civic administration; the regimes of Mussolini and Stalin relied on the backing of bureaucracies. Bureaucracy has many faces. It can frustrate the will of democratically elected governments and can be a threat to democracy by suppressing socially active citizens (Jacoby 1973:147). A direct example is the need, in virtually all jurisdictions, to obtain a permit, from a bureaucrat, to hold a lawful street demonstration. Weber, in *Bureaukratie und Freiheit* (1946), conceived of bureaucracy in its historical context as essential to civilization, citing the ancient Egyptian and Babylonian reliance for survival on the centralised control of their systems of canals:-

...we modern men [sic] are surrounded by a logistical network of gigantic proportions, consisting of railways, postal, electrical and other services; we live and die through its functions, as did those ancient peoples through their canals, the systems are similar in that they require direction and organisation by a central bureaucracy (Weber in Jacoby 1973:10)

As in ancient times, bureaucracy is now characterised by specialisation, a hierarchy of authority, a system of rules and impersonality (Blau and Meyer 1987:9). Bureaucracy in its present form did not begin to develop until the second half of the 19th century. Jacoby identifies it as having its British origins in the Industrial Revolution, and the Reform Acts of the 1830's, which saw the intervention of government administration in raising taxation and revision of the operation of the Poor Laws (Jacoby 1973:166). This was a time when the administrative arm of government began to place restraints on the unfettered exploitation of the poorer classes. Interestingly, it is apparent that the level of intervention by *the state* in the management of the early colonies was virtually total.

In the public sphere the role of a modern bureaucracy is to deliver the promises of the elected government to the community and exact its dues from the community, and thereby give effect to the policies of that government. The role of the bureaucracy is often contested, and we now live in a world where the word *bureaucratic* is often used as a synonym for *inefficient* or *obstructive* (Blau and Meyer 1987:4). Yet, as conceived by Weber, bureaucracy contributes to *coordination* and *control* and thereby to efficient administration. While agreeing with the first part of this statement Blau, in the Preface to *Bureaucracy in Modern Society*, questions 'whether coordination and control produce efficiency' (Blau and Meyer 1987:vii).

There are clearly many negative aspects to *bureaucracy*. Bureaucracies are essentially human constructs and correspondingly reflect the failings of humankind. They can be dysfunctional in many respects; they commit errors of commission in implementing the wrong policy or errors of omission in failing to act when action is required (Heimann 1997).

Bureaucracies are not always *neutral* structures that necessarily ensure efficiency, as will be exemplified in discussion of the management of urban waste, past and present. Paehlke and Torgerson (1990:8) go so far as to state that 'it seems that tendencies toward the effective handling of the environmental problems come, not because of bureaucracy, but in spite of it'.

Yet Blau and Meyer (1987:vii) concede that, whilst Weber extolled the positive aspects of bureaucracy, he also recognised its weaknesses. Bureaucracies have tended to be remote and monopolise information, rendering outsiders unable to determine the basis on which decisions are made. 'Once it is fully established, bureaucracy is among those social structures which are the hardest to destroy'....and tend to be.... 'entrenched or self entrenching', conservative in seeking to preserve the *status quo*, non responsive to public opinion, 'and ambivalent towards democracy' (Blau and Meyer 1987:24-26).

While politicians, always fearful of an electoral backlash, remain responsive to the wishes of their constituencies, bureaucrats operating behind closed doors are *invisible* and avoid personal accountability. Negative images of *the Bureaucrat* involve perceptions of manipulation, indecision, delay, obscurantism, cunning, and artfulness, traits exploited in many modern day political satires, *vide*, *Yes Minister* (BBC, London) and *The Games* (ABC, Sydney).

The industrialist Henry Ford criticised the Australian government's bureaucracies as undemocratic, interventionist and *socialist*, given the active role of Australian government in building and managing railroads. 'Politicians and administrators were prepared to use the state in innovative ways to achieve immediate and self-interested ends such as establishing social and economic infrastructure. While other capitalist societies sought to follow a *free market* path to development, the public sector in Australia strategically intervened in the economy from early colonial days' (Davis et al. 1988:15).

In contemporary parlance, *The Bureaucracy*, seen by many as synonymous with *The State*, is considered all too powerful. The power of states, and corporations, and the merger between the two, is the subject of popular writing lamenting the corporatisation of government, and the *monetarisation* of the *rationale* of government, from local through to global. Such popular writers as John Ralston Saul in *Voltaire's Bastards*, and *The Unconscious Civilization* and John Gray in *False Dawn: the Delusions of Global Capitalism*, enlarge on this theme. Global bureaucratisation, corporatisation, is seen as a threat given that it can only be achieved with the complicity of governments.

Since the 1970's, governments, through self corporatisation and by forging relationships with corporations both nationally and globally, are becoming increasingly more powerful at the expense of the bureaucracy. This is achieved through alliances based on economic trade-offs involving such sweeteners as job creation and tax incentives. The bureaucracy is itself becoming corporatised. A contemporary commentator, Guy Peters, in his Introduction to *The Politics of Bureaucracy* (1995), comments with reference to the United States that:-

Government is an increasing part of the life of the average citizen. Once relegated to the basic tasks of delivering the mail, policing the streets, and defending the nation in time of war, contemporary government provides an array of goods and services too large to enumerate here. Moreover, governments now regulate a range of private activities that were once left to the whim of the individual or to the market, activities that were not even thought of a decade ago; the public sector is now developing the information highway as it has more conventional highways (Peters 1995:1).

As will be discussed in the historical narrative in following chapters, late 20th century laissez-faire Australian governments, while remaining as *regulators*, have largely opted out of the politically hazardous waste disposal business. Since the late 1960's, corporations, many of them trans-national, have moved in to fill the vacuum. The processes of waste disposal have been *corporatised*, and what was once a public service, is now big business.

In this sense, public and private bureaucracies now manage the waste industry in Australia. It appears, as will be discussed in later chapters, that these bureaucracies, whilst powerful, remain in the shadow of the power wielded by re-election-sensitive politicians. Despite the fact that oppositional groups have 'increasingly concentrated on the bureaucracy' (Jaensch, 1992:337), in the context of the waste debate the bureaucracy is reduced to being the messenger, or the buffer zone, between the community and the politicians in government, and, certainly in South Australia and Victoria, not the final arbiter of waste management facility siting outcomes.

Politics

Politics may be a messy, mundane, inconclusive, tangled business far removed from the passion for certainty and the fascination for world-shaking quests which afflict the totalitarian intellectual; but it does, at least, even in the worst of political circumstances, give man some choice in what role to play, some variety of corporate experience and some ability to call his soul his own (Crick 1972:54).

Democracy, to paraphrase the classicist views of Bernard Crick (1972:73) is but one element in politics, yet politics cannot survive without democracy. Dryzek (1990:217) has

summed up democracy at the close of the 20th century as having two elements, 'the collective construction and application of political authority', and secondly, 'rationality'. However, he concedes that the role of political authority, and rationality 'whether understood in terms of making choices for good cognitive reasons or as the capacity to resolve problems effectively through individual cognition and social interaction', 'may be honoured as much by their violation as their observance.

Edelman (1964) in suggesting that man [sic] and politics can be looked at symbolically as reflecting each other acknowledges the complexity and variation inherent in any conception of politics. The way in which people implicitly and explicitly conceive of politics depends on 'whether they define it primarily in terms of a *process*, or whether they define it in terms of the place of places where it happens, that is in terms of an *arena* or institutional forum' (Leftwich 1984:10-11). The *politics of waste* can be related to the broad focal issues to do with the disposal of waste generally, or to the specific issues referable to a site where a waste management facility is, or is proposed to be, located. In either context, the disposal of waste, like politics, encapsulates issues of culture, economics and power. As emphasised earlier, the siting of waste management facilities, as planning decisions, are political decisions. A classical, perhaps idealistic view of politics was enunciated by Bernard Crick (1972:22) as:-

...the activity by which differing interests within a given unit of rule are conciliated by giving them a share in power in proportion to their importance to the welfare and the survival of the whole community ...a political system is that type of government where politics proves successful in ensuring reasonable stability and order.

Crick (1972) suggests politics should enable groups in a community to make a positive contribution towards the general business of government and maintaining of order. Crick portrays politics as fluid; operating within the constraints of democracy where it facilitates the involvement of people in power systems that may or may not be defined as democratic or egalitarian, and as:-

...an activity—lively, adaptive, flexible and conciliator. Politics can exist independently of both democracy and government and while democracy as social movement must exist in nearly all forms of political rule, yet if taken alone, and as a matter of principle, it is the destruction of politics (Crick 1972: 55-56).

Yet, in reality, we know that politics, *on the ground*, is rarely attractive. David Oakshott stated in 1939 that 'in itself politics is *vulgar, bogus* and *callous* not only because it attracts people of that stamp, but because of the false simplification of life implied in even the best of its purposes' (vide Grant 1990:15). Hugh Gaitskell, an astute political strategist, stated that 'a man [sic] who cannot ride two horses at once has no right to have a job in the

bloody circus' (cited in Crick 1972:138). It is perhaps reflective of the fact that politicians, forced to serve a party line and at the same time maintain good faith with constituents who have diverse views and interests, are seen as nothing short of duplicitous. This is no better illustrated than by reference to the waste siting debates that have occurred in Australia over the past ten years and which support Weller's contention; 'Dissatisfaction and disillusionment about political solutions are rife. Politicians are treated more suspiciously than used car salesmen. Institutions are suspect. Campaigning as 'anti-politicians' promises transitory success' (Weller 2000:1).

Political parties, and in turn, elected governments, represent the mobilisation of the bias of the majority of the voting community and to this extent, 'One group's solution becomes another group's problem' (Lindblom 1980:4). Halligan and Power (1992:29) characterise the effect of political parties to be the 'patterning of power'; they have 'the responsibility for determining the relative importance of democratic and bureaucratic values. Put more plainly they settle on and seek to impose, their policy agenda. As a consequence of power imbalances within and between groups, some issues are organised into politics while some are organised out. As will be discussed later in this chapter, the ability to put something on, or keep something off, the political agenda is a critical outcome of politico-power relationships.

In the context of the narrative that follows, it is appropriate to bear in mind that politicians and politics only became instrumental in directing the course of administrative events in Australia from the late 19th century. Up until that time authority resided in either a governor or largely 'appointed' legislatures. The emergence of political parties and the party system only began in the 1890's (Jaensch 1992:194).

Yet it still took several decades for power to shift from the entrenched bureaucracies to politicians due to the fact that early governments tended to be amalgams of common interest groups and factions. The ever-changing allegiances on the floor of the legislative chambers diluted the power of political leaders, and this was only overcome when the two party system materialised with the emergence of a strong Labour Party and a strong Liberal Party.

As the discussion that follows in Chapters Nine to Eleven will illustrate, politics and power in the *waste debate*, as elsewhere, are inextricably linked. 'All politics is a struggle for power' (Arendt 1970:35), and democracy, as the manifestation of a power system, purports to involve the governed in decision making. Politics is as often more about the avoidance of issues as the resolution of problems. In the event that the issues relating to

the disposal of waste are politicised, for example in regard to the siting of a waste disposal facility, the political party in power will generally 'run for cover' as no electoral advantage is ever achieved by supporting an unwanted land use.

Policy

Public policy is the complex interplay of values, interests and resources. Policies express values, support or curtail interests and distribute resources. They shape, and are shaped by, the constituent elements of politics, so that policies represent victories or compromises encapsulated as programs for action by government (Davis and Weller 1993:2)

Policies are the templates against which waste disposal strategies are wrought. Policy is the formal expression of the means proposed by government, and non-governments, to solve those problems. Policy is not the exclusive possession of government. Non-government organisations have policies too, but they lack the power to utilise public resources or legal coercion mechanisms, as do governments. In the corporate sphere policy may be enshrined in the strategic plan or corporate mission statement. In social movements *policy* may be contained in a *manifesto*, the document of incorporation, or the constitution or rules of the organisation.

As the siting of many waste management facilities illustrates, waste management policy is often the outcome of compromise built upon compromise by politicians who seek to 'reconcile conflicting and convergent societal interests through compromise and negotiation in a public sphere' (Doyle and McEachern 1998:13). Policy is 'often made amid uncertainty and tested in the most demanding of circumstances' (Bridgman and Davis 1998:5). Davis and his co-authors suggest that 'Public policy is the interaction of values, interests and resources, guided through institutions and mediated by politics' (Davis et al. 1993:16).

'Locational conflict is a political process that demands that ...policy decisions be debated and made explicit' (Lake 1987:xviii). The protagonists in these *locational debates* are politicians and bureaucrats drawn from all levels of government, planning consultants and environmental protection agencies, residents close to a proposed site and the wider community within the region and the state, environmentalists from near or far and industrial corporations (Lake 1987:xv-xxvii).

In practice, policy formulation is incremental, using what Lindblom called *small experiments*, to see if familiar responses can resolve an emerging problem. Hence the emergence of the incremental response; 'Policy making is a process of successive

approximation to some desired objective in which what is desired itself continues to change under reconsideration' (Lindblom 1959 cited in Bridgman and Davis 1998).

Official government policy is the public articulation of the government's *position* on a matter. Whatever the private views of those who comprise the government, it is the official *government line* which must be adhered to, that is at least until it becomes totally untenable. Considine (1994) suggests that policy emerges as a clarification of public *values and intentions*; the commitment of government money and services; or, the means of granting of rights and entitlements to a project. Any one of these three actions is an exercise of power by government. Without delving into the origins or outcomes of policy, put plainly 'A public policy is an action which employs governmental authority to commit resources in support of a preferred value' (Considine 1994:3).

The term *policy* may be used differently by practitioners and academic observers; yet it is 'a concept that dominates our understanding of the ways we are governed' (Colebatch 1998:1). In the waste debate (as elsewhere), policy is evidenced by outcomes. Yet practice and practicality, directed by politicians, has resulted in a lack of consistency in waste management policies and hence waste disposal outcomes. Perhaps the most glaring of these inconsistencies is to be seen in the growth of the landfill disposal option at the expense of cleaner, but more expensive options.

Ideally statements of policy should precede commitments and actions. In reality, however, policy statements often tend to follow events. When government announces *policy*, more often than not it is simply a means to give a fairly routine proposal special significance (Colebatch, 1998:2). *Policy* conveys the *imprimatur* of significance in an age when governments strive to lead from the front and seek to differentiate their initiatives from those of their oppositions. While health issues were on the political agenda from the early days of colonisation through until the 1950's, Australia was arguably a *policy free zone* in the areas of environmental management, and specifically waste disposal.

Public policy is *political* in nature. 'No matter how much decisions are proposed by experts, legitimated by learned tribunals or justified on grounds of economic or technical rationality, policy is above all about politics' (Davis et al 1988:8). It is a political outcome. Policy is intended to appear *intentional*, that is, designed to achieve a stated or understood purpose. It involves decisions and their consequences; it is *structured and orderly*. Policy is, in theory, *dynamic*; '...policy is the continuing work done by groups of policy actors who use available public institutions to articulate and express the things they value' (Considine 1994:4). Yet it remains a political outcome, often perceived as a *knee*

jerk reaction to a crisis; an *ex post facto* remedial response formulated by a political strategist.

Colebatch (1998:3) states that policy usually "rests on three assumed characteristics of organised action", *coherence, hierarchy and instrumentality*. *Coherence* is the assumption that all bits of action fit together. *Hierarchy* is the presumption that the process is about people at the top giving instructions. *Instrumentality* is that policy is to be understood as the pursuit of particular purposes, that is, policy objectives. This leads to a statement of the obvious, namely, that *democracy* as a power system is self-sustaining as it creates and reinforces structured forms of government that, by their very nature, are centripetal. Policies are, in a sense, the mortar in the edifice of structured government of which political parties are the builders.

As we have seen in a notionally democratic society, politicians need to be responsive to community problems. The problems that *need to be solved* form the bases of policies. As observed by (Davis et al. 1988:8) 'policy is above all about politics [it is] a point of firmness built into a continuing flow' used by those in public life in their 'attempts to shape the way public life is organised'. Policy 'should define and achieve social goals and not just administer the spaces left by unregulated capitalism' (Davis et al. 1988:3). It does not have to have the rationality of democracy for 'the test of good policy is not whether it is rational, but whether it is acceptable to participants' (Davis et al 1988:3).

The difficulty with these formulations of policy is that the siting of waste disposal facilities is generally politicised, and in this context as will be discussed in relation to the Fourth Epoch of Urban Waste Disposal, the outcomes are not always rational in the sense of being the best possible outcome. An observable fact of Australian politics is that Ministers of government change frequently and traditionally 'lack endurance in their positions compared to others in these policy sub-systems' (Considine 1998:33). The more contentious and area the more likely it is that ministerial changes will occur.

Another factor, which has characterised waste management policy, is that major policy changes have often been the foreshadowed promises of opposition parties prior to elections. Such promises have led to waste management facility closures in New South Wales, and possible siting approvals negated in Victoria. As a consequence policy decisions tend to be intermittent and often unpredictable. Waste management policy has become a slippery political football and thereby less sure and certain than many other aspects of 'routine' governance.

Another perspective, particularly relevant to waste disposal facility siting issues, is that once a policy, relative to mode or place of disposal of waste is made and acted upon, the magnitude of the economic commitment, may make it difficult, or impossible, to change that policy. As will be discussed in Chapter Seven, once incineration was decided upon as the best means of waste disposal early in the Third Epoch, and incinerators were built, the direction of waste disposal policy became locked-in, in some cities, for the next forty or more years. Similar issues arise, relative to the siting of landfills, in the Fourth Epoch as will be discussed.

The Policy Cycle: the iterative nature of policy formulation

Recognition of the iterative nature of policy formulation and implementation, and of its fluidity, is captured in the notion of the *policy cycle*. This term suggests a sense of order, often not reflected in practice. However, it is a useful tool in identifying the components in the process. As Lindblom (1980:5) has observed, policy does not always emerge as the logical outcome of an orderly system. It is a paradox, 'without beginning and without end...the result of a complex set of forces'.

Bridgman and Davis (1998) discuss the *policy cycle* as a construct that gives order, system and rhythm to an outcome that might otherwise appear disordered and chaotic; 'It starts with identifying issues, then moves through analysis and implementation to evaluation of the policy's effects [and is] a tool, a guide designed to inject rigour but not to limit potential and creativity' (Bridgman and Davis 1998:21). Bridgman and Davis (1998) go on to suggest that *policy* is a metaphor for *list*, yet, 'politics and government is not that neat'. Lindblom appears to take the general view that policy making is not always rational and that it is a contradiction in terms to see policy formulation as well informed or scientific and at the same time democratic (Lindblom 1980:5-6).

As has been discussed politics, and hence policy-making is about resolving *issues*. Issues create their own urgency as they generally emerge from conflict. As well organised pressure groups know, issues can be orchestrated, positioned and amplified to ensure that they *find* the media. 'An important way in which an issue may gain access to a government agenda is by expanding [it] in scope, intensity and visibility' (Bridgman and Davis 1998:32-35). The media are always *issue hungry*. Hence, the publication and politicisation of an issue, calling in the television cameras and/or resorting to hyperbole, or creating a *disaster scenario*, are tools-of-trade to experienced oppositional groups. Issues are often kept on, or kept off, a political policy agenda by the media.

Governments, in formulating their policy agendas, ignore "issues" at their peril. 'An issue arises when a public with a problem seeks or demands governmental action and there is public disagreement over the best solution to the problem' (Bridgman and Davis 1998:34-35). As is evident from reading the daily papers, each problem must compete for official attention because of limited time and resources and hence 'the important tends to be obscured by the urgent' (Bridgman and Davis 1998:34-35). The demands that policy makers choose, feel compelled to act on or at least appear to be acting on, then constitute the policy agenda.

As will be discussed in the chapters that follow, policy in regard to waste disposal outcomes needs to be ordered, consistent, logical and forward-looking, yet ready to adapt to ever-changing circumstances. In practice though, as discussed earlier, policies with respect to waste disposal have tended to be intermittent. Policies have often been conceived and implemented *on the run* as political compromises, in a *decide, announce and defend* mode, being more in harmony with the political, rather than the geo-physical environment.

In this difficult policy making climate of governments and oppositional groups alike have often resorted to the use of specialist consultants to delay, promote, or protect policy outcomes or to defuse issues. As will be seen from the narrative that follows, Royal Commissions, Select Committees or the Experts' Reports have often been called in aid to smother or redirect debate. The last thirty years has also seen the *beatification* of consultants and the emergence of the *expertocracy*. In this climate, the historical narrative on waste management can appear to be a catalogue of successive consultant's reports. While this can be interpreted as an aspect of the iterative processes of politics and policy formulation, often beneficial to fashioning effective waste disposal strategies, at other times, such reports can smother the facts and lead to unsatisfactory outcomes, as will be discussed in later chapters.

Power

Ultimately, decisions taken with respect to urban waste disposal rest with those politicians, and political, parties who wield the greatest power. The choice of waste disposal options and the siting of landfills have generally been hotly contested power struggles. Politicians and their administrative support systems may use their power to make and give effect to decisions, to create delay, or alternatively to take no decision at all. The actual implementation of a decision once taken may be delayed or obstructed indefinitely. Power is central to democracy. In the correct balances it can either see the flowering of

democracy, or its denial. Power, in the political context, can be as subtle, or as unsubtle, as the politicians who wield it. It takes many forms.

Power grows out of the barrel of a gun.
(Mao Tse -tung in Arendt 1970:11)

Despite the blunt rhetoric of Mao, the theoretical analysis of power shows it to be both a complex and elusive concept. It is, and remains, in the words of Gallie an 'essentially contested concept', that is, a concept *the proper use of which inevitably involves endless disputes* (Gallie 1956:167 *et seq.*). Power is intrinsic to the practice of politics, and 'is involved in all environmental conflicts and policy making' (Doyle 1998:5).

Power exists in the context of all *political relationships* and is integral to compromise, and hence, to the formulation of public policy. While *public policy* is inherently difficult to define (Bridgman and Davis 1998:3), it can be described by its characteristics which correspond to the *coherence, hierarchy and instrumentality* of Colebatch's analysis of policy which is discussed earlier in this chapter.

Hobbes defined 'the POWER of a man [is] his present means to obtain some future apparent good'. To Voltaire it was personal coercive control reflected in his words, 'making others act as I choose'. Hobbes characterised power as a *potential*, in contrast to Voltaire, who saw it as a *fait accompli*, an outcome or an actuality. Weber identifies power as 'the chance of a man or of a number of men to realise their own will even against the resistance of others who are participating in the action' (cited in Hindess 1996:2). Bertrand Russell stated that power is a means for 'production of intended effects' (cited in Lukes 1991:85-86). Power to Hannah Arendt 'is an instrument of rule'; rule being a form of domination (Arendt 1970:36).

The Power Debate: Pluralists versus Elites in the derivation of current concepts of Power

The body of literature on the analysis of *power* is extensive. The *power debate* initially gained momentum in the late 1950's in America and carried on through to the 1970's with a focus on such issues as the power of *ruling elites*, pluralism, and the impact of wealth and reputation on power.² The context of this debate was the period of post-war prosperity in America, the explosion of consumerism and the recognition of the growing

² The elitist view was that "The political system is divided into two groups: the *elite*, or the 'political entrepreneurs' who possess ideological commitments and manipulative skills; and the *citizens at large*, or the 'apolitical clay' of the system, a much larger class of passive, inert followers who have little knowledge of public affairs and even less interest." (Walker 1966) Walker adopts the expression "apolitical clay". Walker interpreted the elitist view of democracy as 'conservative', and ignoring the individual by focusing on the system.

social, economic and racial inequalities within society. What these debates led to were revised notions of citizens' rights born of rising community activism and a redefinition of democracy.

The issues contested by these American commentators in the 1960's have formed the foundations of contemporary discussions by such writers as Lukes (1991) and Hindess (1996) who have 'brought power up to date' in the current social and political context. For this reason, a brief review of the opposing views espoused by the pluralists and the elitists is instructive to understanding how power is presently conceived.

Going back to the 1950's, Talcott Parsons set the power debate in motion when, in 1957, he propounded what Lukes later referred to as a *functionalist consensus theory*. Parsons defined power as the 'generalised capacity of a social system to get things done in the interests of [achieving] collective goals' (Lukes 1991:108). This conception of power, as an *outcome* manifested within the community, then became the central issue in the debates through the 1960's and 1970's between the elitists and pluralists.

The American pluralist *power debate*, with Dahl, Wofinger and Polsby in the lead, adopted what was termed a *behavioural methodological* approach to power. They agreed that the distribution of power is certainly unequal, but concluded that this did not mean that it was inevitably in the hands of a unified elite (Hindess 1996:3).

The pluralists took the (liberal) view that the possession of power can only be identified with confidence in cases of overt conflict; power relates to observable behaviour and can be measured empirically as an outcome (Hindess 1996). This approach was vigorously challenged on the basis that it only looked at concrete decisions as evidenced by the resolution of overt conflict. It did not look at the underlying structures.

In 1962 Bachrach and Baratz, in the *Two Faces of Power*, attacked Dahl, and the pluralists, forcefully arguing that; 'In sum, since he does not recognise both faces of power, Dahl is in no position to evaluate the relative influence or power of the initiator and decision maker, on the one hand, and of those persons in power, who may have been indirectly instrumental in preventing potentially dangerous issues from being raised (Bachrach and Baratz 1962:952).

Bachrach and Baratz agreed with the pluralists that the concept of power remains elusive, that 'power structures are not stable over time, and that nothing categorical can be assumed about power in any community, yet they took a strong oppositional stance to

such views arguing they were superficial. They looked to the underpinning of power in the community, and asserted that the pluralists have begun...

...their structure at the mezzanine without showing us a lobby or foundation, ie they have begun by studying the issues rather than the values and biases that are built into the political system that, for the student of power, give real meaning to those issues which do enter the political arena (Bachrach and Baratz 1962:947-950).

In 1963, Bachrach and Baratz published, *Decisions and Non-decisions* which moved the debate along even further. 'Power is relational as opposed to possessive or substantive' (1963:633). Its *relational* characteristics are threefold. First, for a power relation, there must be a conflict of interest or values. A divergence; a preferred course of action and a less preferred course of action. Secondly, a power relation only exists if B actually bows to A's wishes; ie that one prevails over the other. Thirdly, a power relation can only exist if one of the parties can invoke sanctions; severe deprivation for non-conformity; a reward or a penalty. The threat of sanctions differentiates power from influence (Bachrach and Baratz 1963:633).

The academic dialogue continued in the 1960's with Merelman (1968), publishing *On the Neo-Elitist Critique of Community Power* in which he reviews and juxtaposes the views of the neo-elitists with the arguments of the pluralists whose 'methodology studied actual behaviour, stressed operational definitions, and turned up evidence in the context of community power' (Merelman 1968:451). Merelman (1968) then sets about highlighting the deficiencies in the decisional methodology and pluralist premises. He observed that pluralists misunderstand the way influence expresses itself in the community. The neo-elites stated that non-elites were *encased* in values foisted on them by the elite who transmitted their values by a conscious and unconscious *mobilisation of bias*. He contended that, because non-elites were not even conscious of having major differences with the elite they had a *false consensus* with the elite, which limited conflict and decisions in the community to unimportant matters that do not threaten the elite.

Merelman (1968) also raises the phenomenon of *anticipated reactions*. He argued that pluralists are most successful in assessing power when conflict is occurring, yet pointed out that there are many situations in which individuals anticipate that they have no chance to profit by raising an issue. They realise that their powerful opponents will crush them and so *back-off*. There is no engagement, and no overt conflict. These themes are remarkably similar to those introduced and discussed by Bachrach and Baratz. Power includes acts which limit the scope of initiation which is an aspect of the *non-decisions* formulation of power. Merelman argued though that too much emphasis is placed on the power of governments in the decision making process as in fact a 'variety of coercive

devices and sanctions, - organisational, ideological and procedural, - may be used to prevent such concerns from being acted on by government' (Merelman 1968: 552).

Power: the contemporary dialogue

The issues that crystallise out of the elitist/pluralist dialogue have since been picked up and further developed by Lukes and Hindess. Power clearly manifests itself in a multitude of guises. The notions of the *hidden face of power*, *agenda control* and *non-decisions*, which emerged from the pluralist/elitist debates, can be directly translated to the contemporary environmental discourse.

In *Power A Radical View* Lukes (1991) built on the work of the American theorists to provide a constructive tripartite framework of power, 'each (of which) arises out of and operates within a particular moral and social perspective'. He declared the fundamental component of:-

...all conceptions of power is the notion of the capacity to bring about consequences, with no restriction on what the consequences might be or what brings them about.' It is 'the ability to command, which is backed up, either implicitly or explicitly, by force' and 'it allows some men to exercise domination over others (Lukes 1991:108).

Further, Lukes' comments that power is defined as contextual, 'one of those concepts which is ineradicably value dependent ...any given use of it, once defined, (is) inextricably tied to a given set of (probably unacknowledged) value-assumptions which predetermine the range of its empirical application' (Lukes 1974:9).

Lukes first dimension of tripartite power involves a 'focus on behaviour in making decisions on issues over which there is an observable conflict of (subjective) interests, seen as express policy preferences, revealed by political participation (Lukes 1974:15). This corresponds to the *public face of power*. Going beyond this pluralist view, Lukes acknowledges that there is not a *level playing field* out there in the electorate, and that many grievances never make it onto any political agenda; the second dimension of power, the private face of power. Lukes agrees that non-decision making is an aspect of power. Thirdly, he takes this view a step further by recognising that power is not always revealed by considering conflict, because there is no observable conflict. Issues may be totally suppressed; this represents the third dimension of power, its third face. This is consistent with a view expressed by Harold Wilson as British Prime Minister who stated that 'a decision deferred is a decision made' (cited in Bridgman and Davis 1998:38).

The exercise of power may be so stealthy that discerning its role in determining outcomes is barely possible. The subtlety of the *third face of power* comes from its deployment to include some issues and exclude others from political agendas. He looks to situations where peoples' interests are denied by never even being articulated. Power that not only creates the agenda but also make it a preference; 'a kind of power that allows people's interests to be harmed without them being aware of or able to formulate the grievance upon which overt political action would be based' (Doyle and McEachern 1998:25). Setting the agenda involves a 'chaos of factors which come together to explain any single item and its rise to prominence...politicians and bureaucrats have a highly variable role, depending upon the policy field in which they work' (Considine 1998:313-314).

Hindess (1996:4-5) joins Lukes in labelling the rejection of the pluralist view by Bachrach and Baratz as being superficial and restrictive. The private face of power, ignored by the pluralists, is characterised by its ability to covertly exclude the interests individuals and groups from participating in arenas in which decisions are taken which affect community life. (Hindess 1996:4). The everyday manifestations of public and private faces of power bring the private face's more subtle and insidious components into the limelight. The distinction between the corporate and non-corporate exercises of power has been blurred by the *corporatisation* of government in Australia and globally, a topic explored by John Ralston Saul in *The Unconscious Civilization* (Saul 1997). Many government and local government services, waste related services in particular, are now *out-sourced* to private enterprise. User-pays, the catch-cry of the *Corporates*, is now mimicked by government agencies.

The *third face of power* can be seen today in the non-transparency of many 'public' decisions, whether they be government or corporate. With reference to the power of public corporations and the *Wise Use* debate, yet equally applicable to all 'community impacting' decisions, Doyle (1999:5 et seq) has made the timely observation that 'corporations are now the carpenters of the roundtables, initiating and controlling agendas and terms of reference'. He goes on to comment that they are usually self-monitoring and self-regulating and the key questions remain; what gets onto the agenda paper and who gets to sit around the table?.

As will become evident in the discussions that follow, particularly in Chapters Nine to Eleven, power as the *driver* of effective decision making has been central to the issues of how and where urban waste has been disposed of. The lack of appropriate policies linked to an absence of power due, for example, to political insecurity, has resulted in politicians recoiling from taking difficult yet necessary decisions. This scenario was played out in

relation to the proposed siting of a prescribed waste facility at Werribee. In that instance, the costs to the proponent of 'strategic' non-decision making by the Minister contributed to an outcome which saw the proposal scrapped and the appointment of the Hazardous Waste Consultative Committee. Possibly a government with a strong majority, or one not facing an election as was the government of the day, would have acted decisively and followed the advice of the consultative panel to approve the proposal.

Power and Authority

Obviously there is a link between power and authority and once again it is informative to visit the debate that has been generated around the comparison of these concepts over the past few decades. Bachrach and Baratz suggested in 1963 that it was *not useful* to refer to authority as a form of power. Rather, they defined it as a *rational, relational concept*, in the sense that 'without coercion B recognises that the course of action is reasonable'. Authority can be both a source of and a restraint on the exercise of power as 'it both justifies and limits the use of power', and, it incorporates 'a quality of communication' that possesses 'the potentiality of reasoned communication' (Bachrach and Baratz 1963:638-639).

In 1970 Arendt highlighted the *collective* notion inherent to distinguishing power and authority, and rejected the approach taken by Bachrach and Baratz. Just as power is *relational* and 'is never the property of an individual', Arendt identified *authority* as arising out of organisations, whether public or private. "Authority", is the *individual* face of *power* in so far as a certain status or position may confer with it a range of powers on an individual which go with the office, and cease when the office is lost.

Clearly power arises from relationships; it cannot exist in a vacuum. 'Power corresponds to the human ability not just to act but to act in concert' and in a sense is the well spring of authority (Arendt 1970:44-45). Authority amounts to 'the complex of institutionalised rights to control the actions of members of the society with reference to their bearing on the attainment of collective goals' (Parsons in Lukes 1991:108). Authority and the collective structures of control represented by governments and organisations lie at the core of Foucault's interpretation of power. Foucault's view of power, mirrored in the words of Rose and Miller, rests on the premise that:-

States began to be transformed from limited and circumscribed central apparatuses to embed themselves within an ensemble of institutions, procedures, analyses and reflections, calculations and tactics that sought to shape and enhance the strength of the nation through a calculated supervision and administration of the forces of each and all (Rose and Miller, 1989 in Hunter 1993:182).

Foucault's mechanism-of-government-centered analysis of power draws a distinction between *power* in general and the notions of *domination and government*. He conceives of power in terms of the *structure of actions* (Hindess 1996:97). 'Outcomes', to Foucaultian thought, are in a sense predetermined by the institutions of government; what may be characterised as a form of 'political calvanism' given its emphasis on pre-determinism. Foucault's predeterminism is captured through the use of the word *governmentality* which was coined to encapsulate his notion that 'the right disposition of things, arranged so as to lead to a convenient end' could be determinative of outcomes (Tuathail 1998:9).

As discussed in McEachern, (1997) and Doyle, (1998), Foucault never used the word *governmentality*, but it has been used to explain the concept of *governing at a distance* which 'results in [achieving] the ends of government...with decreasing levels of direct intervention and with greater reliance on self government' (McEachern 1997:111 discussed in Doyle and McEachern 1998). The structures of the government become *instrumental* in achieving the intended outcomes of government. Foucault's conception of power, if it is to be related to the theories discussed earlier, approximates to the *hidden face of power*, or the *third face of power* in the Luke's analyses; it is a *strategic or interactive concept of power* which does not treat power as a *static resource consciously invoked by government*.

The Power of Money

In practice, if we look at the role of such bodies as the World Economic Forum and other global fiscally focussed Think Tanks, the importance of the role of democracy in taming unfettered capitalism becomes apparent. The alliances between governments and trans-national corporations seek to over-ride local regulation in the interests of promoting monetary benefits to all parties.

Business is to Schattschneider (1960) a power system of the first order. Money in some situations is synonymous with power, yet ideally, democracy, in its purest articulation, seeks to ensure that those who are without money are not without power or rights. As has been discussed earlier, the monetary value of discarded material is generally determinative of whether it is classified as waste, consigned to the waste-tip, on-sold, or recycled. As will be discussed in later chapters, the solutions applied by governments in addressing urban waste management issues have often been largely driven by economic considerations.

In recent times, one of the dominant factors influencing waste management facility siting disputes has been the relative *economic power* of proponents and oppositional groups. An economically powerful proponent is generally faced-off with an oppositional group that is usually poorer and less organised. The referee is generally a politician standing behind a bureaucrat; a government or government agency. As Schattschneider has observed, while the political system may seek to be 'equalitarian', the economic system is exclusive; 'it fosters a high degree of inequality and invites concentration of power' (Schattschneider 1960:119). Capitalism as an end itself has no respect for the individual let alone the environment. Landfill siting disputes often appear to be a contest between the power of the proponent's dollar versus the value of the opponent's vote.

The term *economic rationalism* has been coined as a convenient shorthand description reflective of the policies pursued by recent governments in Australia; market forces are allowed to become the determinants of a range of social outcomes, often at the expense of the poor. However, as the *waste debate* discloses, the values central to capitalism that involve maximising the exploitation of available resources are antithetical to the holistic, prudential credo of environmentalism and sustainable development. Arguably, democracy and the democratic process should ensure that waste management policies promote environmentally sound practices and social equity. Yet, in practice, political and economic power are played off against each other and what may be termed the *public interest* lies ignored in the *no-man's land* between the two. Ideally, 'Government is about social justice, policy about redistribution...[and]...public policy should define and achieve social goals and not just administer the spaces left by unregulated capitalism' (Davis et al 1988:3).

Power: concluding words

Hence it can be seen that, however complex the analyses and interpretations of power may appear, the issues often revert back to the simple notions enunciated in the greater over lesser definition of Max Weber. As a *stratification theorist* in this debate Weber identified *classes, status groups and parties* as a *phenomena of the distribution of power within a community* (Weber in Lukes 1991:90). Power has been interpreted by Weber as the probability that one actor within a social relationship will be in a position to carry out his own will without resistance, regardless of the basis on which this probability exists (Weber 1968). The exercise of power by government often occurs at the interface between the community and government's administrative arm, the bureaucracy. As will be illustrated in a review of the historical record of urban waste management, those negative aspects of bureaucracy, discussed earlier in this chapter, often frustrate the

aspirations of both politicians and governments. While knowledge alone is not power, ignorance facilitates subjugation (Blau and Meyer 1987:13).

Public Participation.

Public participation, which is integral to democracy, is not a novel concept. As a facet of life, formal and informal participation have long been an aspect of human governance; as familiar to the Greeks of Aristotle's age as to humankind of the twentieth century. As social institutions have become more elaborate, so too have the levels and complexities of participation, both conceptually and in practice.

Landfill siting disputes rest on the plinth of public participation. Siting disputes are unlikely to arise in situations where there is a passive public. As will be discussed in the historical narrative in Part Three, recent landfill siting issues, especially those at Werribee in Victoria and Highbury in South Australia, stand out as case studies in effective public participation.

Participation is evolutionary, *praxial*, and elusive to define. It is 'not amenable to a universally accepted definition and over the years the concept itself, and what it covers, has seen many efforts to define it' (Clark 1995:294). It is both the nemesis and soul of democracy. Too much participation and democracy simply can not work. Too little, and it does not exist. At the core of 'everyday' democracy is the active involvement of the public in decision making processes.

[Public] participation takes many forms. It is a slippery concept easy neither to define nor execute and, like 'democracy', it conjures up socially desirable connotations which can all too easily be countermanded in practice (O'Riordan 1977:159)

Concepts of public participation lie at the heart of democracy. The early administrations of colonial Australia did not tolerate informal participation and did not have in place the mechanisms for formal participation. Representative government in the 19th century brought with it greater degrees of public participation. The various Royal Commissions and public inquiries that will be discussed in Chapter Six, relative to changes in waste disposal practices in the second half of the 19th century, in practice provided forums for public participation. By the second half of the 20th century, informal public participation, as the public took to the streets to express dissent, was a familiar part of the 'political' process.

As an aspect of formalized public participation, Environmental Impact Assessment (EIA) was given formal expression and force of law in the USA through the *National Environmental Policy Act* of 1969. EIA emerged as 'an instrument of preventative environmental management' in the USA (Colombo 1992). By the 1970's EIA had been introduced at Federal and State levels in Australia thereby creating new avenues for formal participation in planning processes. But even with formal mechanisms for public participation being given force of law, many people simply do not wish to participate in the planning decision making process even though outcomes may impact on them directly. An understanding of *participation*, and why people participate, are of particular relevance to the issues surrounding the siting of waste disposal facilities.

A viable theory of public participation must deal with the elemental fact that a few citizens are always called upon to govern the remainder. The problem is one of authority and responsibility, of leadership and capacity, in the context of which the nature and scope of participation are to be spelled out (Wengert 1976 cited in Clark 1995).

The expression *public participation* comprises 'two words that strike fear in the hearts of many project proponents be they private developers or government departments. It conjures up visions of hostile crowds, endless project delays and cost overruns' (Report of the Western Australian, Social Impact Unit 1991:4 in Harding 1998:108). As several large corporate landfill proponents are only too well aware, highly effective public participation in the context of landfill siting is alive and well in Australia. Attitudes towards public participation may range from 'rhetorical enthusiasm to supreme indifference' (Clark 1995).

Participation takes many forms. It can be formal or informal, and is variously described as 'top down', 'bottom up', 'reactive', 'radical', 'self-help', 'conventional', 'innovative', 'full', 'partial', 'pseudo', 'direct', 'indirect', 'active' or 'passive'. It is driven by individuals who cohesively and cleave into and out of strategic affiliations to achieve what, on aggregate, are seen as common goals (Pateman 1970, Edwards 1989, Painter 1992; Munro Clark 1992, Doyle 1995, Sadler 1995 cited in Nicholls 1996).

Participation is integral to notions of democracy and policy-making and is about empowerment and power. In the planning context it is 'the act of sharing in the formulation of policies and proposals' (Skeffington 1969:1). Sarkissian makes the point that if proponents, planners and politicians, do not involve members of the community, the community will involve itself (Sarkissian et al. 1994:3). In the context of landfill siting issues the degree to which the community is involved seems to be relevant to the vehemence of the response.

Arnstein (1969) talks of degrees of citizen power, degrees of tokenism and non-participation. Participation, in terms of the 'ladder of participation' proposed by her, ranges from citizen control to through to manipulation. She contends that consultation which amounts to placation is not real participation if the involvement of the community is purely illusory; if the community can have 'a say' but is in practice not listened to. As will be discussed with reference to the proposed siting of landfills at Werribee in Victoria and Highbury in South Australia, proponents who fail to engage in the processes of public participation when seeking to site landfills, do so at their peril.

The motivation to participate: Why do people participate?

Individuals participate if they believe they can 'make a difference', and in turn, through the very act of participation tend to be empowered to continue to participate further if successful. The antithesis of participation is apathy. The perception of risk, in the environmental context, can be characterised as one of the many triggers that propel individuals out of apathy. Creighton (1981), identified five motivational factors which underpin public participation or involvement in planning processes:-

- Proximity to the development site. People living in the area of a proposed development are more likely to respond; one might almost deduce a direct correlation between proximity and intensity of response.
- Economic interaction with the development or the area. People's perceptions of the economic impact either directly as often the case with landfills in depressing property values or on the other side of the ledger, giving jobs.
- Use of the area. A local community may fear a loss of amenity
- Social concerns. Likely threats to the culture of a local area which may extend to irretrievable damage to the physical environment.
- Personal values. The sense of keeping things the 'way they ought to be'.

Creighton (1981) has also identified four factors which influence why people do not become involved:-

- they believe they are already well represented;
- they consider the level of the impact so small as not to warrant their involvement;
- they are ignorant of the effects of a decision upon them; and,
- they have a sense of apathy and do not believe anything they do will alter the outcome.

From another perspective the motivation to participate is often anagrammatically captured in LULU's (Locally Unwanted Land Uses) and NIMBY (Not In My Back Yard). A

recognisable, negative response to the siting of LULU's³, often produces a NIMBYist response. The NIMBY syndrome is one of the recurrent catch cries of both proponents and opponents in siting disputes. Proponents use it to try to demean their opponents and to trivialise their cause. Some opponents use it to sum up their total opposition to a proposal. It is aptly referred to as a 'syndrome', or an 'identifiable attitudinal pattern', which Lewis discusses as a reflection of one's accepted notions of the proper way to achieve *the good life*, or, alternatively, a reflection of anxieties or fears and the patterned strategies of how best to deal with them (Lewis 1996:6).

Lake defines NIMBY as referring to 'the protectionist attitudes of, and oppositional tactics adopted by, community groups facing an unwelcome development in their neighbourhood'. Lake sees the NIMBY response in the context of 'locational' conflicts, conflicts between 'community and capital', 'an expression of people's needs and fears'. From another perspective the same author states that NIMBY can be characterised as 'selfish parochialism preventing the attainment of societal goals' (Lake 1993:87-93).

There are stronger views on NIMBY. The Introduction to *Toxic Sludge is Good for You: Lies Damn Lies and the Public Relations Industry* (in Stauber and Rampton 1995) quotes an official of the US Governmental Refuse Collection and Disposal Association, who characterised the NIMBY syndrome 'a public health problem of the first order. It is a recurring mental illness that continues to infect the public'.... and required a 'campaign to wipe out the disease'. NIMBY is seen by as a manifestation of too much democracy, echoing the de Tocquevillian view that democracy could be an untenable form of government.

Sandman, in his analysis of risk variables, comments that community responses will be influenced by whether a proposal is seen as 'fair or unfair' and in this context the NIMBY response is 'fundamentally a response to unfairness' (Sandman 1993:41). The issue of fairness is a recurrent theme in oppositional responses to landfill siting proposals.

Paehlke (1990:13) defines NIMBY as a 'socially pathological response to a natural and necessary course of development'⁴. The NIMBY response is 'situated', limited, and is not necessarily based on any philosophical belief that the environment should be protected. NIMBYists don't necessarily wish to have the 'development' stopped, or even modified. They simply want it go elsewhere. It is a self-interested decision aimed at distancing the

³ At the heart of every LULU lie large *negative externalities*. A LULU may be a noisy airport, a dangerous hazardous waste facility, an ugly power plant, or smelly factory (Popper in Lake 1987:2).

⁴ See also under NIMBY; Paehlke, R., Ed. (1995:471). Conservation and Environmentalism An Encyclopedia. London Chicago, Garland Publishing.

LULU from a specific location. This is particularly true in relation to the siting of landfills, given that most communities in late 20th century Australia have decided that landfill is the least desirable form of waste disposal⁵, yet it is seen as the most economically acceptable solution. In an ideal world the preferred option would be the 'INBY option', that is, 'in nobody's back yard'. In a way, through the adoption of a course of least resistance (and cost), this reality is reflected in the trend towards the siting of landfills remote from source of generation of waste.

The antagonists quite reasonably ask, 'Why should a community, particularly if it is a socially and economically depressed community, be forced to play host to the waste generated by affluent neighbouring communities?' The issue of 'dumping' on the poor and the oppressed, often the least vocal and least able to resist invasions of their rights, was explored in the American context by Bullard (1994) in his acclaimed book *Dumping in Dixie*. In his opening chapter, Bullard highlights the fact that 'Because of economic and political vulnerability's the poor and underprivileged they tend to carry the burden of technological development'. He develops the general theme that society does not always act fairly in so far as benefits tend to be spread while burdens localised and, in this context, industry always follows the path of least resistance (Bullard 1994). He coined the acronym PIBBY: *place it in the blacks back yard*.

In industrialising USA this meant that the economically poor and politically powerless African American communities became hosts to dirty industries. As will be discussed in Chapter Nine, the corresponding sociological research has not been conducted in Australia with respect to the location of toxic industries and landfills. However, even at a casual glance at the demography of Australian cities, the location of landfills and dirty industries, tends to suggest that 19th and early 20th century siting decisions followed a not dissimilar pattern to that discussed by Bullard. The *path of least resistance* dictated that poorer, sparsely populated areas, where land was cheap and opposition was negligible, tended to get the noxious industries.

In the past thirty years in Australia, principles of social equity, reflected in the formalised right to participate and be heard, have been incorporated in planning processes in an attempt to address the types of inequalities exposed by Bullard in the American context.

⁵ A typical comment: 'The Committee believes that landfill should be considered as the last choice after the basic principles of waste minimisation have been followed.' Environment, Resources and Development Committee, (1997), *Waste Management Practices in South Australia*. Adelaide, Parliament of South Australia.

Environmental Impact Assessment (EIA)

As discussed earlier, EIA provides a mechanism for formalised public participation in development decisions. Environmental impact assessment is a generic expression to describe a process intended to facilitate, *ex-ante*, the identification and assessment of risks associated with a specific development proposal and to involve those likely to be affected by that planning decision. EIA is defined generically as:-

...a process of identifying and predicting the potential environmental impacts (including bio-geophysical, socio-economic and cultural) of proposed actions, policies and programmes and projects, and communicating this information to decision makers before they take their decisions on the proposed actions (Harvey 1995:1).

EIA is first and foremost a *process*. Clark, writing with reference to the European context, concedes that, being rooted in 'both philosophical and pragmatic considerations', it is not amenable to a universally accepted definition (Clark 1995:295 et seq). This is a view consistent with Australian experience where the process is based on generically similar yet different legislative frameworks in the different jurisdictions, where it will be seen to have been invoked and applied somewhat unevenly between State jurisdictions.

As has been discussed, EIA incorporates mechanisms for *controlled* or *formalised* public participation. It is a procedure that lies at the interface of risk assessment, community participation and the formal administrative processes of planning approvals. In a narrow sense, the fundamental purpose of EIA is to *advise and inform* decision makers before critical planning decisions are taken (Harvey 1998).

Garipey (1991) identifies three functions of participation in the EIA process. Properly conducted it is, first, a validation process which gives credibility and minimises the possibility of legal challenges; secondly, a means of comparing alternatives generated by the public, thereby mitigating perceived adverse environmental impacts; and thirdly, a consciousness-raising tool which can set the environmental agenda by identifying community specific environmental problems (Garipey 1991:354).

As an instrument of formalised, or *controlled* public participation, it is rooted in the philosophical belief that individuals have a right to be *consulted*, *involved* and *informed* with respect to matters that concern them. It is intended to facilitate the involvement of a community concerned with the outcome of a specific planning proposal. Participation in EIA is, in Clark's words, 'concerned with informing, consulting and involving the public in planning, environmental management, EIA and other decision making activities' (Clark 1995:294-5). EIA can be characterised as an extension of environmental economics and

hence is far from value free being rooted as Schumacher states in the materialism of western society (Young, 1991:98). It is an offspring of the uneasy marriage between the rationalism of economics and the broad spectrum of issues ranging from the socio-political to the aesthetic.

A dilemma inherent to EIA lies in its susceptibility to a range of external pressures, political forces and economics. Through its relationship with environmental economics, which is by its nature 'reductionist'; it seeks to value externalities in dollar terms. It can be used either as a tool to justify the sacrifice of an environmental 'good' for a dollar gain or, alternatively, as in the case of chlorofluorocarbons, to seek prohibition of an action on the basis that to do otherwise would inflict an economic loss too great to justify.

The contradiction inherent to EIA lies in the fact that economic valuation tends to be at the heart of the calculus of EIA as it endeavours to weigh-up disbenefits, often seen as risks to a segment of the community, against tangible benefits to, or the amenity of, the wider community. It encapsulates the reality that planning decisions often involve the distribution or re-distribution of risks. This is underlined by the fact that the siting of a waste management facility generally involves one segment of the community being asked to carrying disproportionate amounts of a recognised disbenefit.

The extent to which the EIA process had been determinative of the urban waste disposal outcomes, and the siting of waste disposal facilities, has varied considerably between the jurisdictions under review; an issue discussed further in Chapter Eight.

**Issues Relating to the Disposal of Urban Waste in Sydney
Melbourne and Adelaide
An Environmental History**

PART TWO

The Historical Narrative 1788-1960

Chapter Five **1788 -- 1850**

Chapter Six **1850 -- 1900**

Chapter Seven **1900 -- 1960**



Sydney Cove, Port Jackson. 1788 - W. Bradley.

Sydney Cove Port Jackson 1788 by William Bradley
(Source: Mitchell Library Collection. Sydney. Safe 1/14)

Chapter Five Urban Waste Disposal 1788 -- 1850

Urban Waste Disposal in Australia: 1788-1850

Introduction

We can chart our future clearly and wisely only when we know the path which has led us to the present (Stevenson cited in Tripp 1970).

This chapter, and the two that follow, look at waste disposal in Sydney, Melbourne and Adelaide from an historical perspective from the date of white settlement in 1788 through until the year 1960. In taking this overview, the narrative will address the *who*, *how* and *why* outlined in the Research Questions. Who decided, or did not decide, where waste was disposed? Secondly, how and through what mechanisms are waste disposal decisions taken and implemented? Thirdly, why decisions were taken and what drove the decision-making processes?

At the outset though, it is instructive to comment briefly on the host population, the Aborigines, and the manner in which they treated waste. The state of the environment at the time of arrival of the First Fleet has already been discussed in Chapter One. The nature of the *waste stream* prior to the arrival of white settlers reflects the relative simplicity of the life style of the indigenous population. Their impact on the environment creates a base-line for comparison post 1788.

The Ab-original Inhabitants and Waste

Very little is known of the Sydney Aborigines 'because they were so little studied in an objective manner before they were effectively eliminated from the Europeans' activity space' (Aplin 1988:3). In the eyes of the European settlers they were savages. It appeared that they had:-

No property, no money or visible medium of exchange; no surplus or means of storing it, hence not even the barest rudiment of the idea of capital; no outside trade, no farming, no domestic animals except half-wild dingoes; no houses, clothes, pottery or metal; no division between leisure and labour, only a ceaseless grubbing and chasing for subsistence foods (Hughes 1987:14).

During the sixty or more millennia of Aboriginal custodianship of the land, all waste was organic and biodegradable. There was no *intractable waste*, or hard to get rid of waste, in

modern terms. Robert Hughes, epitomising the European view, suggests that waste lay where it fell, 'The debris of possum skins, fish bones and wallaby guts scattered around ...brought swarms of flies and insects, for the tribal *hygiene* of the nomads consisted of simply walking away from [their] rubbish and excreta' (Hughes 1987:14). The indigenous inhabitants were nomadic and, while unwanted matter was discarded, it was the people, and not the *garbage*, that moved on from time to time. Given the harsh but productive environment, and their relatively small numbers, the Aborigines 'fitted into this rich life system as an integral part of it' (Holmes 1976:78).

The view outlined by Hughes contrasts markedly with that taken by Dr Tim Flannery in *The Future Eaters*, who interprets the *pre-invasion* environment as one of highly integrated, self-sustaining and harmonious co-existence between human beings and a harsh environment (Flannery 1994). In the words of Kingsley Palmer, the *success* of the Aborigines in inhabiting this continent 'was a result of a *status quo* that developed between men and women and the environment' (Palmer 1991:8). Unlike the European settlers who, initially at least, saw *the bush* as hostile, the Aborigines had adjusted to and were a part of their environment. They lived in close association with the land and 'were aware of its potentialities, weaknesses and dangers...the landscape constituted a major component of their *world view*' (Palmer 1991:3).

Discussions with anthropologist Dr Philip Clarke of the Natural Sciences Department of the Adelaide Museum¹ elucidated aspects of Aboriginal, *hunter gatherer*, culture, relative to what we term *waste management practices*. It appears that *tidiness*, in European terms, was generally a secondary, functional outcome, of ritualised practices in societies where sorcery and spiritualism permeated all aspects of life. Places could be inhabited with a spirit life and consequently identified as being implicitly safe or dangerous. Going to dangerous places could lead to anxiety or fear, illness or, ultimately, death. Rituals of cleansing such places, or people who had strayed into them, generally involved the use of fire and smoke (Clarke 2001 pers. comm.).

As discussed with Dr Clarke, sorcery permeated all and could be worked against individuals using *things* connected to them. Hence food scraps, hair, fingernails and excrement, had to be carefully concealed; buried or burnt (Clarke pers. comm. 2001). These ritualised practices, once again, had the functional effect of keeping sites of habitation free of what we term *waste* (Clarke 2001 pers. comm.).

¹18th of January 2001.

Another *waste management* factor was that *hunter gatherers* did not accumulate, store or exchange goods to create wealth. To the Aborigines, *value* did not involve an accumulation of a surplus of objects, but related more to the spiritual, symbolic, or ritualistic value of a thing or place (Palmer 1991:2-8). Within *Aboriginal cosmology*, land could not be *owned* and, where 'ownership' of any thing was claimed, it tended to be communal.

The Aboriginal inhabitants managed their waste in a manner sympathetic to their environment and, after tens of millennia, all that remains visible today are the shell middens. As Powell (1976:9) points out, there was 'successful harmonic adjustment between population and resources' prior to white settlement. The Aboriginal inhabitants clearly had an impact on the physical environment, yet the environment was able to absorb that impact. This was far from being the case as the white settlers, intent on cultivating the land and going beyond self-sufficiency to accumulation of wealth, smothered the host culture and their natural environment. As the narrative will disclose, waste disposal issues were seen as secondary to maintaining water sources and basic health and sanitary conditions in the early colonial settlements.

SYDNEY Early Administration

The arrival of Captain Phillip in New South Wales had been several years in the planning. As noted, the American colonies had been lost to Britain in 1784, making it a matter of urgency to find a place 'either within His Majesties Dominions or elsewhere outside of his dominions' to send offenders sentenced to transportation *beyond the sea* (Maiden 1966:1-5). After several failed attempts elsewhere, New South Wales became the chosen destination for Britains unwanted felons.

The first sixty years of settlement saw a bureaucratic penal military regime transformed into an aggressively independent and democratic social order; a process that began with the arrival of the first free settlers in 1796 (Lancelott 1852). Initially the political vacuum inherent to the regime, and the absence of any form of participatory government or of responsive mechanisms for policy formulation, left the management of sanitation and waste disposal at the whim of an autocratic government. Funding was a key to the provision of all public services and Whitehall was seeking to curb, rather than increase, spending in this remote penal settlement.

Phillip's instructions included the advice to 'bend all his efforts to the establishment of a self-sufficient colony, with the convicts as the chief means to this end' (McMartin 1983:33). And as McMartin goes on to observe, 'in no other colony, before or after, did the central government attempt such comprehensive and detailed control of a colony's affairs as was the case in New South Wales for the first five decades of its history' (McMartin 1983:33). Every one of the white inhabitants was employed, fed and clothed, directly or indirectly, by the government stores. In reality, Sydney was little more than an urban jail for British criminals.

This democratically 'undeveloped' country was essentially a naval-military autocracy (Maiden 1966). In civic government and the amenity and comfort of the 'residents' played an insignificant role in the settlement. In the words of Aplin, in the Preface to *Sydney Before Macquarie*, during its first twenty years, Sydney was 'a difficult, boisterous and often undernourished and undisciplined infant...', yet after a time, 'it entered the *precocious toddler* stage of its growth' (Aplin 1988: Preface). The Governor autocratically oversaw this benevolent dictatorship².

Once the settlement was established, the facilities and infrastructure necessary to maintain and to service a dispersing local population began to be put in place. In 1789 Phillip received a direction from the colonial Office to 'lay out townships of convenient size and extent in such places as you, in your discretion, shall judge proper' (H.R.A., ser.I, vol.1:127 cited in McMartin 1983:10). A reality of human habitation is that it is only when people come to live within *fixed perimeters* that the disposal of waste becomes problematic (Rathje and Murphy 1992). In the case of Sydney, the *fixed perimeter* was, in every sense, Port Jackson, which became progressively more crowded. The population swelled to 5,270 by 1800, 11,566 by 1810 and over 48,000 by 1824. Most people lived within walking distance of the harbour.

Waste Management Practices in Early Sydney

The early settlement at Port Jackson was not a tidy place. The 'excess water and sewage of the central portion flowed into the harbour at Circular Wharf by means of the old Tank Stream. Within this area lived 50,000 to 60,000 people, and only the crudest provision

²The militaristically autocratic nature of government is reflected in the fact that at various times the officer in charge of the New South Wales Corps *ruled* the colony. There were two gubernatorial *interregnums*. When Phillip returned to London in 1792 to have a hernia operation Major Grose and later Colonel Johnson took charge until Governor Hunter arrived 1795. Phillip in fact did not recover his health and did not return to Sydney. Again, in 1808, following the Rum Rebellion and the overthrow of Bligh in 1808, colonels Johnson, Foveaux and Paterson took charge until Macquarie arrived in 1810 (Fletcher 1976: 26).

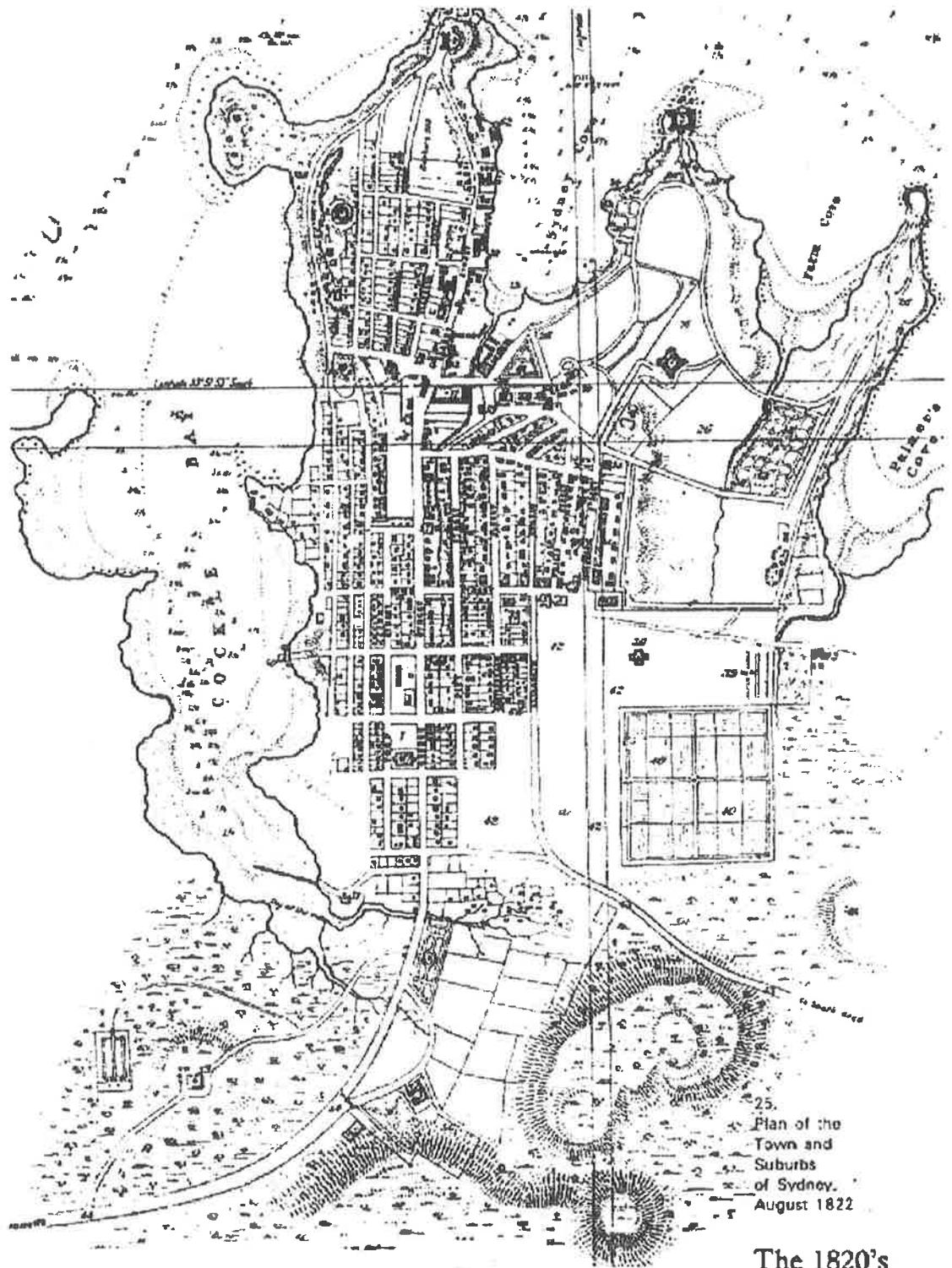
was made to dispose of their household waste and excreta' (Crowley 1980: 185). Coward comments that in the first years of settlement 'numerous vacant blocks in the city became *de facto* rubbish dumps' (Coward 1988:18). The problems of heat and flies, reflective of the overall difficulties faced by settlers in maintaining sanitary conditions, made life extremely harsh for the early colonists.

The mosquitos and flies are in great quantities; the latter will infect fresh meat in such a manner that it is sometimes difficult to keep it free from maggots even one hour after it is killed (Grose and Paterson 1893:799).

There is very little direct evidence, apart from a few incidental eye-witness accounts in the diaries and journals of gentleman travellers, of precisely *how* and *where* Sydney's waste was disposed during the first few decades of settlement. As discussed in Chapter Two, many of these things were simply not written about. However, it is possible to draw inferences from contemporary events. For example, it is safe to surmise that any combustible waste was burnt and, as at the time of colonisation, much of the coastal area around the harbour including the Rocks and Darling Harbour, was swampy mudflats, solids were used for *reclamation*.

Aplin comments that dumping of waste in marsh areas and the head of Sydney Cove began 'on what must have been a private, *ad hoc* basis' in the early years of settlement (Aplin 1988: 22-23). While most putrescible waste was no doubt scavenged by pigs and feral animals, liquid wastes, and matter that was not scavenged, lay in the streets, drains and cesspits. The topography of the city then ensured that any overflow from drains gravitated to the bottom of the *Sydney Basin*. The Harbour became the *cloaca maxima* of the new metropolis and Sydney Harbour became Australia's first *unofficial* dump. Writing of his visit to Sydney in 1846, Lt. Colonel Mundy makes the following observations:-

The sewerage of the town is shamefully bad, though no city possesses a site more favourable for that essential. Most of the drains are on the surface, and during long periods of drought the accumulation of filth becomes beyond measure disgusting (Mundy 1852:46).



The 1820's

Sydney in the 1820's

Showing Sydney Common, later to become Moore Park at lower right.

Source: Mourat, S.,(1969). This was Sydney: A Pictorial History from 1788 to the Present Time. London, Ure Smith.

Mundy goes on to state that drought is followed by rain:-

.....which sets the gutters in motion, and, fortunately for the citizens, carries away down to the sea in its torrents the thousands of specimens of decomposed matter, which have been left to rot in the streets (Mundy 1852:46).

The disposal of waste and the provision of potable water are closely related. The preservation of the clear water springs that collectively formed the Tank Stream³ was critical to Sydney's survival. Reflecting the autocratic nature of government at the time, draconian measures were taken to preserve the purity of the water supply. By 1791 the pollution and siltation of the stream caused the Governor to have a trench dug on either side of the stream and to have a stock proof fence erected in its vicinity (Aplin 1988:32).

By a General Order of the 22 of October, 1795, and a further Order the following year, he provided for the erection and maintenance of a paling fence along the Tank Stream with the added direction that all pigs and paths were prohibited in its vicinity. An Inspector of Fences was appointed. In September 1810, Governor Macquarie published a further General Order in the *Sydney Gazette*:-

And as the erecting or keeping up of Necessaries, Slaughter-houses, Tanneries, Dying-houses, Breweries, and Distilleries on or near the Banks, so as that the Water destined for the use of Man is shamefully and grossly rendered impure by filth of every kind from thence, contrary to the law which prohibits such Nuisances, it is hereby ordered and directed,

1. That no Necessaries (sic) (etc) shall be in future erected on or near to the said Stream, Tanks, or Springs flowing thereto, or thence along any part of their Course through the Town of Sydnay [sic]; and further, that all Necessaries (etc) already erected or established thereon, shall be immediately pulled down, or otherwise suppressed' (cited in Aplin 1988: 33).

In 1811 Governor Macquarie selected the site of what became, if only by happenstance, Sydney's first *official* municipal landfill. By Order dated the 5th of October in that year he 'assigned and caused to be marked out and measured a large common in the immediate vicinity of Sydney for common pasturage of cattle belonging to the inhabitants of Sydney' (Mackenzie 1984:7). The swampy areas of Sydney Common (Moore Park), deemed unsuitable for pasturage, then became used for *reclamation*. Later, as will be discussed in the following three chapters, Moore Park became Sydney's first (formal) municipal dump and, later, the site of the first municipal incinerator in Sydney.

3 The tanks were rock hollows carved in the sandstone to capture the water.

The Changing Nature of Government

The authoritarian nature of government mellowed after the departure of Governor Macquarie in 1821. He was described by Phillips (1909) as the last of the autocrats. In 1832 Governor Bourke issued a Minute stating that the time had arrived for the people of Sydney 'to administer to their own convenience and comfort, by providing, by means of a body elected among themselves, for repairing, cleansing and lighting the streets' (cited in Parkinson 1971:1). Positive steps were taken to ensure that self-regulation and, with it, self-funding, became a part of colonial governance. The state of town planning and the sanitary conditions in Sydney, reflecting a retrospective view of these issues, were discussed in the *Sydney Morning Herald* of the 6th of November 1850:-

The population of Sydney, in proportion to the rest of the colony, has already become so enormous, and is every day increasing at so prodigious a rate, that whatever bodes mischief to the sanitary conditions of the inhabitants must necessarily imply danger to the whole community (SMH 1850).

And with reference to such neighbourhoods as Woolloomooloo, Surrey Hills, Paddington, Pyrmont, the *Sydney Morning Herald* report continues:-

.....to make their thoroughfares fit for the common purposes of traffic would require an outlay of money not easily calculated, and to make them what they ought to be as regards cleanliness and salubrity would require an expenditure which is fearful to contemplate. And along these undrained, unlevelled, unshaped ways and passages, misnamed 'streets', human habitations are springing up by the hundreds and thousand (Birch and Macmillan 1962:129).

Sydney had severe drought conditions between 1827-29, 1837-39 and again in 1849; the first major engineering works undertaken in Sydney began with the construction of a two and a half mile tunnel to carry water from the swampy areas to Centennial Park begun in 1827 (Stephenson and Kennedy 1966:105).

The Transition to Representative Government

The strategies and policies for disposal of municipal waste were in colonial times, as they are today, the outcome of political processes. Governor Macquarie's departure marks a point of transition from penal autocracy to representative government, driven as much by imperatives to make the colony *self sufficient* as by the settlers desire to gain an input into the affairs of the colony. Colonies were seen by Whitehall as major financial burdens and, just as Governor Phillip had been encouraged to do all in his power to create self-sufficiency, so too were his successors. As the sale of 'Crown Land' did not produce the

necessary revenue, the way to economic self-sufficiency was seen to be through the creation of limited, self-funding, local government intended to bring with it the mechanisms to both create and maintain essential services.

In 1824 a nominated Legislative Council, comprising five members, had been established by the Governor. In 1832 Governor Bourke had unsuccessfully attempted to introduce municipal government. However his efforts were thwarted by a populace who resented the prospect of paying for services, including policing, hitherto provided at no cost to them. In the face of this rebuff the Governor introduced the *Police Act* of 1833. This legislative measure gave police and Justices (of the Peace) control of a wide range of matters including the abatement of nuisances. 'Nuisances' in this context included the removal of offensive or noxious waste. In 1834, however, the Lords of the Treasury in Whitehall cut funding for police and jails and put the onus on the colony to service its own needs. There was no money for the management of municipal waste let alone the preservation of public order. This led in time to both a financial crisis (Fitzgerald 1992) and a public concern regarding the sanitary state of the settlement.

In 1835 as Sydney became more prosperous, there were representations by a group of residents 'urging that a general system be adopted for lighting, draining, paving, repairing and keeping in repair the streets, removing nuisances and encroachments and the establishment of a sufficient water supply: the system to be under control of persons nominated by the inhabitants' (Maiden 1966:175). Supported by Governor Gipps, the Legislative Council approved the proposal subject to a Private Bill being presented providing for the creation of a 'Commission of Sydney'. A public meeting was called to approve the Bill that provided for forty-five commissioners, funding from spirit licences of up to twelve thousand pounds per annum, and the balance to be raised by a levy on town properties.

The proposal was hotly opposed at a public meeting that was warned to 'dread and beware of *taxeaters*, *tax-makers* and *tax gatherers*' and of any attempt to introduce direct taxation. The proposal failed. *The Empire* of the 1st of September 'regretted that without reliable argument or calm reflection, the Town Improvement Bill was so unceremoniously treated by the rabble collected at the meeting' (Maiden 1966:176). In 1837 the Legislative Council then passed the *Sydney Building Act* of 1837 which Act placed the Town Surveyor, a civil servant with convicts under his control, to be in charge of sanitation, drainage and other works. The deeper issues of garbage disposal remained unresolved. The filth continued to accumulate.

In July 1839, the Governor, Sir George Gipps, began to promote the idea that New South Wales should have local authorities similar to those in England and, on the 4th of June, 1840, he introduced the *Municipal Corporations Bill* which sought to create a form of local government by passing control of domestic governance to Commissioners. Governor Gipps, however, considered it 'impolitic, if not unsafe, to entrust any people with a control over their government in the exercise of its higher functions,...' (Historical Records of Australia, ser. I, vol.20:641).

The *Sydney Gazette* of the 25th of March, 1840, supported the proposed Bill provided the franchise was restricted to persons who were *entirely free* and who occupied property of a rental value of not less than fifty pounds per annum (cited in Maiden 1966). Taxation, again, was the issue. By this time transportation of convicts had ceased⁴ and with it the ready availability of 'free' convict labour for public works. The other source of funding, the proceeds of sale of Crown Lands, was now to be placed in the *Land Fund* which all agreed was only to be used to promote immigration. W C Wentworth, who had promoted the *Town Improvement Bill* four years earlier, led the opponents and argued that it was a taxing Bill and therefore *ultra-vires* the power of the nominee Legislative Council. Strong opposition was based on the fact that emancipists were given rights equivalent to those of free settlers. Vested interests controlling the *Sydney Herald* and the *Sydney Gazette* urged rejection and, with the prospect of civil unrest, Gipps then withdrew the Bill. The *Sydney Herald* lamented on the 7th of May 1842 that:

With all the elements of self-taxation we have neither the dignity of a chartered city nor the plebeian rights of an incorporated borough. With water running along our streets we are not allowed to conduct a single branch line to our houses. With mess and filth which every day accumulates we have scarcely a sewer to carry it off. Five thousand houses and no drains – what a condition for a British City (Maiden 1966:179).

Four days after this report in the press, Gipps presented the Sydney Corporation Bill to the Legislative Council. Wentworth persisted with his constitutional objection and there was a public meeting of 700 residents of whom a 'tolerable sprinkling were respectable citizens'⁵. The politically astute Gipps then promised five thousand pounds per year towards maintaining a police force and a like amount for public works including sewers. On the 20th of July 1842 the Sydney Corporation Act was passed. Sydney was declared a city. However, municipal government struggled to survive.

4 'It now is one of our great drains for surplus population, and it can scarcely be deemed a convict settlement, as in 1840, her Majesty in council decreed, that, from and after the 1st of August in that year, the transportation of convicts thereto, should altogether cease'(Lancelott 1852).

5 *Sydney Herald* 30th June 1842.

In its first four years the Corporation 'not only failed completely to carry out one single purpose or duty for which it was constituted other than to set up its organisation, but it had accumulated a liability of £1315 in the process of its ineffectual endeavours' (Maiden 1966: 63).

By *Imperial Act 5 and 6 Vic.* 30th July 1842, notified in the *Government Gazette* in January 1843, New South Wales gained limited representative government. The Act of the British Parliament provided for the creation of a Legislative Council of 36 members 24 of whom were elected, and, as stated in the Preamble, 'Whereas it is expedient that provision be made for the local government of the different parts of the Colony it shall be lawful for the Governor, by Letters Patent, under the great Seal of the colony of New South Wales to incorporate the inhabitants of every county within the colony or such parts of counties, or other divisions, as to him seem fit to form district councils of the purposes of this Act' (Maiden 1966: 49).

From its inception, the Sydney Council had limited means to raise funds and was generally under resourced. At the same time it faced mounting pressure to provide more and better services, particularly with respect to water supply, sanitation and waste disposal. As contemporary reports indicate, prior to the creation of local government, neither the *Police Act of 1833* nor the *Sydney Building Act of 1837* solved the city's waste disposal problems. At best, they were measures for policing existing 'nuisances' and did not address the deeper long-term issues.

The provision of a reliable and safe water supply⁶, and effective waste disposal services for Sydney, remained distant dreams. Issues of waste disposal and pollution continued to be issues of public concern and, as a consequence in 1847, the first Inspector of Public Nuisances was appointed.

Hence it can be seen that during the early years 'Civic government as we know it played an insignificant role in the settlement of a little known and entirely undeveloped country which was essentially established under a naval-military autocracy' (Maiden 1966). During the next fifty years Sydney had no choice but to address the task of getting its municipal management in order, clean-up its back yard, and systematically regulate the disposal of its waste.

6 The erratic nature of the water supply was finally addressed in 1867 with the building of dams at Botany. By 1875 there were six dams, however pollution of the catchments led to poor water quality, rationing, discontent, select committees and then Royal

MELBOURNE Settlement and Early Administration of Port Phillip District

Victoria, as we now know it, was first annexed to the Crown in 1770 as a part of the colony of New South Wales. The settlement of the Port Phillip District in the 1830's, and the founding of Melbourne leading to the creation of the colony of Victoria, marks the beginning of a new and different chapter in Australian history.

The New South Wales government's initial attempts to settle the Port Phillip District failed. On the 5th of January, 1802, Acting Lieutenant John Murray located the entrance to Port Phillip Bay. Six weeks later, in late April 1802 Commander Matthew Flinders entered Port Phillip Bay unaware of Murray's earlier visit⁷. A year later, in 1803, Port Phillip was surveyed by Charles Grimes who discovered the Yarra River. Later, in the same year Colonel David Collins then arrived from Sydney with a party of convicts and attempted to colonise Port Phillip. However, within a matter of weeks on the 27th of January, 1804, Collins abandoned Port Phillip as unfit for habitation due to a lack of a secure water supply. The next official attempt to create an official settlement did not occur until 1826, two years after Hume and Hovell had completed the first overland journey from Sydney (Victorian Year Book 1892).

It was gentlemen sheep farmers from Tasmania in search of new grazing lands, notably William Batman, John Pascoe Fawkner and J T Gellibrand, who first established a permanent settlement at Port Phillip Bay in 1835 (Victorian Year Book 1892). Batman and his colleagues had formed the Port Phillip Association, much to the irritation of the bureaucracy in Sydney who were not about to relinquish the sovereignty of the Crown or *ownership of the soil*, by default (Jones 1981) to a group of *squatters*. Batman and his colleagues had succeeded where the colonial administration in Sydney had failed. The 'success of the enterprise was a triumph of private enterprise and individualism, and was seen as such, all the more strikingly in view of the failure of the Crown's two attempts to colonise Victoria (in 1803 and 1826), ignominious ventures that displayed lack of initiative and spinelessness' (DeServille 1986:56).

Commissions. It was not until 1887 that water supply was secured with a pipeline from the Nepean River.

⁷ Flinders observed in 1802 that 'the country surrounding Port Phillip has a pleasing, and in many parts a fertile appearance; and the sides of some of the hills and several of the valleys, are fit for agricultural purposes.' A description which influenced Governor King to found a settlement there (Austin 1964:131).

Melbourne's *reason for being*, and early days of settlement, contrast markedly with those of Sydney. 'Melbourne was an afterthought of a settlement and a by-product of the pastoral industry rather than a colony in its own right' (Lewis 1994:Introduction). However the antagonisms between Sydney and Melbourne flourished. The inhabitants of Port Phillip established a Separation Association in 1840. The palliative of giving six seats to Port Phillip representatives on the Legislative Council in NSW was doomed to failure.

The new settlement which began as a collection of tents grew haphazardly, with none of the infrastructure necessary to ensure a clean and hygienic environment. In 1839, four years after the formal settlement was recognised, Superintendent La Trobe was sent to Melbourne to impose order as the representative of the colonial government in Sydney. The state of squalor that greeted La Trobe is reflected in the fact that the town's leading butcher, John McNall, was brought before the courts because the 'filth and offal in his premises at the corner of Swanson and Collins Streets was so great as to injure health and destroy comfort'. In 1841 the *Gazette* reported on 'the beastly state of the town', 'water stagnant and putrid', and commented that it was 'strange that so little disease is generated from the pestilential miasma⁸ arising from these sources' (cited in Cannon 1991: 220-221). Moreover:-

Swine of all descriptions, shapes and sizes have been permitted to stray about the streets of Melbourne, until they become a public nuisance. Not long since a child was dreadfully mangled by a ferocious sow in Little Flinders Street, and more recently a child had its ear torn off by a pig in Newtown (*Port Phillip Patriot*, 18 February 1841 cited in Grant and Serle 1957: 44).

La Trobe directed the Police magistrate to use the local officials 'to oblige all parties to remove offal or other nuisances from the vicinity of their dwellings, and also to keep the town clear of stagnant water' (cited in Cannon 1991: 220-221). Soon after incorporation, the Council petitioned Superintendent La Trobe that 'it is of vital importance to the health of the inhabitants that there should be parks within a distance of the town where they could conveniently take recreation' (cited in Whitehead 1997:3)⁹. In response La Trobe set aside large tracts of land around the city. However, there followed a lengthy contest as to whether the government or the city council should have control of these areas¹⁰. On the northern side of the town 2560 acres were set aside. This area later became Carlton Gardens, Royal Park, Princes Park, Melbourne University and the General Cemetery (Lewis 1994). Parks served as *de facto* rubbish dumps.

8 Miasma; 'a smell is a disease' (Chadwick in Coward 1988:4)

9 See also see Wright, R.,. *The Bureaucrats Domain: Space and the Public Interest in Victoria 1836-1884*. OUP:33-34

10 Flagstaff Gardens was not handed over to the council until 1917.

As in Sydney, slaughterhouses caused particular concern. In 1841 slaughterhouses were established along the Yarra as a public facility at government expense. In 1842 3,600 cattle were slaughtered along the Yarra and this figure quadrupled within ten years. The offal simply went into the river where tidal movements were relied on to carry it away. The stench in summer must have been almost beyond description. In March of 1844, the Melbourne Town Council passed By-Law No 10 'for the more certain prevention of nuisances occasioned by persons throwing the carcasses of animals into the River Yarra Yarra, within the town boundary, and to provide for the removal of the carcasses of animals drowned therein'. Yet this did not solve the problem.

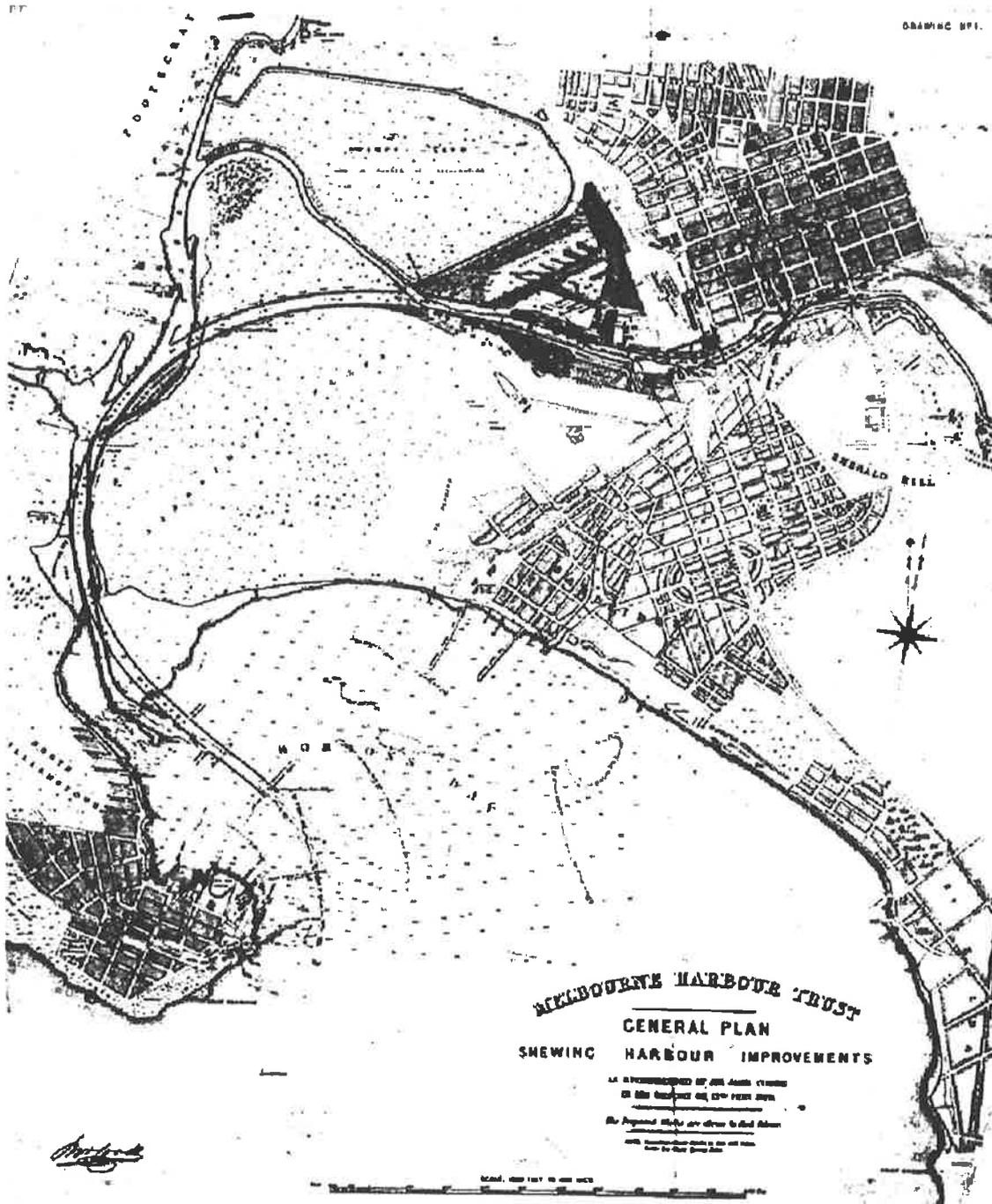
The colonial diarist William Howitt recounts that, in 1852, when sailing down the Yarra, he observed, 'a fenced-in yard on one side, in which stand poor and wretched victims, amid mountains of the heads of their predecessors, from which a host of pigs are rending the flesh...half in the river are equal heaps of entrails and garbage, which other swine are rending' (cited in Cannon 1991:230). Thomas McCrombie, who was on the Council's Sanitary Committee, wrote in 1847 that:-

...the town is in a fearful state. The want of common sewers and a proper system of drainage was *felt severely* during the last summer.....the heaps of filth which lie unnoticed in the back lanes---the pools of stagnant water impregnated strongly with vegetable matter -- all increase the danger which the inhabitants run of having their hearths swept by plague and fever (cited in Cannon 1991:230).

McCrombie observed that there was a 'lack of a soundly engineered plan to allow noisome waste products to flow into drains and sewers' (Cannon 1991:225-226). At a time when Melbourne had a population of about 12,000 people, a point of intolerance had been reached and, with a representative Council, the means were at hand to address the issues¹¹. The outcome was the *Report of the Sanatory [sic] Committee*, 31 August, 1848; a comprehensive report on the disposal of waste in the City of Melbourne (Sanatory Committee 1848). The Committee was appointed to 'report on the best means of improving the Sanatory [sic] condition of Melbourne' and commented on:-

...the way in which the dwellings of the humble classes are huddled up in the lowest portions of it the filthy condition of the Courts and Alleys over which the Legislature of the Colony has refused to give the Council any control, the absence of any Law of the regulation of Building, the want of any sewerage and a copious supply of water, and that the finances of the Municipality are inadequate to the construction of such works (the Committee) have been careful in offering suggestions not merely excellent and desirable in themselves, but which the Council is also in a position to carry out (Sanatory Committee 1848).

¹¹ The Town of Melbourne became a City on 26th of June 1847. This was gazetted in Sydney on 5th February 1848 (Victorian Year Book 1890-91:6)



Melbourne 1879

Showing the areas of swamplands contiguous to West Melbourne.

Source: Carroll, B., (1972), Melbourne and Illustrated History. Melbourne, Lansdowne Press.

The Committee identified the 'filthy condition of the narrow Streets, Courts, Alleys and Backyards, the Slaughtering of Sheep and Pigs on the premises of Butchers within the City' and that 'the accumulation of animal and vegetable refuse must necessarily be attendant upon the congregation of human beings into the confined limits of large Cities, thereby creating putrid and noxious vapour which both predisposes to disease and fans its fury' (Sanatory Committee 1848).

The Committee of 1847/48 sensibly came up with two sets of recommendations, those that were not within the 'present ability of the Council to carry out' and those beyond its present means. The first category included 'a proper system of Sewerage of upon some comprehensive plan', to levy a sewerage rate, the provision of a water supply, the prohibition of new slaughterhouses within the city and the framing of a *Building Act*.

The Committee's second set of recommendations related to those it could adopt 'trusting that the propriety of this arrangement will at a glance be recognised by the Council'. These included a 'request to the Legislative Committee to frame a By-Law for the prevention of slaughtering stock of any description within the inhabited portions of the City of Melbourne', to request the Mayor to enforce as 'stringently as possible' the provisions of the Police Act and to 'use every precaution to remove the masses of offal which disgrace many portions of the City', to carry out a system of surface drainage, to get approval of the Executive 'to clear the space between the City and the Beach so that the obstruction to the free access of pure sea air may be removed'. Finally the report asked that the government be informed of the 'danger to the public health of laying out a narrow lane alternatively with a wide street.'

Thus by 1848, the municipality of Melbourne was making some attempt to systematically manage its waste stream.

ADELAIDE Settlement and Early Administration

In contrast to the settlement of both Port Jackson and the Port Phillip District, the settlement of Adelaide began as a well-ordered, chartered, and carefully planned exercise, promoted by idealistic social reformers, backed by capital from private sources, and promoted by an over zealous London-based South Australian press (Richards 1986).

The events leading to the 'formal' settlement of South Australia contrast markedly with that of its sister colonies to the east. Just as the American Revolution and the loss of the American colonies had a direct bearing on the settlement of New South Wales, the repercussions of the French Revolution and the Industrial Revolution in England set the stage for what was seen as a *bold utopian experiment*; the settlement of a free colony for free people in South Australia. At its core was the notion of self-supporting emigration, a factor which would have appealed to Whitehall.

In 1808 the French cartographer, Freycinet had produced a map showing the area of South Australia as '*Terre Napoleon*' with its adjacent gulfs as the, '*Golfe Bonaparte*' and '*Golfe Josephine*' (Kerr 1978). The threat of a territorial claim by the French was no doubt a factor that recommended early colonisation and aided parliamentary support. 'The colony was conceived and delivered amid a welter of propaganda and publicity', most of which was conjured up by Edward Gibbon Wakefield, whom Pike refers to as 'capricious, unscrupulous and avid for influence and fame' (Pike 1957:53). Wakefield was helped by Robert Gouger, who, by contrast, is described as, 'efficient, single-minded and faithfully devoted to any duty undertaken' (Pike 1957:53). Planning and promotion of the colony that Bentham suggested should be called *Feliciania*, *Felicitania* or *Liberia*, had begun in earnest in 1829. Edward Gibbon Wakefield¹², as an enterprising businessman and shrewd theorist, had allied himself with Bentham, the intellectual champion of the *middling classes*. Bentham¹³ who emphasised the values of *self worth* and the doctrine of *the-greatest-happiness-for-the-greatest-number*, 'brought him disciples from almost every rank of English society' (Pike 1952:68).

In 1831, the eighty year old Bentham devised what he termed 'the vicinity-maximising-and-the-dispersion-preventing-principle' (Pike 1952:71) for this 'middle class utopia in the southern seas' (Pike 1952:65). A popularly elected governor and an uni-cameral legislature were proposed. Dissatisfaction with the *elitism* of the aristocracy, non-conformism, the rise of the evangelical movement, and resentment towards the favoured position of the Church of England, all contributed to the idealism that lay behind the

12 Wakefield was behind a series of publications including a pamphlet 'Sketch of a proposal for colonising Australasia etc.' and 'A Letter from Sydney'. There were also no fewer than twenty books relating to the new colony with the title 'Land of Promise' (Kerr 1978). A time in debtors prison, and other matters arising from an elopement with an under-age heiress, kept Edward Gibbon Wakefield either out of London or otherwise incommunicado during 1829. Consequently it was, largely through the agency of Gouger that 'the utopian dreams of Adelaide's founders', 'the dream of a middle class paradise in the southern seas was promoted'(Pike 1952).

13 Bentham had proposed the names Felicia, Felicitania or Liberia for the proposed settlement (Pike 1952:72).

aspirations of those who supported the proposal. At a practical level though Wakefield allowed theory and philanthropy to give way to pragmatism.

On December 28th 1836, in a scene that must have been reminiscent of events in Port Jackson forty eight years earlier, Governor Hindmarsh came ashore from the *Buffalo*, raised the Union Jack, and read out the Proclamation founding the colony of South Australia 'in the presence of government officers and settlers on the spot, under a bent gum tree at Glenelg, near the mouth of the Pattawalonga Creek' (Bull 1884). His footfall had been preceded by the arrival of Colonel William Light who left England in May 1836 (and not March as intended) and arrived at Antichamber Bay on Kangaroo Island on the 19th of August (Light 1839 reprint 1910).

Light had been dispatched with a team of surveyors, on the instructions of the Colonization [sic] Commissioners for South Australian 'for the purpose of effecting such a survey of the different harbours and the adjoining land as may be necessary to the correct determination of the best site for the first town' (Gill 1911:23). Yet his task of exploring all the coasts of South Australia and selecting the site for the first settlement within about two months was well nigh impossible (Williams 1974:397).

[The Commissioners were] empowered to declare all the lands of the colony (excepting only portions which may be required for roads and footpaths) to be open for purchase by British subjects, and to make regulations for the surveying and sale of such lands at such time as they shall from time to time deem expedient (Capper 1838:32).

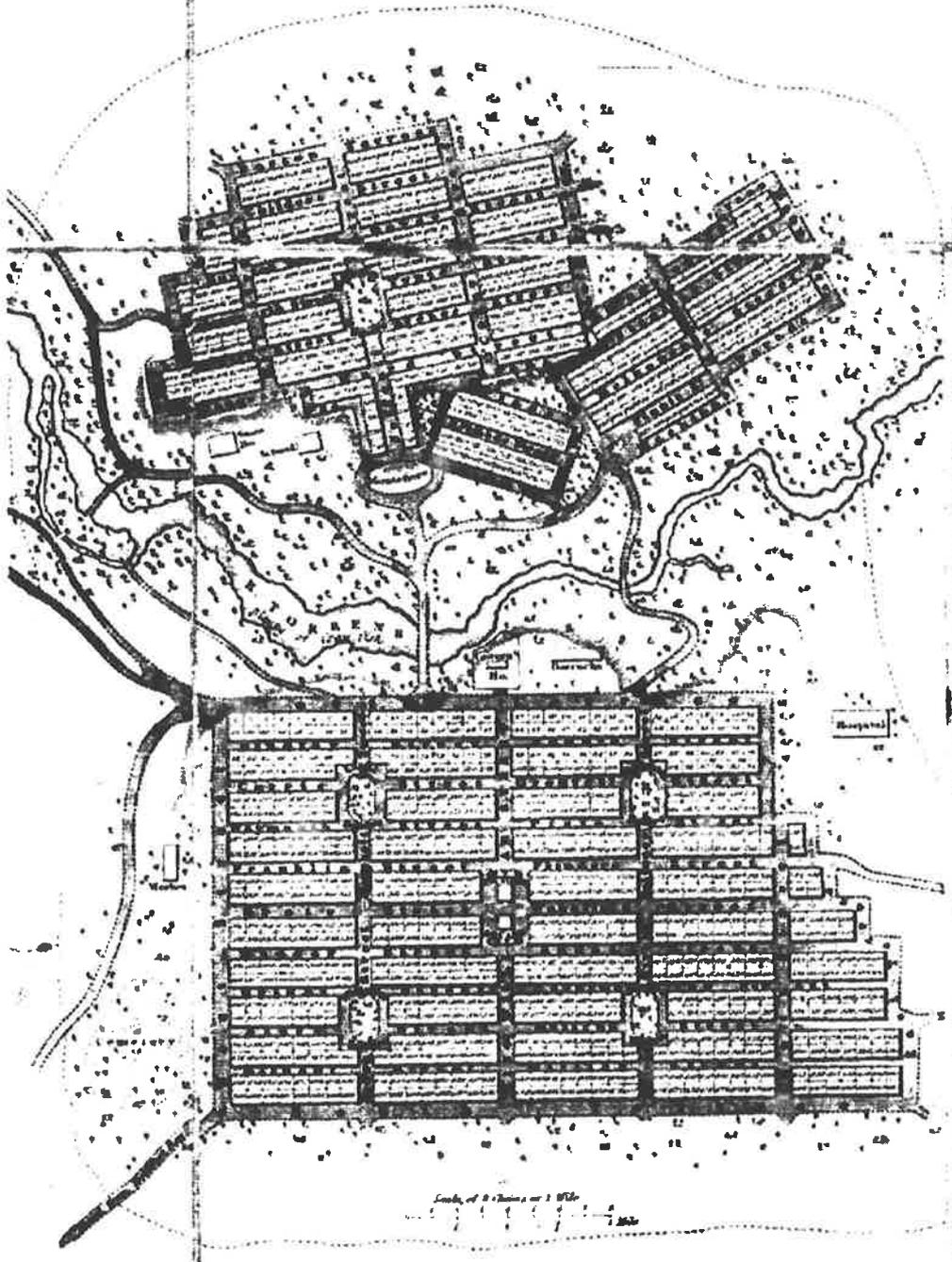
This provision stands in stark contrast to the land grab mentality which characterised the original settlements in Sydney¹⁴ and Port Phillip.

14 'Urban squatting, an activity as common - and as crucial - to Sydney development as was the later and better known rural equivalent to the colonies sociopolitical life, had begun in earnest within days of the First Fleet's arrival. In fact the whole dynamic of settlement in Sydney was at first dictated by, and later reinforced by the wholesale alienation of urban land' (Kelly 1986:41)

THE CITY OF ADELAIDE.

with the Acre Allotments numbered.

Surveyed by
Col. Light.



2. Light's plan for the city of Adelaide, with its gardens and squares, acre allotments, and far-sighted belt of encircling parklands, as surveyed in early 1837. Comparison with the next illustration—an aerial photograph almost one hundred and fifty years later—shows how faithfully Light's plan has been followed. From a facsimile of John Arrowsmith's 1839 map issued by the Libraries Board of South Australia.

Adelaide 1837

Showing parklands, later to be dumps, around the perimeter of the city

Source: Whitelock, D., *Adelaide 1836-1976: A History with a Difference*. Brisbane, UQP.

The Siting and Layout of the City of Adelaide

The City of Adelaide is today a testament to its ordered beginnings, however, this outcome was not achieved without bitter contention. This is no better reflected than William Light's personal diary entry of the 28th of March 1839:-

The reasons that led me to fix Adelaide where it is I do not expect to be generally understood or calmly judged of at present. My enemies, however, by disputing their validity in every particular, have done me the good service of fixing the whole of the responsibility upon me. I am perfectly willing to bear it: and I leave it to posterity, and not to them, to decide whether I am entitled to praise or to blame (Light 1839 Reprinted 1910).

Light's vision prevailed:-

...the main reason why Light's Adelaide met with approval was that it employed the rational principle of the grid. Light's picturesque additions were desirable, but it was the rational and equal subdivision of the land into purchasable blocks that was the essential precondition of capitalist settlement -- of the self regulating 'democracy', based on free trade, which Wakefield was promoting' (Carter 1987: 203).

The survey of the new city began on the 11th of January 1837 and was finished on the 10th of March 1837 (Worsnop 1878:398). The 'City of Adelaide was surveyed, and beautiful plans, with squares terraces and promenades, might be seen at the surveyor's office' (Wilkinson 1849:7). The city was laid out in a grid on what has been referred to as the 'Roman camp principle' (Walkley 1952:81).

Whilst the city itself covered about 1,000 acres, the city plan allowed for a green belt of 2,300 acres which, even after the annexure of land for parade grounds, Government House, and other public buildings still left 1,500 acres for parklands (Walkley 1952:81). History shows, however, that this green belt had many uses. As in Melbourne, and Sydney, Commons became dumps. In Adelaide, this *verandah* of open land was used for cess soakage and municipal garbage, before eventually becoming the parklands of which the city boasts today.

As always intended, municipal government came early to this newest of colonies. Adelaide was the first community in Australia to have local government, a factor of which Gipps, as Governor of eastern Australia, would have been well aware in his tussles with the likes of Wentworth. Prior to the settlement of South Australia the Secretary of State for the Colonies had agreed that South Australian towns would have local government once their populations reached 2000.

In 1840, the Executive Council, under Hindmarsh's successor, Governor Gawler, passed the *Colonial Municipal Act*. 'The creation of a local, fairly representative authority to govern the immediate affairs of the fledgling city was a transposition of power very popular with the citizens' (Morton 1996:5). The jubilation was short lived. Revenue was collected. However, with the appointment of a surveyor, a town clerk, a treasurer and the payment of the mayoral allowance, half the sum raised was used up . There was no power to borrow without the consent of the Governor-in-Council and rates were withheld by many citizens. Although the council earned some revenue from a *slaughterhouse for horned cattle* in the western parklands, money was scarce, no municipal buildings were built and 'the streets continued in a state of nature' (Morton 1996:5); in fact worse due to the traffic of vehicles and cattle and the discarding of waste.

This led to the 1841–42 depression, the insolvency of the Adelaide City Council and the bankruptcy of the Province. In September of 1843, the furniture and effects of the Council were seized to pay debts. The Municipal Act of 1840 was repealed and replaced with legislation that empowered the government to raise a levy on property to fund public works. A Board of Commissioners was appointed and they 'improved the streets, roughly fenced the squares, and devoted great attention to the enforcement of sanitary regulations, the funds for such purposes being raised by an assessment of one shilling in the pound on the rental of house property in Adelaide' (Lancelott 1852: 202). In 1849 an attempt was made to reconstitute the Council, yet this did not occur until 1852.

The acres of parklands that surrounded Adelaide became the site of the settlement's principal garbage tips. Drainage overflows gravitated to southwestern portion of the parklands. The smaller population and the layout of the city also enabled the corporation to set up a slaughterhouse and manure depots in the early 1840's in close proximity to the city, once again making use of the parklands. Adelaide simply did not have the waste disposal problems of Sydney and Melbourne.

Closing Observations

This overview of the early days of Sydney, Melbourne and Adelaide illustrates the contrasts that existed between the circumstances and the philosophies of their respective settlement. These differences in turn can be linked to their physical development as cities. Sydney was initially a penal colony, while opportunistic pastoralists from Tasmania founded Melbourne. South Australia was a commercial venture on a much grander scale in the guise of an utopian experiment.

As discussed in Chapter One with reference to the comments of Finn (1987) and Frost and Dingle (1995), the cities assumed their own character and exhibited significant variations, yet in a number of fundamental respects they had much in common. Each was remote, and initially at least, had only the most rudimentary forms of government, regulatory systems and emergent administrative bureaucracies. Gubernatorial, autocratic rule, rather than democratic government, was the order of the day. There was little or no public participation in government and, with the exception of South Australia, notions of democracy did not prevail.

A factor common to each of the colonial settlements under discussion was the nature of their waste streams. Virtually all that was discarded would have been organic. The frugalities of colonial life would have ensured that all glass, metal and manufactured objects were recycled or reused if at all possible. Sites for disposal of waste were within or very close to areas of habitation. 'Reclamation', as an acceptable means of waste disposal was expedient and could conform to an *out-of-site out-of-mind* rationale. In Sydney this was achieved given the convenience of the Harbour and coastal swamps. Melbourne and Adelaide both had Crown Reserve Lands; parklands, swamps, and clay and sand mines, that could be *reclaimed*.

It is significant to note that in none of these settlements was waste effectively *managed* in today's terms. The imperatives in all colonies were survival at all costs, and self-sufficiency if possible. Regulation of waste disposal of waste, as the regulation of 'a nuisance', was secondary to such issues as preserving fresh water supplies. In Sydney this is reflected in the regulation of the areas adjacent the Tank Stream. As will be discussed in the next chapter, it was the state of Sydney Harbour, the Yarra River in Melbourne and Torrens River in Adelaide which catalysed responses to the absence of effective waste disposal strategies in the fledgling colonies.

The historical record indicates that there was no forward planning in relation to what must have been the foreseeable eventualities of an absence of controls on waste disposal. As contemporary reports of historians and commentators indicate any vacant land, which included government reserved land, tended to be taken over by garbage. Addressing an Intercolonial Medical Conference in 1902, one Dr Kendall observed that 'Another most unclean and dangerous practice is the turning of the sewage of a city or town into the adjoining river, with the vain hope that during the progress of a long length of stream purification would take place by means of sedimentation' (Kendall 1902:441). One can conclude that it was the vastness of the land, and its seemingly endless absorptive

capacities, that obscured any forward vision with respect to waste disposal on the part of early colonial governments.

Risk and the perception of risk, which will be seen to be critical factors in waste management practices in the late 19th and 20th centuries, was little associated with urban refuse. Waste was 'disagreeable' if it was considered *noxious* and, within the limits of the scientific knowledge of the day, was the *miasmatic* vapours of decay that signalled danger. If any substance had a stench it could be injurious to health and vice versa (Cipolla 1992). Risk of death and illness, in the terms discussed in Chapter Three, was akin to fate and chance or the will of God. The prevailing level of passive acquiescence to disease is reflected the Preamble to the *Health Bill* of 1832 which states 'Whereas it hath pleased Almighty god (sic) to visit the United Kingdom with the disease called cholera' (cited in Morton 1996).

At a time before the establishment of industry within the colonies, most waste was considered innocuous and, in any event, there was little public concern for the *amenity* of inhabitants. Sydney was after all a penal settlement. Only with the arrival of free settlers, in Sydney and elsewhere, does the balance between *survival* and *amenity* begin to change. In the changing social contexts of the early settlements it was the law of nuisance rather than any form of what we now term risk assessment that determined outcomes.

In the poetic words of Wentworth (1823), New South Wales was 'A new Britannia in another world'. Even so, it took several decades for the social reforms that swept England during the 1830's and 1840's to reach the colonies. It is clear, though, that the shortcomings with respect to public health and sanitation in English cities, identified by the reformer and 'apostle of efficiency' Edwin Chadwick in the 1830's, have relevance to what was occurring in Australia. Chadwick identified the main impediments to effective waste management in early 19th century England to be:

...impotent, fragmented, or non-existent local authorities: defective legal powers, mediocre or incompetent officers; faulty technology; inadequate finance; entrenched traditions or existing rights which would hinder desired improvements (cited in Coward 1988:5).

In the light of the above observations it is possible to conclude in answer to the 'who' and 'how' questions that it was the governors and not the populace that took, or more correctly, failed to take long-sighted decisions with respect to urban waste management in Sydney, Melbourne and Adelaide in the period to 1850. Regulatory mechanisms with respect to waste were not enacted other than in the limited context of preserving water sources and the avoidance of 'public nuisances'. Waste disposal was opportunistic and expedient, and *ad hoc*.

Thirdly, the question of 'why' waste was 'managed' in the way it was can be related to the following:-

- the growth of colonial populations was sudden and largely unregulated; there were exponential leaps in 'urban' waste production;
- there was an absence of representative government and the community did not get to participate in the decision making processes;
- concepts of risk were not understood in the context of urban waste;
- there was an absence of infrastructure and of the most rudimentary technology to handle waste disposal;
- there was no media to prompt governments to action;

This period represents what is proposed in this thesis as *The First Epoch of Urban Waste Disposal in Australia*. As will be seen from the comparisons that emerge in the following chapters, this period distinguishes itself as one in which there was little or no regulation, and certainly no forward or strategic planning, with respect to urban waste disposal. In this sense, the significance of this period is its impact on the epochs that followed. *The Second Epoch of Urban Waste Disposal, 1850 to 1900*, addressed the administrative and other shortcomings of this *First Epoch*, and saw the clean up of the mess left in its wake.

Urban Waste Disposal in Australia: 1850 – 1900**Introduction**

During the period now under discussion, what is proposed as the *Second Epoch of Urban Waste Disposal in Australia*, Sydney, Melbourne, and Adelaide each had assured futures. The uncertainties of the early days of settlement were now largely forgotten. Each had embryonic forms of local administration, autocratic government was now a thing of the past, and communities were becoming wealthier. Power in a sense had moved from the citadel to the emporium. Each city was gaining its own bureaucracy and physical infrastructures; transport facilities, reliable water supplies and drainage were being put in place. Yet, as highlighted in the preceding chapter, each of these cities carried forward a legacy of waste mis-management, or more correctly, non-management.

The rise of the *Health Movement* in the United Kingdom in the 1830's had seen reformers, like Dr Edwin Chadwick, gain a voice and promote sanitary reform throughout Britain. Chadwick, D'Israeli, and others, sought to overcome ignorance, superstition and passive acquiescence to disease following successive outbreaks of typhoid and cholera in Britain. This reforming zeal had been carried over to the Australian colonies, yet, even with the various commissions and enquiries discussed in the previous chapter, Sydney, Melbourne and Adelaide remained dirty places where the populous lived in fear of the outbreak of epidemic diseases.

This was an era when refrigeration was virtually unknown and there was little real understanding of the causes of transmission of disease. The miasmatic theory still held sway. All fresh foods had a very limited *shelf-life* and dairy products and meat were particularly susceptible to the warm weather. Butcher shop offal pits, rotting heaps of rubbish and cess pools brimming with human excreta were to be found in every part of the cities under review. These ever-present health threats were a significant driving force behind reforms in the late 19th century. The Editor of the Australian Medical Journal (AMJ) had written in 1858 that 'a great public calamity may sometimes result in a great public good' (AMJ Vol III 1858:150).

The same journal went further in 1861; 'The truth is however, that public opinion seldom expresses itself so as to compel governmental action, unless it is itself urged by the pressure of an immediate and severely-felt [sic] grievance; and the mode in which many reforms are brought about is, not by suddenly excited clamour [sic], or powerfully expressed denunciation, but through incessant iteration of a tiresome topic by a comparatively few individuals who have given themselves up to advocating of certain essential necessities' (AMJ 1861 v6: 282). In an outburst of prophetic exasperation, the Editor of the AMJ went on to say:-

...epidemics are of signal service by procuring indirectly those sanitary reforms which offer a comparative immunity from their recurrence. It might savour of inhumanity to wish that this colony, hitherto in a measure free from the devastating scourges which have periodically swept over Europe and Asia, should become the scene of an unsparing pestilence; and yet, judging by the apathy of those who should be the first to move in bringing about the necessary preventive conditions, it would seem that this terrible stimulus is required, in order that we may obtain them (AMJ 1861 Vol. 6:282).

Waste disposal remained largely unregulated, *opportunistic*, and driven by expediency. However, there were momentous changes in each of the cities under review in the period to the year 1900. These changes can be related to the Research Questions posed earlier. 'Who decided where waste was to be disposed of?' It will be seen that there were significant changes in public decision-making processes with the emergence of more representative colonial governments and with elected local councils gaining a voice. In response to the 'how question', the mechanics of localised waste administration changed. Laws and regulations were promulgated that categorised and controlled waste management for the first time. Royal Commissions and other public inquiries examined the waste disposal problems of the day and recommended solutions. There were dramatic changes in science and technology. Thirdly, the 'why' of waste management, can be related to changed perceptions of risk which influenced the administration of public health.

SYDNEY

What of Sydney 1850-1900?

The poor state of sanitation in Sydney was the single most contentious issue at the root of the growing tensions between the Sydney City Council and its 'parent', the Legislative Council, in the years leading up to 1850. Coward suggests, that wealth and social distinctions, and resentment of the success of lower and middle and working class *nouveaux riche* with *social aspirations*, lay at the root of the problem. In all probability, the

land owning *aristocracy* who occupied the Legislature blamed the *nouveaux riche*, and their poor cousins the city artisans, for the filth. Yet, as a contemporary commentator, G C Mundy pointed out, 'One cannot thread any backstreet of Sydney without feelings of disgust....Every kind of unnameable filth salutes the eye' (Mundy, 1852:45-46). As the Sydney Illustrated News reported three years later, 'these sweltering cesspools, this stagnant filthiness meant that people walking along the street were assailed by stinks in every direction'¹ (Cannon 1983:155).

As had been the case since 1788, 'The excess water and sewage of the central portion flowed into the harbour at Circular Wharf by means of the old Tank Stream. Within this area lived 50,000 to 60,000 people, and only the crudest provision was made to dispose of their household waste and excreta' (Crowley 1980:185). This population continued to grow. By 1891 the majority of the residents of Sydney lived within three kilometres radius of the Central Post Office (Drew 1994:31).

The general state of sanitation in Sydney, and the angst it generated, can be gauged by the fact that the *Sydney Morning Herald* ('SMH') conducted a survey, the results of which it published in ten articles between February and April 1851. On the 1st of March 1851 the following litany of sanitary ills appeared in the SMH :-

House Drainage

This is extremely rare. The replies to our enquiries do not warrant us in asserting that it is equal to five percent on [sic] the number of houses.

Water Closets

What may be denominated a water-closet is very rare in Sydney:....they are only to be found in the mansions of the upper classes, and in some of the first rate hotels and private boarding houses. The common privy is in general use.....in many instances, the decencies of life are thus violated.

Water Supply

Extremely deficient.....

Street cleansing

The surface of streets is never swept. ...the ground is unpaved – drainage, either superficial or subterranean, is the exception rather than the rule –the same must be said of water, it is not to be found.....'(Crowley 1980: 185-186).

Household drainage was more often than not routed directly into the street:-

...the closer built streets, where proper gutters existed — there being no underground drains — all slops from kitchens and sinks and laundry tubs were necessarily led into these, and as there was no power to have gutters made in front of their land, many gaps were left, in which many of the slops and rain-water from yards (not too clean) lay and decomposed till it either dried up or percolated into the soil, or was washed away by heavy rain to some lower level (Quaife 1892:619).

¹ *Sydney Illustrated News* 31st of December 1853.

This was also the era when *night carts* patrolled the streets to 'fulfil their necessary but unpleasant duty, obliging the residents, just before retiring, to close up every window or opening of any kind to keep out the horror (Quaife 1892:620). The *Sydney Morning Herald* commented that:-

...the state city drains are of little further use than to carry away the surface drainage as they contain animal and vegetable matter which is easily ascertained by the noxious gases that ascend...if we stand for a few moments over one of the sewer gratings; [and while] a flowing stream of filth is to be preferred to a stagnant pool. The various *rejectamenta* of more solid nature which lie about in yards and streets where they chance to fall, of course add to the foul appearance and smell (SMH, 1858 cited in Crowley 1980:378-380)².

Significantly, all of this waste matter flowed into the Harbour.

The Legislative Council chastised the City Councillors who remained under sustained attack for incompetence in managing an effective sanitary policy. Two Select Committees met and reported between 1849 and 1852 and, in December 1852, the Council was brought to the brink of dissolution. The axe fell on the 29th of October 1853. Three Commissioners were appointing to run the City and the Council was not reconstituted until 1858.

The administrative issues continued to dog the provision of effective sanitary services. In October 1853, at the time of the appointment of the Commissioners, the *Sydney Sewerage Act* (17 Vic. 34) and the *Sydney Water Supply Act* (17 vic.35), gave power to the government to raise up to four hundred thousand pounds for water and sewerage works. Yet, within a year of their appointment, the Commissioners were at odds with the Legislative Council. On the one hand they were criticised for their injudicious expenditure, and on the other, for not expending enough on city streets and dust-carts.

The Commissioners sought an increase in rates but the Legislative Council rejected this request. The Commissioners' second report in 1854 stated:-

...we have placed under the control of an overseer, a number of carts for the removal of the daily accumulations of dust and rubbish from the premises of citizens. Some inconvenience has been occasioned by the exposure of the dust-boxes upon the public streets (SCA³ Report 1855)

In addressing other waste disposal issues, the Report states that 'in fact, the most important of all, is the removal of night soil beyond the bounds of the city...to deposit it in the Sand Hills beyond the Military Barracks, along the Coogee Road...' (SCA 1855). Yet

² Published, 7 October 1858.

³ Sydney City Archives.

this did not save the Commissioners. In what amounted to their obituary, newspapers praised the Commissioners for work commenced on sewerage the city but at the same time bayed at their extravagance. The *Sydney Corporation Re-establishment Act 1857*, (20 Vic.36), saw an end to the Commissioners and the election of a new, revamped, Council.

The work of sewerage the city then went ahead, yet the overall problems of solid garbage disposal remained unresolved. In February of 1858, the *Sydney Magazine of Science and Art* (February, 1858:175) referred to the Rocks area, at the bottom end of present day George Street, as:-

...crammed to repletion with human beings, regardless alike of health and decency, with unimaginable abominations all around, with innumerable heaps of stable manure and refuse matter reeking in the hot sun, fostering clouds of blow-flies and pouring out the gaseous [sic] results of putrefaction to taint the atmosphere (cited in Crowley 1980: 378).

The residential area at the Rocks drained directly into the Harbour and, even though the city was partially sewerage by this time, the sewage was also simply channelled in the same direction. It is significant to note, at this point, that, as has been seen from past practices, the problems of waste disposal were not being addressed head-on but rather, deferred. The Harbour had continued to be Sydney's principal sewer and waste repository since January 1788 and the problems this gave rise to were first formally addressed (but not resolved) in 1865/6 with the appointment of the *Commission to Enquire into the Condition of the Harbour of Port Jackson*⁴. This body was convened 'to investigate into the causes of the shoaling of water, and generally into the effect produced by the sewage of the city being conveyed into the harbour; and to report on the most efficient means by which any further silting up may be prevented' (Royal Commission 1865/6).

The Report of the 19th of April, 1866⁵, was presented to both houses of Parliament. One of the written submissions states that; 'the sewage is undoubtedly filling up the harbour; at my wharf it has already shoaled 3 feet in 3 years.....the present traps for intercepting the sewerage are utterly useless...(and).....if something isn't quickly done to prevent the Corporation sewer being emptied into the harbour at the foot of King Street, the channel across must very soon fill up' (NSW Pp: 1866 v.2).

⁴ NSW Parliamentary Papers 1865/66, vol. 1:873. . Mitchell Library Sydney

⁵ NSW Parliamentary Papers 1866, vol 2:1-105. Mitchell Library Sydney.

The Pell Report

Following the *Commission to Enquire into the Condition of the Harbour of Port Jackson* in 1866, the next significant attempt to address the issues of Sydney waste disposal came when, on April 12, 1875, a board consisting of fifteen gentlemen, with Professor Pell as Chairman, was appointed to inquire into the city's sewerage and health. No time was lost in producing the first Progress Report that appeared on the fourth of May; three weeks later. Pell stated that 'a state of things was revealed of so revolting and dangerous a kind that we determined at once to confine our attention to the one point the subject of this report' (Pell 1875 :337). As a matter of extreme concern, Pell's first Report goes on to describe that 4,700 of the 5,400 closets in Sydney are connected directly to the mains water supply, without cisterns, so that in the case of a blockage 'water supplied to inhabitants for household purposes is polluted with matter which some high authorities consider too offensive to be admitted even into the public sewers' (Pell 1875 :337). In the event of a blockage, closet contents were sucked back into the mains water supply due to pressure differences.

The responses of health administrators remained predicated on the *miasmatic* theory, as reflected in their public statements; 'that water may be so contaminated by the foul air from a closet as to be dangerous to health and life, although perfectly pure in taste and appearance. Such water may...create some dangerous diseases...' (Pell 1875:336).

The initial Pell Report concluded 'that a widespread pestilence has not desolated Sydney is a proof of the general well being of the inhabitants and of the healthiness of the climate' (Pell 1875:339). This report also confirms that transition from cesspit to water closet did not prevent the household water closet being used as a general catch-all for household waste disposal. The Pell Committee went on to produce further reports detailing the need for a sewerage scheme for Sydney and its suburbs, which led to the passing of the *Water-pollution Prevention Act, 1875* (39 Vic. No36). This Act prohibited the direct connection of water closets to the water mains. The *Nuisances Prevention Act 1875* (39 Vic. No14)⁶ complimented the Water-pollution Prevention Act by giving municipalities the power to regulate the construction, location and maintenance of cesspits and closets as well as the deposit of night-soil.

The cesspit was in common usage in all the colonies, in one form or another, from the earliest times of settlement, and 'too often it was only a hole in the earth or rock, or built of

⁶ Both acts Consolidated in 1892 as the Nuisances Prevention Act Amendment Act, 55 Vic. No20

brick, was badly or not at all cemented; cement, however, not forming a barrier impervious to sewage' (Quaife 1892:618). Cesspits continued to be a waste disposal nightmare as their proximity to wells often put the subterranean water table at risk. It is also safe to surmise that they were used as general refuse containers. Quaife goes on to state that the *usual practice*:-

...where a pit was found to fill up quickly.....a pipe was laid into the nearest street gutter, till there was such an addition to the foulness of the gutters that an inspection traced out the cause, and the municipal authority compelled an alteration (Quaife 1892:619).

When local governments invoked their powers under the *Municipalities Act of 1867*⁷, which prohibited the dumping of night soil on vacant land, they precipitated a crisis that was not addressed until 1885 when the City Council successfully obtained the help of the government to provide a punt to enable sea dumping night-soil. So began the organised punting of all manner of garbage to sea from various points around Sydney Harbour, a practice which continued for fifty-seven years.

In the Ninth Progress Report, April 4 1876, Professor Pell stated 'We are sorry also to say that the provisions of the Nuisances Prevention Act appear to have been almost entirely neglected. Cesspits are still, as heretofore, emptied by night men, who dispose of the contents as seem best to themselves' (Pell 1876/77).

In his Final Report, Professor Pell refers to cesspits and water closets and 'the practice of thus disposing of substances which should be carried away in the scavenger's cart most objectionable(and).....it shall be absolutely necessary to adopt some means for preventing such matter obtaining access' to the water supply (Pell 1876/77:25). In response to this finding it was later proposed, by the Sewage and Health Board, that new cesspits should be constructed in such a way 'so that nothing can go down larger than two and three quarter inches' to prevent 'large substances, such as bottles and tins, old boots, bones and so on getting in with the soil' (Coward 1988:115).

Strategies for the disposal of solid domestic and industrial waste were still to be devised. For some time 'carted waste', *night soil* and garbage that did not go into the Harbour went to Moore Park as *fill*.⁸ In 1889 the *Metropolitan Water and Sewerage Act* heralded a

⁷ The Municipalities Act of 1867 had extended the regulatory powers of Councils outside the city of Sydney enabling them to levy rates and pass and enforce by-laws.

⁸ Moore Park was portion of a large parcel of land that Governor Macquarie ordered in 1811 be 'assigned and caused to be marked out and measured a large common in the immediate vicinity of Sydney for the common pasturage of cattle belonging to the inhabitants of Sydney' (Mackenzie

change in the management of the *waste stream*. Effectively, excreta and liquid wastes left the surface waste stream as the city was sewered. Following the 1888 amendment to the above Act, sewers and water mains were transferred from the City Council to the water and sewerage Board created under the Act⁹. Progressively the cesspit became redundant leaving putrescible and solid, and *floatable* wastes that could not be dumped at sea, to be used for land *reclamation*.

Population and overcrowding, a recurrent theme in the discussion of inner city squalor, were recognised by the Pell Reports as a major problem. As one witness, Dr John Smith, stated, 'filth and overcrowding invariably go together' (Pell 1876:551), a conclusion that was amplified by others. However, the political focus remained on funding issues, relative to waste that caused public offence, or 'nuisance'. Just as the means of disposal of urban waste were changing so to was the nature and content of the waste stream. Wastes were now being categorised for the first time with reference to their source. This led to the next significant milestone in sanitary reform in Sydney, which came in 1882, when the Royal Commission into Noxious Trades was appointed.

Royal Commission into Noxious Trades

Glebe Island had become the *out of sight out of mind* 'home' to slaughterhouses in the 1850's following the enactment of the *Slaughterhouse Act* 1849 and the *Sydney Abattoir Act* of 1850, which banned butcher shop slaughtering of animals in the inner city. Yet, as the city grew, the extent of the nuisance caused by, this, and other noxious industries, began to cause concern. The Royal Commission was directed to:-

Inquire into the nature and operations of, and to classify, noxious and offensive trades within the City of Sydney and suburbs and to report generally on the number and extent of such trades...(and)...the degree, so far as can be discovered, in which the operations of such trades are relatively injurious to the public health, and the conditions under which their operations may be carried on with least danger and inconvenience to the public... (NSW PP 1882/3).

On the 19th of April 1883 the Commissioners reported that, apart from industries associated with the slaughter of animals, there were no noxious trades being carried on within in the City of Sydney. Yet, they-then went to great lengths in their Report to

1984). The area, which became the Sydney Permanent Common, included areas unfit for pasturage, drift sands and the Lachlan Swamps, which preceded Botany Swamps, as a source of water for Sydney once the Tank Stream had become too polluted. As with similar 'commons' in Adelaide and Melbourne, Moore Park had an early life as a dump. Swamp reclamation was an early euphemism for landfill. It later became the site of Sydney's first municipal destructor.

⁹ In 1924 the Metropolitan Water, Sewerage and Drainage Board became the successor to this original Board. (Coward 1988:107 and 258).

catalogue 108 industrial premises within the vicinity of the city. Premises scrutinised by the Noxious Trades Commissioners included, tobacco manufactories, varnish and glue manufactories, tanners and curriers, lime burners, vinegar manufactories, candle manufactories, bone crushers, boiling down establishments and tin smelting works, places that were complained of by the citizens in the neighbourhood.¹⁰ However, the site that received the most attention, was the Glebe Island Abattoir:¹¹

...where there is the practice of emptying the paunches (bellies), and contents going over the bank and running into the harbour.....I can say that the water in the bay on the southern side of Balmainis constantly very much discoloured...the intestines are emptied there and allowed to remain in the open...and after every shower of rain a great body of that stuff is washed down into the harbour (NSW Pp 1882/3:119).

The Report recommended the relocation of noxious trades from what had become inner suburbs, to unoccupied land more distant from the city, under the stringent supervision of an Inspector of Nuisances. In modern-day terms, the Commissioners were recommending the creation of *noxious trades sites*, the forerunners to modern day *special industrial zones*.

Yet many noxious trades, with the assistance of the powerful pastoral lobby, were able to resist change. The expansion of railways in the latter part of the 19th century and the importance of the pastoral industry to the Australian economy can be linked, through the depression of the late 1880's and 1890's in eastern Australia, to the continued prominence of a range of inner-urban *noxious industries*. Livestock were transported to ports and population centres for export and local consumption. In the process, cities became more polluted and pastoralists became more financially and politically dominant. The proliferation of butcheries, fellmongeries, tanneries and boiling down works¹², in and around urban Centres, was a major contributor to the urban waste disposal problems of the day.

The 'melting down' process was *noxious*, yet apparently protected by the nature of the administrative and political structures of the day. A view expressed at the time was that 'the pastoral industry is one of our great industries, and anything which is injurious to it

¹⁰ Discussed minutes of evidence p.117-119 paras172-175 and 221-227 (PpNSW 1882/3)

¹¹ The report notes that in 1882, 524, 415 sheep, 69,991 cattle, 31, 269 pigs and 8348 calves were slaughtered on the site and that the volume was increasing.

¹² The process of boiling down, or as the proprietor of the above establishment more daintily styles it, rendering down, is thus shortly described. The stock are shot, flayed, hung up, quartered, chopped in pieces, and thrown into huge iron vats licensed to carry sixteen to twenty four oxen, or three times as many sheep, at once. In these the fat is boiled out, skimmed into buckets, poured

must also seriously affect the colony' (Fitzgerald 1987:93). The inference that this observation carries is that municipalities should not endanger the colonial economy by trying to get rid of dangerous, or even stinking, industries.

It was in this political climate that the novel opportunity for the creation of an 'industrial zone' was canvassed, but lost for all time, due to the power of vested economic interests (Fitzgerald 1987). It was stated in the Medical Journal in 1892 that, 'From a sanitary point of view, the decentralisation of any industry would be most beneficial to a community' (to avoid) 'a frightful shortening and sacrifice of human life' (AMJ 1892:440). Following the findings of the Royal Commission on Noxious Trades in 1883 the creation of specific *noxious industry sites*, was debated in Parliament.

The issues had become politicised to the point that Free Trade and Anti-noxious Trade factions had emerged onto the political scene. A Bill was proposed providing for a site at Kurnell, having an area of 3570 acres with a buffer zone of 213 acres to be planted with trees, be set aside. The matter went to a Select Committee. The economic depression in the late 1880's then overtook events, and in the meantime suburbia moved into the area in Kurnell designated as the *noxious industry zone*. What was an amazing initiative, well ahead of its time, was totally lost. Several years later, when the *Noxious Trades and Cattle Slaughtering Act (57 Vic No21)* was passed in 1893, it made no reference to the proposed noxious trades zone.

Another legislative initiative, the *Nuisance Prevention Act Amendment Act 1892 (55 Vic. No20)*, provided for the classification of industries as *noxious*. Municipalities had the obligation to register *noxious trades* in their areas, which then had to be licensed by the Board of Health. In practice the Board of Health often issued licences, against the advice of the municipalities, and rarely exercised their power to revoke licences (Fitzgerald 1987:93). As twentieth century hindsight confirms, having the law on the statute books is meaningless, unless there is the political will to enforce that law.

thence into casks, which, after being headed up and branded, are shipped for England. The fleshy fibre is thrown to dogs or used as manure (Mundy, 1852:123).

Issues of Sanitation and Health NSW

The population of Sydney continued to grow. In 1890 the diarist, J E Ritchie, stated in *An Australian Ramble* (1890:115-116).

In sanitary arrangements the colonies are far behind the old country...In Sydney they laid out a million of money, and then discovered they had simply poured all their filth into the harbour. Sydney began to see the error of its ways, and at enormous expense, began the construction of a tunnel many miles long to take the sewage right away to the sea (cited in Johnson 1984:50).

As mentioned earlier, what are now modern day *environmental issues*, waste management included, were seen as an aspect of health administration. Just as Chadwick's reports had led to health and sanitary reforms in England, his recommendations were beginning to influence health administration in the colonies.

The problem of overcrowding had been formally recognised as a potential health risk by Professor Pell in 1876. In the previous year, a committee of the *Sydney City and Suburban Sewage and Health Board* was convened 'To inquire into the state of Crowded Dwellings and Areas in the City of Sydney and Suburbs, so far as it affects Public Health'. This Committee, also headed by Professor Pell, reported in 1876 that there was overcrowding, dilapidation of buildings, deficient ventilation and general uncleanness in Sydney. Facts that would have been generally known to anybody living in the city. As for sanitary arrangements, the 'disgraceful state of back yards and closets' was found to be 'not only prejudicial to health but repugnant to all ideas of decency and morality' (Pell 1875:11).

This was a time when Sydney, unlike its sister cities, did not have a centralised health administration. By this time most Australian colonies had Health Acts modelled on English legislation¹³, however, anomalously, New South Wales had a Board of Health in 1881 before it had a Health Act that could enforce its dictates. During the early 1880's the Board of Health in NSW had a purely an administrative role in the context of the *Infectious Disease Supervision Act 1881* (45 Vic. 25) enabling it to quarantine individuals in the event of small-pox outbreaks. This role was extended in 1886 when it was given a supervisory role under the *Dairies' Supervision Act 1886* (50 Vic.17). Local authorities could then inspect premises and animals, declare meat unfit for human consumption, and apply to Justices of the Peace for orders to destroy diseased animals.

¹³ Public Health Act UK 1848 and the Imperial Health Act of 1875.

A few years later, in 1894, the powers of the Health Board were further extended under the *Noxious Trades and Cattle Slaughtering Act* (57 Vic. 21). Yet the Health Board remained a 'toothless tiger' in the absence of the wide-ranging powers that characterised the corresponding bodies in both Victoria and South Australia. The 'experience of local (health) boards in Australia has been that, speaking generally, the public health was left to take care of itself --- a happy-go-lucky system, on which no reliance could be placed' (Whittell 1892:539). Eventually, in 1896, the Government in New South Wales passed the *Health Act* (60 Vic. 38). The Act created 'health districts' and the Sydney City Council was empowered to appoint a Health Committee, a City Health Officer and a District Medical Officer. At this point the Health Committee became the watch-dog of Sydney's urban waste disposal practices.

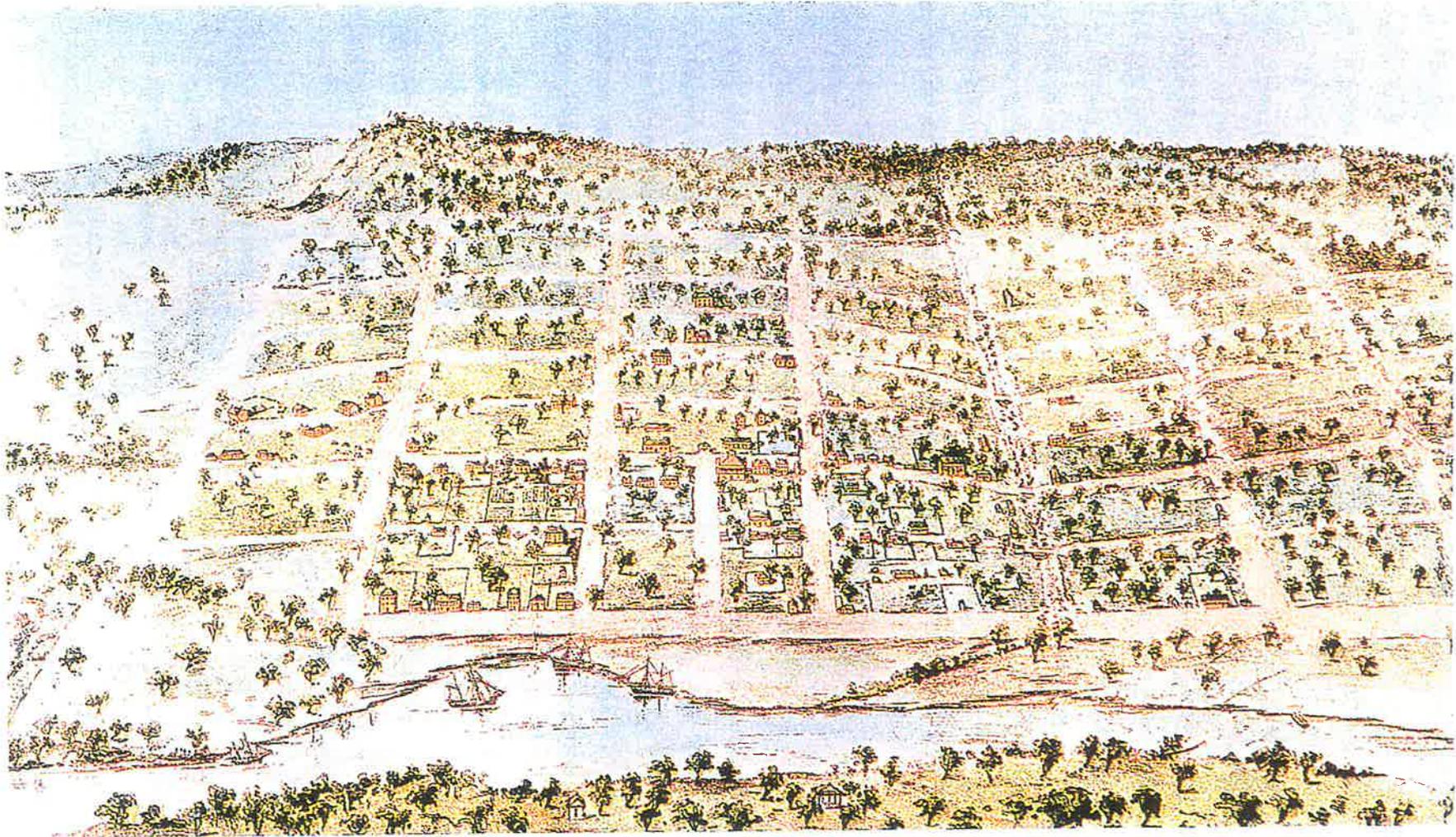
MELBOURNE

What of Melbourne 1850-1900?

Melbourne moved from being a town to a city in 1847. However, it was not until the first of July, 1851, that Port Phillip ceased to be a dependency of New South Wales and became an independent colony under the name of Victoria (Victoria Year Book 1890-91:6). As mentioned in Chapter Five, 1848 saw the tabling of the Report of the *Sanatory [sic] Committee*. This report was a watershed in the management of sanitary issues in Melbourne and colonial Australia generally. As discussed the Report sensibly divided its conclusions into two parts, those capable of immediate implementation and those considered to be beyond its resources (Sanatory Committee 1848:7).

At the top of the list of *deferred recommendations* was 'a proper system of Sewerage upon some comprehensive plan such as recommend itself to the Council' (Sanatory Committee 1848:7). The framing of a *Building Act*, as an act to levy a sewerage rate, the provision of a *sufficient* water supply and removal of the 'two boiling down establishments in close vicinity to Melbourne' which 'are admitted injurious to health', were also considered by the committee to be beyond immediate action. What was deemed immediately possible was to 'request the Mayor of Melbourne to enforce as stringently as possible the various provisions of the town's *Police Act*, and use every precaution to remove the masses of filth and offal which disgrace many portions of the City' (Sanatory Committee 1848). The 1848 report also recommended the promulgation of a 'By-law for the prevention of slaughtering stock of any description within the inhabited portions of the City of Melbourne' (Sanatory Committee 1848:7)¹⁴. This proposal extended not only to butcheries, but also to the proliferation of stinking *boiling down* works.

¹⁴ VPRS 3181, Unit 364, File 31/8/1848).



Melbourne in 1838. A contemporary view of a reconstructed model 1888
La Trobe Collection State Library of Victoria

(Source:Lewis, M., (1995). Melbourne The Cities History and Development Melbourne. Impact Printing (Vic.) Pty Ltd..)

In 1849 a Bill *For Regulating the Formation, Drainage and Repair of Streets and Alleys on Private Property Within the City of Melbourne* went to the Legislative Council in New South Wales. It became law on the first of January, 1850, and provided *inter alia* 'for the Council at any time...by writing under the hand of the Mayor or Town Clerk.....to order that any such street or alley, or any part thereof be freed from obstruction, paved, flagged, macadamised, levelled, drained, and sewered...'. The Act went on to provide that the costs could be recovered from the owner of the land. Yet, Melbourne was 'widely regarded as the dirtiest town in the world' (Swanson 1984) due to the sudden influx of thousands of people as a consequence of the gold rushes. The existing infrastructure simply could not cope and 'empty building blocks were the dumping ground for stinking refuse and effluvia of every description' (Swanson 1984:8). Of Victoria, and by inference Melbourne, it has been written that the 'colonial politics were raw, occasionally riotous, ultimately ruinous. The Melbourne City Council actively sought to promote and enforce 'acceptable' urban waste disposal practices, the prevention of *Nuisances*. In 1850, the Council introduced By-law 27 which imposed a fine of ten pounds on any person who:-

...shall deposit, place or put, or cause to be deposited placed or put, any Night Soil, Manure, Offal, or Offensive Refuse or Matter whatsoever, upon any of the unenclosed lands or upon any public road or way within the limits of the Corporation, excepting in some public depot appointed as hereinafter directed.

Melbourne had laid the legislative foundations for sanitising the city; prohibited the random dumping of garbage and, incidentally, provided for rubbish dumpsites. The practical solution was to use, (or in fact to continue to use) the 'recreation reserves' provided by Governor La Trobe, which were conveniently close to the city, as dumps. Eventually these areas became, and remain to this day, Melbourne's splendid parks and gardens.

Carlton Gardens as a 'recreation reserve' in the 1850's; was 'an unfenced piece of land where the locals grazed their goats and cows without charge, felled the odd tree for firewood or dumped an occasional load of garbage' (Swanson 1984). In 1856 *Melbourne Punch*, an active commentator on the political and social life of the city at the time, was fairly scathing:-

A sandy desert fenced with post and rails,
Bestrewn with garbage fit for vultures feast,
Where foul unsavoury smell the nose assails;
Of vestments rotting, or of dog deceased;
While o'ver the arid waste is scattered thick
The kettle oxydised, the rusty pot,
The broken bottle, and the fractured brick;
(Sonnet to Carlton Gardens, *Melbourne Punch*, March 20th, 1856)

Responsible government came to Victoria in 1855 by an Imperial statute (Finn 1987). By this time the population of Melbourne was around 53,000, yet the water supply still remained a major problem. A contemporary description of a Melbourne house noted:-

No kitchens fitted with dressers, sinks, drains, &c.,(in)... these colonial dwellings; in fact there is not a single drain or sewer in all Melbourne.The receptacle for refuse, animal and vegetable, is usually built of stringy-bark palings over a hole behind the cottage, some 4 or 5 feet deep. In it all the waste matter of the house is deposited, and when full, the householder manages as best he can, for there are no scavengers, dustmen, or *nightmen* in Melbourne (Lancelott 1852:79-80).

In 1852 the gravity of health concerns placed sanitation high on the agendas of both the Melbourne City Council and the Legislative Council. On the 27th of July, 1852, a Select Committee was appointed 'to consider of a system of Sewerage, and of a Supply of Water, to the City of Melbourne' (Select Committee 1852). This Report, which reflected many of the findings of an earlier internal report by the City Surveyor Blackburn to the Water Works Sub-committee of the City of Melbourne on the 9th of August, 1851, discussed a number of options to provide the city with potable water. It should be noted that the Select Committee also considered the provision of sewers and noted that it 'is altogether dependent on that of water supply' (1852:vii).

As in the case of the similar reports in Sydney and Adelaide this report outlines, in graphic detail, a contemporary picture of the general state of the sanitary conditions prevailing in Melbourne. Assistant Surveyor Clement Hodgkinson observed in a letter to the Select Committee, at Appendix F, that:-

...the survey as far as it has advanced has disclosed, in the back yards and enclosures, more astounding accumulations of putrescent substances and rubbish of all kinds than I ever inspected in the very worst parts of the dirtiest English or Continental towns, or than I should have thought could have ever occurred in a civilized [sic] community. Many of the foundations of the buildings are greatly injured owing to the saturation of the subsoil by liquid excrementitious matter (Select Committee 1852:Appendix F:867).

James Blackburn, the City Surveyor, to the Committee that:-

...many of the vacant allotments in the city present the most disgusting nuisances...I am acquainted with many such spots, in which there are accumulations of filth, surreptitiously deposited by the inhabitants of the neighbourhood, to a depth of three or four feet (Select Committee 1852: Appendix H:873).

In its list of recommendations the Select Committee stated that measures had to be taken for the due regulation of cesspools and dust bins, 'the prevention of improper deposits near the city', the prohibition of slaughtering of animals in the city and the drainage of swamps adjacent to the city.¹⁵ With remarkable foresight, for its time, the Report goes on to propose that the City Council should have the power 'to remove such accumulations and impound the land, and if necessary, to sell it to pay for the expenditure incurred' (Select Committee 1852: Appendix H:874). Further it was proposed that:-

[A] Public Scavenger should, I conceive be appointed, whose duties would consist in the removal, periodically, from every premises, all dirt, dung, scullery, and kitchen offal. Simultaneously, also, every inhabitant should be compelled to construct a dustbin, into which he should discharge all such matters, and whence they should be removed by the scavenger.

The duty of the scavenger should not extend to the emptying of privy cesspools. The expense of such a functionary and staff would involve the necessity of a special rate, and for this a legal provision would be necessary (Blackburn cited in Votes and Proceedings Legislative Council, Victoria 1852-3:781-785).

The provision of a safe and reliable water supply was of paramount importance to the survival and prosperity of Melbourne, just as it had been to the other colonial cities. A significant outcome of the 1852 Select Committee Report was the construction of the Yan Yean Reservoir which came on line on the 31st of December, 1857. The disposal of solid waste and household garbage still remained an issue.

Blackburn in his submissions to the Select Committee, referred to the rubbish shutes into the Yarra near the Princes Bridge, close to the centre of the city which took garbage (Select Committee 1852: Appendix H). There were also quarry sites on the slopes above the river, from the earliest days of settlement, and these had also become convenient dump sites for the city dwellers (Swanson 1984:83). Blackburn, as City Surveyor, recommended that one site be fenced off on the western side and that one of the ten constables employed 'for the prevention of depositing filth, night soil etc., on the outskirts of the city' be permanently stationed there to ensure that only 'hard and innocuous' rubbish was deposited at the site (Select Committee 1852: Appendix H). He also suggests that the washing and watering of horses and horned cattle in the Yarra, close to the water pumps, be prohibited.

¹⁵ The Report of the Select Committee on the Sewerage of and supply of Water to the City of Melbourne, V and P Legislative Council, 1852-3 Vol ii, pp 781-785

Melbourne Punch, once again illustrating the contemporary role of the media in driving public debate and reform, gave voice to public sentiment:-

There is a golden city in the mud,
The mud is in the broad the narrow streets
Slimy and fluent and the viscial paste
Clings to the surface to the paving stones
(Melbourne Punch, July 3rd, 1856)

The city's *recreation reserves* had been systematically *trenched* and used for the deposit of night soil and, we can surmise, non-combustible household garbage¹⁶. The council developed a lucrative trade in selling manure from the various manure depots it set up in the parks (Boyle 1991). It is reported in *The Argus* of the 21 January 1862, that, when it was decided to develop Flagstaff Hill as a garden for the benefit of the public, there was by that time no decent topsoil....'the loam had been stripped away many years before, and much of the site had been used as a garbage dump' (Swanson 1984:73).

Fitz-Roy Gardens, another *recreation reserve*, was used as a bluestone quarry. As with most quarries, once mined out, it also became a convenient central city dump. The area was also *trenched* and used to dispose of the city's night soil, garbage and manure, causing complaints about the 'malodorous exhalations' coming from the site (Boyle 1991). Household refuse was still being dumped on the site in 1858 when the area was invaded by foraging goats. To keep out both the goats and the illegal dumpers, and to control a rat plague in the rockeries, a strong of wire netting fence was erected around the park. In 1864 though the transition to recreation reserve and public garden began.

By the late 1860's, backed by wealth generated by the goldfields, Melbourne was on its way to becoming a populous and wealthy city, but, as reported to the City Council by the Central Board of Health¹⁷, the sanitary condition of the city, although improved, was still fairly primitive. There were no regulations for the disposal of rubbish from private premises and it tended to be 'deposited in corners of yards till the accumulations amount to a load; whilst a very common practice, ---especially among the humbler classes -- is to deposit ashes and refuse on the various rights-of-way, lanes and alleys of the city' (Report on the Sanitary Condition of Melbourne, 1861, PRO 3181:364).

¹⁶ It is safe to conclude that given the shortage of wood that most combustible material around premises was used for open fires and to fuel coppers and ovens leaving only solid non-combustibles to be disposed of elsewhere.

¹⁷ PRO, VPRS, 3181 Unit 364 File 14/9/1864

The overall picture of the city's waste-related environment is aided by a reference in 1864 to the closure of a zinc smelting works off Little Bourke Street in the centre of the city 'from which arsenical vapours were emitted, the residents of an adjacent lodging house visibly suffering from its effects...[and Little Collins Street]...where nitrous acid vapours were given off during the manufacture of chemicals for photographic uses' (Report on the Sanitary Condition of Melbourne, 1864, PRO 3181:364). This Report also comments on the overflow of cesspits into lanes and public street channels and recommends the need for sewers. By the late 1860's, Melbourne's cesspits were being replaced by a pan system and night soil removal which continued for the next thirty years.

What went into the pans, and the fact that most 'night soil', once collected, found its way into parks and gardens in and around Melbourne, became a matter of endless complaint. A letter to the Town clerk of Melbourne of the 10th of March, 1870, from the Council of the Borough of Brunswick, seeks 'to bring to your attention the offensive smell caused by the deposit of night soil in Princes Park.' In 1870 there was a Royal Commission into 'the extent to which nuisance or injury to public health is or may be occasioned by the pollution of the atmosphere or waters in or around our said City of Melbourne, whether from the carrying on of trades, businesses, or manufactures, or from other sources, the causes of such pollution, and the best means for preventing the same' (Royal Commission 1870).

In August of 1870 the work of the Royal Commission on Noxious Trades¹⁸ commenced its work which involved visits to 121 industrial premises in the city and suburbs of Melbourne. Despite attempts going back to the 1850's to relocate slaughterhouses and other noxious trades away from the Yarra and its tributaries, in 1870-71 Melbourne had twelve slaughter-houses, which produced 3000 to 4000 tons of blood and an estimated 35,000 tons of solid refuse per annum. It is estimated that about half the blood flowed into waterways and the offal was fed to pigs, or offered to farmers for the cost of cartage (Lack 1985:176).

Despite the recommendations for reform the Yarra continued to be a source of stench and discomfort. Historian Dr John Lack comments that 'none of the Noxious Trades Commission's recommendations for the better conduct and supervision of abattoirs and offensive industries were implemented. There was a continuing reluctance to interfere with private enterprise' even though local residents complained bitterly, as indeed they do to this day, that the pollution depressed property values and discouraged settlement in particular areas (Lack 1985:188).

The lower reaches of the Yarra were openly used as industrial drains. Sewage, street drainage, offal and the run-off from a paper mill, wool-scourers, fellmongers, (who separated wool from sheep skins), and tanneries, continued to pollute its waters. As in the case of Sydney, Melbourne allowed the dictates of commerce to continue to control the waste management agenda.

Issues of Sanitation and Health Victoria

By the last quarter of the 19th century the ever-present threat of epidemic disease in Melbourne (as elsewhere) was linked via the miasmatic theory, to the need for effective sewage and garbage disposal systems. The mechanisms put in place by the *Public Health Act* of 1867 were not working. The Australian Medical Journal (AMJ) of the 15th of October 1886 addressed the disposal of *nightsoil* in Melbourne; 'Conferences have been held, and much discussion excited without much being done towards the adoption of a definite scheme...[if] only a Metropolitan Board of Works could be formed, there might be hope that a beginning might be made' (AMJ 1886: 575).

On the May 15th 1887 the Australian Medical Journal (AMJ) stated:-

It is impossible that we can go on pouring the sewage of the City and its chief suburbs into the Yarra, or into the swamps lying between different parts of the metropolis. The condition of the river is bad enough, but as a scandal and a disgrace to civilization, it is nothing compared with the state of the West Melbourne swamp, and the low ground between South Melbourne and the city, which have been receiving the drainage of a large population ever since Melbourne was founded (AMJ 1887:227).

The Allen Report

In parallel with events in other colonies, by 1888 public concern bordering on alarm resulted in a Royal Commission into the Sanitary Condition of Melbourne being called to examine the relationship between noxious trades and ill-health (Royal Commission 1888)¹⁸. By 1887 death rates from typhoid fever, which was then recognised as a preventable disease, had reached 6.21 per ten thousand people in Victoria; in South Australia and New South Wales it was 4.92 and 4.32 respectively (Dawson 1979-80:149-154). Professor Allen, Dean of the Faculty of Medicine at Melbourne University was appointed Chairman of the Royal Commission.

¹⁸ Royal Commission on Noxious Trades, Melbourne 1870-71, Victorian PP, 1870, Second Session, vol 2, no 22; 1871, vol 3, no 30.

¹⁹ Victorian PP .1889, no 27, vol 2, and 1890, no 7, vol. 2.

The Commissioners, no doubt influenced by the miasmatic theories of the day, considered that 'such odours must be indirectly detrimental to health, inasmuch as people subjected to them are apt in consequence to be deprived of fresh air, and to lose appetite, especially in the case of women and children, persons in a weak condition, or convalescents' (cited in Lack 1985:182). The Commission produced three progress reports dealing with existing conditions of abattoirs and noxious trades, Melbourne's water supply, and drainage and sewerage.

The Final Report is a reiteration of the progress reports and the recommendation for the creation of the Metropolitan Board of Works to take charge of the issues considered including proposals for a sewerage scheme for Melbourne. Following the recommendations of Professor Allen's 1888 report a scheme was put forward on the best means of draining the metropolitan area of Melbourne and in 1891 the Metropolitan Board of Works was appointed to carry out a system of sewerage. The first sod for the construction of the main outfall sewer was turned on the 19th of May 1892 and, as reported in the Argus of the following day, on the fifth of February 1898 the penstock connecting the City of Melbourne sewerage system with the sewerage farm at Werribee was raised.

The Gresswell Report

There followed, in 1890, a comprehensive and insightful summary of waste management practices in late 19th century Melbourne by Dr. D A Gresswell entitled the 'Board of Public Health Report on the Sanitary Condition and Sanitary Administration of Melbourne and Suburbs', ('the Gresswell Report') (Gresswell 1890). The Report sums up in great detail the state of waste disposal in Melbourne and serves as an assessment of the cumulative effects of over fifty years of municipal neglect and public indifference to effective urban waste disposal. The report is compelling in its detail and conclusions. Resisting the temptation to annex the entire document to this thesis I shall nevertheless quote from it extensively as it paints a grim picture of the state of sanitation in Melbourne, which one can safely surmise may have had equal relevance to other colonial cities in Australia. The early pages of the report discuss the demographics of Melbourne and the condition of the housing, its density, construction and layout. Gresswell observes:-

Large accumulations of refuse on house-premises are of somewhat rare occurrence; but free littering of it on house-premises and on surfaces round about them is common enough, the refuse being thrown deliberately onto the back yard, over the boundary fence, or on to some near vacant land, or being swept from the house or shop direct into the street channel (Gresswell 1890:10).

The Gresswell Report goes on to state that:-

...refuse from houses is placed in the first instance in any sort of receptacle ready to hand, such as buckets, oil tins, kerosene tins, foot baths, casks, washing tubs, broken wood and even plaster board boxes, and worn out cess pans properly constructed receptacles but being rarely used, except in certain parts of the city of Melbourne and elsewhere on good-class properties. These receptacles are generally not provided with covers; and in some localities they are sued for the reception of much liquid, as well as solid, refuse. Most of the carts used in collecting house refuse and street-sweepings, allow free escape of the liquid filth from them (Gresswell 1890:10).

And as had been the case since settlement of all the colonies:-

.....in chief part animal and vegetable matters.....are, in the majority of cases, still being disposed of on the nearest available spots of low-lying land. Owing to the cost of cartage there is the strong temptation to dispose of refuse-matters as near as possible to the place where they are collected (Gresswell 1890:10)

At page eleven Gresswell then gives an overview of state of waste disposal practices in Melbourne:-

The gravity of the mischief hence arising will perhaps best be appreciated by reference to the following details:-

The refuse of the city of Melbourne has for some time, and up to quite recently, been deposited on several acres of West Melbourne swamp, and to a depth of seven feet or more. It is mixed with tons of sewage-sludge from street channels and sewage catch-pits, and has for a long time been a source of gravest nuisance. The refuse of St Kilda for the past ten years or so has been deposited over about three acres of the beach, that has thereby been raised four or five feet (1890:11).

The Report then catalogues, in graphic detail, the state of public parks in South Melbourne, Flemington, Kensington, Footscray and Collingwood. Acres of refuse mixed with sewage sludge up to seven feet deep in places causing what is referred to as a 'gross nuisance'. Contemporary references to '*worst Smelbourne*', '*flatulent Footscray*' and '*foetid Flemington*' seem to have been well founded (Lack 1985).

Gresswell goes on to discuss 'Excretal Matters', at page 12, and decries the 'trenching' of night-soil and the use of the single pan or pail service with weekly collections. He recommends that a 'double pan service, combined with an effective method for rendering the materials innocuous, is urgently demanded in the interests of public health and safety; and no time should be lost in taking this matter up with the determination of carrying it through.'

The Report refers at page seventeen to 'many hundreds of acres of bare soil soaking with sewage' where the nearby inhabitants speak of the their living environment as being 'terrible', 'sickening', 'enough to breed any fever' (Gresswell 1890:17). Gresswell identifies a specific location referred to as the 'plague spot of the place', where typhoid has 'invaded' all the houses. The relationship between the quality of water as intrinsic to the health of the community is emphasised in the report.

Dr Gresswell's report also touches on *noxious trades*, the subject of the Royal Commission in 1888/9. He notes at page twenty three that:-

...in most cases (they are) conducted apparently with a total disregard of the feelings of the community at large; and, except in the case of one or two districts, there seems to be but little being done to see that the avoidable nuisance to which they give rise is being mitigated (Gresswell 1890:20-23).

Gresswell concludes that despite the Government's decision to take action that it is a matter that demands the immediate attention of local councils and in the case of Melbourne, of the Melbourne City Council. He emphasises, in a language aimed at Melbourne's wealthy ruling elite, that the costs of improving the sanitation of their city is a small price to pay given the alternative; nothing less than continuing disease and death due to poor sanitation.

However, perhaps his most significant recommendation was the conclusion that household refuse should be incinerated; 'There can be no doubt that destruction by fire of these materials is the only remedy, and no time should be lost in bringing into operation the machinery necessary for carrying it out' (Gresswell 1890:12).

Despite the robust recommendations Dr Allen's Sanitary Commission Report of 1888 and the Gresswell Report two years later, implementation of change was slow. On the 24th of February 1892 Dr Gresswell submitted a further report entitled the *Remediable Conditions Connected with the Prevalence of Typhoid Fever* in which he observed that the Metropolis was in almost exactly the same insanitary condition then as it was four years earlier in 1888. Once again it can be observed, waste disposal and sanitation were seen as inherently health issues and in turn health issues were driving the waste disposal agenda in Melbourne in the direction of incineration.

Gresswell's Reports did not go unheeded. The medical profession was agitating for action. The Editor of the Australian Medical Journal commented in 1892 that despite the provisions of the Health Act of 1889, 'Local sanitary administration is placed in the hands of the Councils, but these are apathetic, the board ought to have legal power to coerce them' (AMJ Editorial 1892:142). The local engineering profession also pushed for reform of waste disposal practices. In 1892 the City Surveyors of Melbourne, Richmond and South Melbourne, Messers Mountain, Clayton and Nolan, co-authored report with one John Kruse entitled *Reports on Cracknell's Patent City Refuse Destructor*.

Following Dr Gresswell's recommendation that fire was the only safe means of waste disposal, a local engineer E W Cracknell²⁰ had invented and patented a *destructor*. The authors, who were influential in their *domains* concluded that 'Mr Cracknell has made a distinct advance on anything that has yet been done in the construction of destructors for treating refuse as found in Australian cities' (Mountain et al. 1892:17).

Mountain and his co-authors refer to two destructors in operation in Melbourne. The Report discusses the effectiveness of the City of Melbourne's two cell Cracknell destructor built in 1891/2 at the West Melbourne Swamp; (in the vicinity of the present Dynon Road). It also discusses the installation in South Melbourne of a twelve cell Fryar Destructor which became operational in 1890²¹. The fact that the City of Fitzroy was considering the installation of a Cracknell model is also commented on favourably (Mountain 1892:9-24).

Melbourne was clearly heading in the direction of incineration. It is also apparent that health issues were driving the waste disposal agenda however, the cost of incineration was a stumbling block which would require a powerful incentive to surmount.

ADELAIDE What of Adelaide 1850-1900?

As appears from the previous chapter, the settlement of South Australia, whilst at one level inspired by high ideals, was in practical terms a commercial venture orchestrated by wealthy individuals who traded off the evangelical rectitude of non-conformists and money from London bankers²². Adelaide always had a smaller population than either Sydney or Melbourne (as it has to this day). The emigration program was highly controlled and selective as it was intended to provide 'a balanced community of enlightened citizens' (Pike 1957:79).

²⁰ Mr E W Cracknell of 349 Collins Street Melbourne (Mountain et al 1892:5).

²¹ South Melbourne had begun to incinerate in 1890 and typhoid deaths in the area were shown to have dropped from 94 in 1889 to 58 in 1890 (Gresswell 1892).

Emigrants arrived not only with money but also with great enthusiasm and high expectations; emotions absent in the early days of Port Jackson. The commercial imperatives and the puritanical order which encapsulated the relationship between *cleanliness and godliness*, as reflected in the Jewish saw adopted by John Wesley²³, were factors in maintaining the image of Adelaide as the 'Queen City'²⁴ and as a clean, orderly and righteous city. The rectitude of Adelaide's founding fathers bought up to the Roman dictum that *the health of the people is the supreme law*²⁵, would have, no doubt agreed with the sentiment of 19th century England expressed by Mary Douglas:-

As we know it dirt is essentially disorder
Dirt offends against order (Douglas 1966).

Adelaide's early administrators were keen to ensure that *order* was maintained. Public image was important in this *model* colony. Bentham's ideal of achieving the health and happiness of the greatest number was translated into what, in modern parlance, we term 'quality of life issues'. Just as the physical aspect of the city's *orderliness* can be seen in its rectilinear layout, the fact that Adelaide was the first city to have a municipal government, reticulated water, and a sewerage system, reflects the aspiration for social and economic order.

As reported in the *South Australian Advertiser* on the 31st of December 1860 'The water supply of Adelaide is now a 'great fact [that although] the water sometimes came forth of the colour of coffee [or] somewhat opaque in appearance' (Crowley 1980:428). Furthermore, in 1870 the government vested control of the waterworks, not in individual municipalities, but in a semi-governmental corporation (Williams 1974) which, no doubt, ensured a degree of financial independence from government, but more importantly, a uniformity of approach throughout the expanding metropolitan area. Many aspects of the early days of Adelaide were little different to those of Sydney and Melbourne. The climate was very hot and dry in summer and wet in winter. And in sanitary terms, the early days of the Queen City were little different from those of its contemporary colonial rivals:-

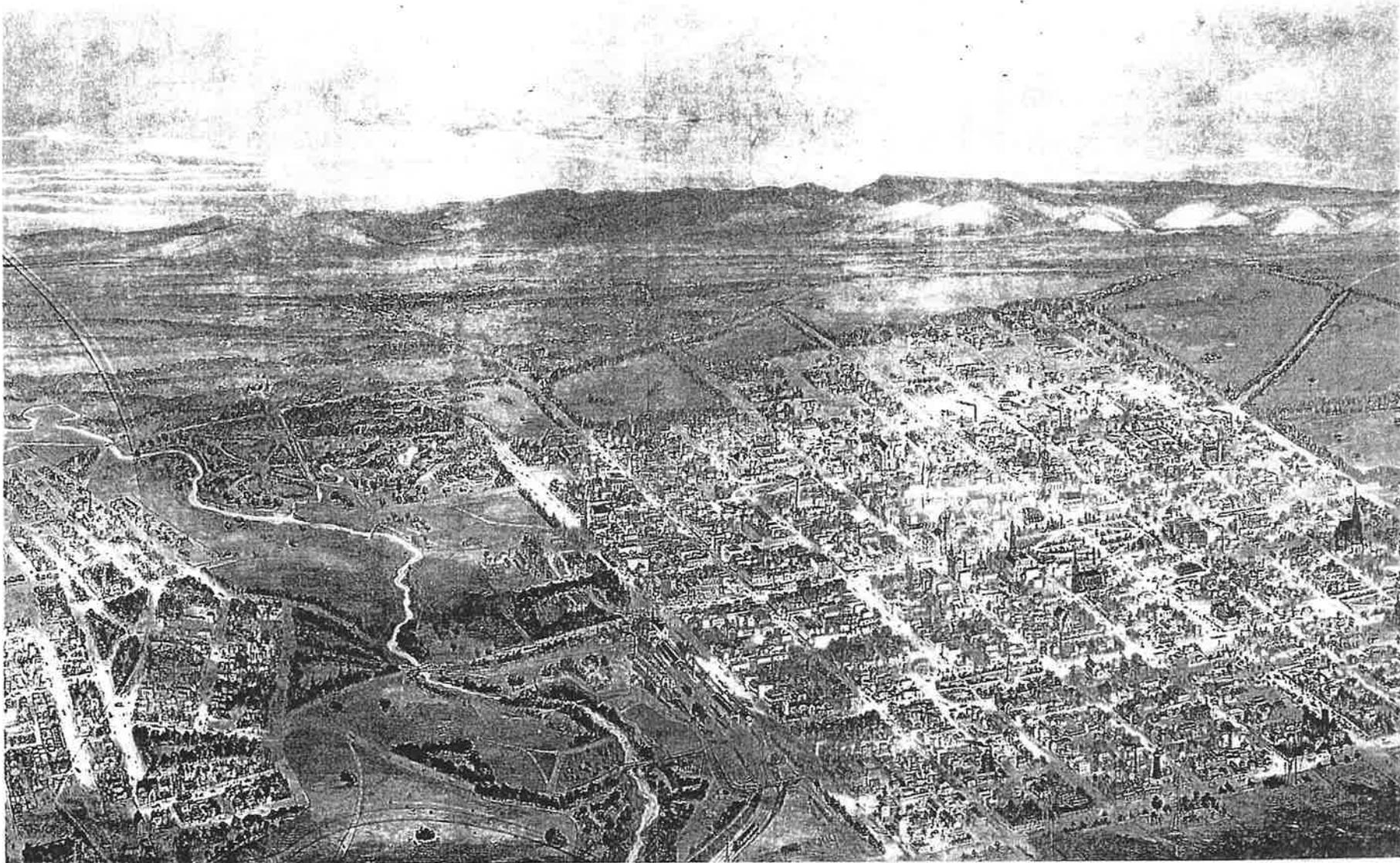
...the want of drainage is an evil much felt by the citizens. In the hot weather, when decomposition takes place quickly, the effluvia arising from the filth and offal thrown down near the houses, and from innumerable receptacles of decaying animal and vegetable matter is most injurious, and if not remedied, may prove pestilential to the neighbourhood (Lancelott 1852:204).

²² Gouger was one of the principal bankers behind the SA Land Company

²³ 'Cleanliness is next to godliness', discussed, Brewer, Ebenezer, 1870, *Dictionary of Phrase and Fable* Centenary Edition 1970, Cassell London.

²⁴ Consort to King William IV, after whom the 'town' was named.

²⁵ *Salus publica suprema lex.*



An aerial view of Adelaide from the *Illustrated Sydney News* of July 1876.
(Source: Whitelock, D., (2000). *Adelaide A Sense of Difference*. Kew (Vic).Australian Scholarly Publishing Pty. Ltd.)

It is estimated that in 1878 there were seven thousand cesspits in the city of Adelaide which often overflowed into the gutters. The cesspits were usually emptied only once a year by a hand held scoop (Morton 1996:28). A resident of Hindley Street, one Jasper Fleming, complained to the City Council:

The weather for some time past has been most trying, and after sunset doors and windows are thrown open to catch even a catspaw of pure Air, and we generally get a duration at our west end during the night and early morning, but this Homeopathic provision is destroyed by the Shit Carts (pardon the word) passing our Houses say from 11 to 4am and leaving their stink behind them (Morton 1996:28).

It appears that the problems generated by household drainage and cesspits in Adelaide were little different to those of Sydney and Melbourne. However, the smaller population, the spacious layout of town blocks and the resultant lack of overcrowding, lessened the impact on the living environment. The Adelaide City Council began to investigate a system of 'deep drainage' as early as 1865, and, following the Royal Commission of 1876²⁶ construction of sewers began. The population of Adelaide in 1871 was 43,000 (23% of the colony's population), compared to 138,000 in Sydney (27% of total) and 191,000 in Melbourne, (26% of the total population)²⁷.

Unlike Sydney, Adelaide did not have the amenity of a nearby harbour, but as in the case of Melbourne, it had a river through its centre. Up to this time the Torrens had suffered the same fate as the Yarra and had become a sewer and the site for noxious industry. By 1876 the magnitude of the problem meant that it could no longer be ignored and as in Sydney and Melbourne the inevitable enquiries began.

The 1876 Royal Commission....Rees Report

The only significant report on sanitation in 19th century South Australia was undertaken in 1876. Chaired by parliamentarian, Rowland Rees the Royal Commission was directed '*To Inquire into and Report upon The whole question of Sanitation for the Province of South Australia*' (Royal Commission 1876). The Commissioners singled out eight noxious trades for comment, fellmongeries, tanneries, soap and candle manufacturers, breweries, boiling down works, piggeries, abattoirs and flax factories (pp. i-vii):-

²⁶ Royal Commission (1876). SA Pp. 1876 No.18 Vol.2.

²⁷ Sources: P Spearitt Melbourne and *Sydney at the Census* in J Davidson ed (1986) The Sydney Melbourne Book.

There were thirty seven witnesses called to give evidence. A common thread in much of the evidence was the resort to economic arguments in relation to the income generated, goods exported, numbers of persons employed and wages paid. A synopsis of the evidence given to the Commissioners discloses:-

- that all of Adelaide's night soil was buried in the west parklands;
- that the east parklands were used for absorption of liquid wastes and pits often overflowed and 'emit a most sickening stench'; yet refuse from the pits is considered first rate manure;
- the sanitary condition of the city was worsening annually due to saturation of earth with filth;
- the high rate of infant mortality in Adelaide attributed to poor sanitation and considered excessive when compared with other Australian cities;
- sewage runs directly into the River Torrens which is unfit for human or animal consumption;
- 'the willows' in the west parklands used as absorption grounds, 'a very offensive place';
- shipping should be prevented from discharging filth and refuse into the Port River;
- plaster of Paris and charcoal used as deodorants;
- Bagot's establishment at Mile End, (3-4 km from the city) boiled down 60,000 – 100,000 sheep annually and buried the offal blood and liquid refuse, 'after rain an unpleasant odour emits from the pits';
- the prohibition of cattle slaughtering in the city would be a great improvement;
- deep drainage was justified, whatever the cost;
- others considered that deep drainage too expensive; (Royal Commission 1876:xvii-xxvi)

The drainage and sewerage of the city was of concern to the Commission. The solution proposed was 'expedient':-

...all those we examined, and other testimony conclusively showed that Deep Drainage was the only panacea for the admitted evils. It will be desirable at the outset to convey such sewage direct to sea: yet we believe, that this will only be a temporary expedient, as the loss of such productive manure would be wasteful and extravagant...such a system...would reduce the evils complained of to zero....although involving a very large and costly expenditure, would prove the least expensive in the long run.....of the question of expense, we recognize [sic] that the public health is the first and only consideration which should weigh with the Commission²⁸. (Royal Commission 1876:i-vii)(emphasis added)

²⁸ Given effect to the epigram, *Solus populi est suprema lex*. Cotterell (1913) A Collection of Latin Epigrams and Phrases, 3rd ed, London. (at page 62)

Further recommendations included proposed amendments to the Public Health Act and the appointment of Health Officers in various localities. The report recognised the;-

...absolute necessity to prescribe definite standards of purity, below which no liquid can be admissible into streams, or allowed to run from factories..... surveillance should be exercised from time to time of the character and purity of the water of all streams (Royal Commission 1876:viii)

In 1878 deep drainage of the city began and a sewage farm²⁹ covering 470 acres was established five miles from the city.

[The farm] is divided into paddocks for depasturing purposes and for cultivation of Italian rye grass, lucerne, mangolds [sic], sorghum, wheat, barley, vines and wattles. The livestock on the farm may be set down at around 300 cows, 20 horses, 300 sheep, and 150 pigs. The receipts over expenditure in working expenses were last year about nine hundred pounds (Whittell 1887:303).

Although the waste disposal problems in Adelaide mirrored those in Sydney and Melbourne, Adelaide had reticulated water and effective drainage systems ahead of both of them. As with the corresponding reports in Sydney and Melbourne (Pell, Gresswell and Allen), the Rees Report serves as a catalogue of the shortcomings of urban waste management in Adelaide. There was no shortage of places to dispose of solid, inert waste in and around the suburbs of Adelaide and consequently this aspect of waste disposal was not specifically addressed. The public spotlight was focused directly on that portion of the waste stream that was identified to be health related; the putrescible and the organic waste streams from domestic and industrial sources.

Issues of Sanitation and Health South Australia

In South Australia legislation was passed between 1873 and 1887 that gave Adelaide a Central Board of Health that initially administered the whole state. Incorporated towns had local Boards of Health but they were answerable to the central board. After the granting of municipal self government to the whole of the colony in 1887 local councils gained control over roads, drains, bridges and waste disposal, as an aspect of health administration. Yet the Central Board of Health retained an overall supervisory authority across the whole colony. Members of the police force acted as Inspectors and the Board, which was the sole judge of what was a 'nuisance' under the Act, had 'the fullest powers to make such orders as it might think fit in reference thereto.' The courts could not look behind the decisions of the Board (Whittell 1892:540-541).

²⁹ It was appropriately called a farm as it was divided into paddocks for depasturing purposes and for cultivation of rye grass, lucerne, marigolds, sorghum, wheat, barley, vines and wattles. In 1887 there were 300 cows, 300 sheep, 20 horses and 150 pigs. Receipts over expenditure in 1886 was

These draconic provisions, and the centralised nature of the administration of health, gave South Australia a much more effective means, than New South Wales and Victoria, to administer 'nuisances'. In 1898 South Australia gained a new Health Act that applied to 'the sanitation of premises and their surroundings, food supplies (chiefly meat and milk), and infectious diseases' (Ellery 1905:430-434).

Yet despite these provisions, and the advantages that Adelaide had in terms of its relatively small size³⁰, it was the first of the colonies under review to be struck by bubonic plague in 1900. Increased awareness of waste disposal as a health issue changed public practices with respect to waste disposal and led to the conclusion that incineration was absolutely necessary in the interests of public health. Melbourne took the lead and Sydney and Adelaide followed, with the erection of destructors. Yet the technological advances, which paradoxically provided more efficient means to dispose of waste, led to industrial changes that in turn, irrevocably changed the nature of the waste stream itself.

Closing Observations

During this Second Epoch of Urban Waste Disposal in Australia the processes of reform, which in broad terms focussed on cleaning up the neglect of the era that preceded it, were predicated on administrative reviews, Select Committees, Royal Commissions and Inquiries. The health and sanitation reports by Pell, Gresswell, Allen and Rees serve to provide graphic insights into the state of waste disposal in the cities under review in the mid to late nineteenth century. The recommendations contained in these reports led to major public works being undertaken which improved the sanitary conditions in each of the subject cities, in particular their drainage and sewerage systems. The cities became cleaner and aesthetically more attractive, yet many recommendations, particularly those with respect to waste management and incineration which required considerable expense, were ignored or at least delayed.

Waste management remained characterised as a health issue. Interestingly each of the colonies under review, acting independently of the others, identified fairly uniform problems and came up with fairly uniform solutions that followed the *out of sight out of mind model*. Sydney introduced limited sea dumping and no doubt this expedient would have been adopted in Adelaide and Melbourne but for logistical difficulties. Nothing really

nine hundred pounds (H D Whittell, Report to Intercolonial Medical Conference, The Sewage farm, Adelaide, August 1887).

³⁰ Population 39,240 From census 1901 discussed Ellery (1905)

changed with respect to the mode of disposal of waste. The cities were cleaned up and sites for disposal moved from inner residential areas to outer areas.

Limited reform was achieved by putting in place systems to administer urban waste disposal in terms of health, sanitation and public nuisance regulation. Christoff (1999) has referred to the period from 1880–1900 as the *first wave* of environmental governance in Australia. It was a time in which he states reform 'occurred in response to outcries over localised problems of pollution and their impacts on public health and hygiene, and to the notions of social improvement associated with the creation of public space' (1999: 38-39). Christoff's conclusions can be related directly to the issues raised in the preceding narrative. Responses took the form of legislation, rules, regulations and by-laws to regulate waste management in terms of nuisances and health and sanitation.

Taking an overview of the entire period of this epoch, 1850 to 1900, there were dramatic changes in the way the colonies were governed. The day-to-day issues of municipal management had moved away from government house with the appointment of town corporations. Representative bodies encouraged the growth of increasing levels of public participation and the emergence of factionalism that led eventually to the formation of the two party system that reached maturity in first decade of the 20th century (Jaensch 1992). City dwellers, landholders and pastoralists all of whom had personal interests to protect coordinated their efforts to ensure those interests were maximised. Members of the community, as councillors, board members and legislators, began to be involved in decision-making processes. As an aspect of public involvement and participation newspapers and satirical magazines were established and began to pester politicians thereby assuming an influential role in promoting the clean up of the fouled cities.

The way in which legislators and city managers went about the process of enquiry and report reviewing aspects of waste accumulation can be related to changes in the inter-linked concepts of democracy, bureaucracy, politics, policy, power and levels of public participation, discussed in Chapter Four. The growth of representative government led to *accountability and the creation of city administrations provided the means to enforce it*. Government departments and city halls became characterised by their entrenched hierarchical structures, specialised bureaus, operation according to rules and use of the written record; they became efficient *text-book* bureaucracies.

Reverting to the Research Questions posed at the outset it is clear that there were significant changes in waste disposal 'systems' in the period from 1850 to 1900 as *who* took the decisions and *how* and *why* they were taken went through a period of transition. Changes in the *how* of decision-making are reflected not only in the processes of town management but on a broader scale through the mechanisms of enquiry and report that were used effectively to identify and highlight the obvious causes of filth accumulation in and around cities.

Why and on what basis decisions were made can be related back to the growing concerns of the communities in relation to health and sanitation issues linked to what we now call quality of life issues. As Sydney, Melbourne and Adelaide grew in size and became more prosperous a sense of civic pride developed as people became concerned with the beauty, appearance and liveability of their urban environments.

At a more concrete level it is suggested that a range of additional interconnected factors also influenced change. They included:-

- population growth leading to intolerable levels of urban waste saturation within cities;
- the emergent role of the media;
- changes in the classification of waste premised on the miasmatic theory in terms of the laws of 'nuisance' and the management of 'noxious industries';
- the rise in democratic processes and the institutions of government;
- the emergence of administrative agencies (bureaucracies), councils, health boards and boards of works, within governments;

Two other factors that more or less 'stayed in the wings', only to come forward early in the epoch that follows were firstly, changes in waste disposal technology which offered alternative means of waste disposal, particularly incineration, and secondly, changing perceptions of risk particularly in the areas of health and sanitation, albeit initially based on the miasmatic theory. Risk, or more importantly the ignorance of the risk, remained an ever-present factor. The 'familiar' was not considered dangerous unless for example it emitted a *vaporous, malodorous, stench*. Miasmatic beliefs facilitated a continuation of the opportunistic and expedient waste disposal practices that had characterised the earliest days of settlement.

As has already been observed, waste was not really disposed of but simply moved from one place to another. And while the banning of cess-pits, the expulsion of noxious industries from the cities, and the suppression of what were termed 'nuisances', improved living conditions in cities, a century of hindsight indicates that this desire to create a sense of order and administrative efficiency was often misguided or wrong and led to irreparable (further) degradation of the wider environment. The exploitative nature of colonisation, hinted at by Thomas Mitchell (1848) and discussed by Powell (1976) and Hughes (1996 and 1999) came at an enormous price to the environment. Changes were often *cosmetic* and clearly what we now identify as 'environmental imperatives' were not in forefront of the minds of sanitary reformers one hundred and twenty years ago.

Introduction

This Chapter looks at the issues confronting urban waste management in Sydney Melbourne and Adelaide in the period from 1900 to 1960. The period I have proposed as the *Third Epoch of Urban Waste Disposal in Australia*.

The discussion of urban waste disposal in Sydney, Melbourne, and Adelaide during this time turns on an understanding of the convergence of social, political, cultural and technological changes that occurred in the period leading up to the year 1900. The historical narrative that emerges draws on many sources. It encompasses that eclectic blend of subject matters and issues reflected in the observation of James O'Connor (1997) that environmental history is the culmination of all other histories that preceded it.

By 1900 each of the cities under review had well funded municipal administrations (housed in grandiose city halls)¹; representative colonial legislatures were in place, and political parties were emerging out of factionalism. The federation of the colonies and the creation of the States of Australia in 1901 brought with it, not separation from England, but 'the potential for the independence of an Australian nation state', (Hudson and Sharp 1988:36). With Federation came a sense of nationhood as old colonial rivalries were replaced by interstate cooperation, which co-incidentally, was also promoted by improved means of long distance communication and transport. *Aplin's precocious toddler* was advancing towards maturity (Aplin 1988:Preface).

The *administrative factors*, identified by Dr Chadwick as impediments to the effective provision of urban sanitary services in Britain, and reflected in the recommendations of the various colonial commissions and inquiries in the mid to late 19th century, were progressively being addressed by the beginning of the 20th century. Yet despite the outcomes of these reports, and lobbying by politicians, health reformers and engineers, incineration had not been embraced as a means of waste disposal. However, as will be discussed in this chapter, it took a single cataclysmic event, the *visitation* of bubonic plague, to precipitate dramatic changes that influenced the course of urban waste disposal practices for the next sixty years.

¹ In describing the ideal 20th century city, from a 19th century perspective, J T Noble Anderson stated in 1900; 'In the architecture of the city, therefore, the two artistic essentials are the strong citadel, the presence of which gives the sense of rest and security which is so essential to the happiness and health of the population, and the emporium, which gives that sense of civic importance and self respect, which is essential to the proper health of the commercial spirit' (Anderson 1901:18).

The population of Australian cities continued to grow. The census figures of 1906 disclose that the majority of Australians lived in the capital cities. The states of New South Wales, Victoria and South Australia had populations of 1,375,240, 1,210,882 and 365,731² respectively. By 1908 the State capitals, Sydney, Melbourne and Adelaide had populations of 538,800 (35.29% of the State population), 526,400 (42.73%) and 175,641 (45.76%) respectively³. The Commonwealth Government Statistician points out by way of contrast that London, Edinburgh and Dublin housed 20.59%, 7.22% and 6.63% of the populations of England, Scotland and Ireland respectively in 1906 (Stevenson 1982).

It is clear that cities by their very nature represent large, dense populations that produce large quantities of refuse, and have diminishing availability of space for its disposal. Less available space equates to fewer choices with respect to waste disposal options and greater costs to the community in social and economic terms.

Federation

The most significant change in Australia's political and administrative history, the union of the Australian colonies under a federal constitution, did not have any immediate impact on how urban waste was managed. With the creation of the Commonwealth of Australia a new tier of government came into being on the first of January 1901. The new constitution did not directly alienate to the Federal Government any aspect of environmental or sanitary management. As will be discussed, however, Federation had what may be termed a *deferred impact* on waste disposal practices. From 1901 the State Governments and local councils simply carried on their work in the administration of health, sanitation and nuisance abatement as previously.

The collection and disposal of domestic waste remained the concern of municipal councils who continued to deal with it as an aspect of the overall regulation of 'health and sanitation'. The terms *rat catcher* and *scavenger* remained as accepted municipal job descriptions from the 19th century and with the arrival of bubonic plague they became an integral part of waste management strategies. Shirley Fitzgerald, the city historian in Sydney, confirms that rat catchers effectively continued to be employed by many councils beyond the 1940's. The only thing that changed was their titles; they became sanitation or health inspectors (2000 pers comm).

² Official Year Book, 1901-1907 Knibbs, 1908, Commonwealth Statistician, page 148.

³ Official Year Book, 1901-1907 Knibbs, 1908, Commonwealth Statistician, page 158.

Waste management decisions were taken 'locally' to meet the needs of the immediate constituency. There was no centralised waste authority, or coordinated strategy across the greater metropolitan areas. Most councils for example, ran their own dumps with the priority being to find out-of-the-way places to transport garbage. The *tyranny of small decisions*⁴, alluded to by Odun (1982), ruled the day. Multiple decisions were taken by numerous local authorities to achieve localized, and not collectively acceptable, outcomes. Garret Hardin's metaphor, the *Tragedy of the Commons* was played out to the full to the detriment of the wider environment (Hardin 1968).

Incineration

Incineration had become a progressively more significant issue in the urban waste management debate in Australia from the late 1880's. The Reports of Pell, Gresswell, Allen and Rees, discussed in the previous chapter, promoted incineration as an answer to the *miasmatic* threats posed by urban waste. While town or urban waste had no doubt been burnt for thousands of years no acceptable system had been designed to systematically destroy it in large volumes close to its source of production until the late 19th century. From the perspective of urban or town waste disposal a significant advance came in 1885 with the invention of forced-draught furnaces that could achieve combustion temperatures approaching 2000° F. Incineration of garbage was linked to improvements in steam driven engines and, in turn, the generation of electricity. With the commercial incentives that these advances offered the controlled burning of large quantities of waste within cities became a viable proposition.

The *Destructor*, as it was known, was first produced commercially in Britain in the 1870's. It is not quite clear precisely when or where the first *modern* Destructor was commissioned. Fetherston and Calder (1908) suggest Manchester in 1876, and Rathje and Murphy (1992) postulate Nottingham in 1874. Whatever the exact date and place of discovery, the technology of incineration remained relatively new and evolving and subject to skeptical debate well into the twentieth century.

Between 1885 and 1908, 180 incinerators were built in the United States (Rathje 1992: 176) and by 1912 there were 300 incinerators operating in the UK (Petts 1994:1). By the end of the 19th century though, basic incinerator design had been *perfected* in England and was being commercially promoted around the world as a *technological fix*; a *scientific* answer, to the disposal of urban waste and to the ills of accumulations of filth. Most

⁴ A series of small and apparently independent decisions are made often by individuals or small groups of individuals effectively resulting in a big decision being taken (post hoc) as an accretion of all the small decisions.

incineration systems, reflecting the apex of 19th century technology, could incorporate steam powered engines which generated electricity, ash and clinker crushers, disinfecting processes, and tar distillation plants.

Despite lobbying by such political notaries as George Reid in Sydney, from as early as 1889, the Sydney City Council declined to install an incinerator. The capital cost of the equipment and ongoing maintenance costs relative to the significantly cheaper alternatives, landfill or *sea burial* was seen to take precedence over the social benefits. As a consequence, garbage dumps grew and continued to provide harbourage for rats and other vermin. Fitzgerald makes the following observation with reference to Sydney which no doubt mirrors what was occurring in other Australian capital cities at the time:-

At the beginning of the twentieth century, the question of garbage disposal had been discussed at great lengths by various councils which had procrastinated for at least a decade over the issue of building an incinerator, incurring heavy censure from the Board of Health back in 1890 for 'barbaric' garbage disposal methods (Fitzgerald 1992:262).

Up until the outbreak of bubonic plague the pleas of the medical profession and of engineers had also gone unheeded. The Australian medical profession, which as discussed in the previous chapter had been highly critical of sanitary conditions in Australian cities from the 1850's, continued their crusade, yet their pleas for reform continued to fall on hard political ground. The outbreak of bubonic plague however tipped the 'social benefit' scales, and justified the expense, as incineration was then seen as a front-line defense against this little understood and dreaded threat. A factor that led to George Reid's sardonic comment that 'the plague has been a marvellous reformer' (NSWPD, LA ,1900, Vol CIV 1131-1139).

Reflecting contemporary wisdom the City Surveyor in Melbourne invoked the words of the Institute of Civil Engineers in promoting the introduction of incineration by stating that:-

From a sanitary point of view the destruction of refuse by fire was unquestionably the most desirable method of disposal, but in combining a Destructor with a power plant it must not be lost sight of that the first and principal object of destruction was to effectively destroy the deleterious matter in the refuse, and no other consideration should be allowed to interfere with the accomplishment of this (Proceedings of the Institute of Civil Engineers, v139:243 cited in the Report of the City Surveyor, City of Melbourne Council Proceedings, June 1900).

An overview of the use of incineration technology early in the 20th century can be gained by reference to a comprehensive study published by the City of Prahran *On Refuse Destructors in Europe and Elsewhere* written by the City Surveyor, William Calder, in 1907, following his world-wide fact-finding trip in the previous year (Calder 1907). Calder's opening paragraphs state:-

In Great Britain the long-sustained opposition and prejudice against Refuse Destructors is rapidly giving way; the practice of tipping on land into the sea or rivers is gradually being abolished, and in that country, at least, where there are now something like 280 Refuse Destructors, the final and sanitary disposal of town's waste by fire may be said to be recognised policy as far as this problem is concerned.

Liverpool may be taken as an instance of the development of Refuse Destruction by fire; so recently as 1896 the bulk of the refuse from this great seaport was taken by barges and dumped in the Irish Sea. Now there are five Destructors, comprising between 50 and 60 cells. Four of these installations produce somewhere about 8 million units of electricity per annum, or sufficient power to run half the 100 miles of tramways in Liverpool (Calder 1907:1).

Calder, clearly a political tactician, expressed a degree of *anticipated exasperation* in the final pages of his twenty page report by quoting an American authority, W A Baker, 'Oh, what avail to provide the best of furnaces if they are to be turned over to political spoilsmen to operate'. The City of Prahran went on to approve the installation of a *Meldrum Front Hand-feed Destructor* that, while operational by 1907, was not finally commissioned until 1909. It continued to operate until 1953 when Prahran's waste, in common with most of Melbourne's waste, was sent to landfill.

Only when the fear of plague receded in about 1910 did the building of incinerators enter a quiet period. By that time Sydney operated incinerators at Moore Park and Pymont. The Balmain/Liechhardt incinerator was built in 1908 and commissioned in 1909 (Vailoux and Reeves 1910:29). Melbourne had incinerators at Spencer Street, Dynon Road, South Melbourne, Fitzroy, and Prahran. Adelaide had a large installation in Halifax Street in the heart of the city. In 1915 the Editor of *The Commonwealth Engineer* in 1915 summarised contemporary perceptions of refuse disposal at the time:-

All municipal engineers, and particularly those in charge of big cities such as the capitals of Australia, agree that the only, safe, and hygienic method of disposal of a city's garbage is by complete incineration by means of mechanical destructors. Several of these are at present in use in Australia, giving effective service, and, despite the fact that the location of some plants is in the heart of extensive populations, their existence is not a menace to the community (Editor 1915 Commonwealth Engineer).

Whether incinerators were 'a menace to the community' or not remained a matter of contention for decades.

A *second wave of incineration*, from the late 1920's and through the 1930's, was largely driven by the production of Australian designed and manufactured models based on the prototype *Reverberatory Incinerator* which was financed and built by J Boadle at Sandringham in Victoria in 1925 (Johnson 1977:119). A number of these *modern* incinerators were built in suburban Australia in the 1930's. Walter Burley Griffin, the designer of Canberra, as an associate of the Reverberatory Incinerator and Engineering Company, stands out with his business partner Eric Nicholls, as the pre-eminent incinerator designer in Australia at this time. Griffin designed twenty incinerators in a fifteen-year period to 1937, of which sixteen were built (Johnson 1977:124-125). These incinerators were promoted to municipal councils as not only functional but also as aesthetically pleasing edifices.

During the Second World War there was a lull in the expenditure of money on non-defense related public works generally and this included the construction and repair of incinerators. After the war, in an era of improving sanitation practices and a better understanding of public health, few municipalities saw incineration as essential. This position was reinforced by the relative cheapness of out-of-town landfill sites, and changes in technology, that made lorries and earthmoving equipment readily available to councils. The final blow, which saw the death of incineration, came in the mid to late 1960's when the clean air debate that had been raging in Europe and America for a decade, eventually arrived in Australia.

Turning now to each of the cities under review in this the proposed *Third Epoch of Urban Waste Disposal*.

SYDNEY Bubonic PlagueArthur Payne's Legacy.

By 1900 the introduction of international and transnational telegraph and cable services ensured that Australian cities were kept abreast of news and developments in their sister cities and from around the world. Sydney, along with Melbourne, and Adelaide, entered the new century with a sense of *anticipatory dread* as global epidemics were seen to be coming in their direction. The progress of the plague was plotted and reported in daily newspapers. It had reached Hong Kong in 1894 and was declared an epidemic. Two years later Bombay reported its first cases and Noumea was declared *plague infected* in December 1899 (Cumpston and McCallum 1926:11).

Bubonic plague was a disease, Dr Tidswell told the Intercolonial Medical Conference in Brisbane in 1899:-

.....which has been known and dreaded for many centuries on account of its tendency to occur in widespread epidemics, causing immense loss of life. Usually these epidemics have appeared quite suddenly, spread like wildfire, killed thousands of men and lower animals, and after a few years disappeared again (Tidswell and Dick 1899:131-136).

The cause, and means of transmission of the illness, remained a matter of academic conjecture until 1903. However, the Chief Government Medical Officer in New South Wales, Dr J Ashburton Thompson took the view in 1900, based on a theory propounded by Ogata in 1897 at the International Plague Conference in Venice, that 'suctorial insects (acted) as vectors from rat to man' in causing the spread of the disease (Cumpston and McCallum 1926:9). This judgment was supported by the research of Dr P L Simon who linked transmission of the disease to the flea, and the 'want of cleanliness and the accumulation of filth'(Cumpston and McCallum 1926:9).

In his *Report of the Board of Health on the Second Outbreak of Plague at Sydney, 1902*, Thompson stated that 'plague is primarily a disease of the rat' and that in Sydney 'we formed the opinion in 1900 that plague-rats constituted the sole source from which the infection was communicated to man' (1902:2). The rats thrived on the garbage discarded by city dwellers and fleas then transmitted the disease to human beings. Writing in the SMH on the 25th of January 1900 Ashburton Thompson informed the public that:-

The popular notion regarding the bubonic plague is that it is dangerous to come within a stone's throw of a patient; but this is an absolute mistake...there seems to be very little doubt that indeed the infection is conveyed from rats to man by the intermediary agency of fleas and other like insect.

Ashburton Thompson's approach was at odds with widely held political and scientific views at a time when the miasmatic theory still held sway. Ashburton Thompson persisted despite considerable opposition from the Premier of the day and set about addressing the plague in terms of his own professional beliefs. He was eventually recognised to be correct and other learned authorities wrong. Armstrong, addressing the Intercolonial Medical Conference of Australasia in 1902, stated that 'the report of the Indian Plague Commission, published in 1901, appears...to take a strangely mistaken view of the influence of rats in the introduction and spread of the plague' (Armstrong 1902:443).

Adelaide claimed the singular distinction of having the first recorded case of Bubonic Plague in Australia on the 15th of January 1900 (Correspondent 1900)⁵. Sydney and Melbourne waited. On the 15th of January Sydney's City Health Officer issued a 'NOTICE Re BUBONIC PLAGUE'. The notice began with the words, 'As the Bubonic Plague is not many hundred miles away from Sydney, I thought the following account thereof might be useful'. It went on to state that, as the 'chief predisposing causes are overcrowding and bad ventilation; want of cleanliness with accumulation of filth; insufficient and unwholesome food; debility from any cause; a warm and moist condition of the air and residence on marshy soil' (Proceedings of the Municipal Council of Sydney, The City Health Officer's Office 1900: 309).

The author of this *Notice* would have been aware that the bulk of Sydney's population lived in overcrowded conditions, in close proximity to the harbour, that the weather in January was hot and humid, and that the majority of people were poor, undernourished and lived in filthy conditions. No doubt levels of anticipatory fear and anxiety rose.

The Australasian Medical Gazette of the 20th of February 1900, records that the plague was first diagnosed in Sydney on the 20th of January 1900. The first victim, a carter, Arthur Payne, 'whose daily work took him continuously to Central Wharf' was the unwitting and unfortunate catalyst for what was undoubtedly the most sudden and significant changes in urban waste management to ever occur in Australia (Cumpston and McCallum 1926, Fitzgerald and Keating 1991). Not surprisingly the first reported case of plague produced a panic response.

The prevailing hysteria is reflected in the contemporary report that 'before noon, alarm bordering on panic had spread throughout the community, and by nightfall the trains were crowded with citizens fleeing the infected city (Kelly, 1981:np). Sydneysiders began fleeing to the Blue Mountains and to the safety of the 'clean air'. Coward states that the 'public reaction was muted at first, but eventually became more agitated as the press whipped up a sense of moral outrage against the filth of the city and the neglect of sanitary matters which was sheeted home to the City Council' (Coward 1988; 208). Shirley Fitzgerald supports the view that the public reaction was less *panic-driven* than Kelly suggests, however she suggests that there was a significant political dimension to the unfolding drama (2000 pers. comm.).

⁵ Ashburton Thompson challenges this finding referring to it as a rumour which was 'ultimately discredited'; yet Cumpston's analysis suggests that it was first diagnosed in Adelaide on the 1st of January 1901; the patient died at the Royal Adelaide Hospital on the 12th of January; rats at the RAH and in the city of Adelaide were found to have the disease (Cumpston and McCallum 1926:31).

Whatever the personal responses, the plague certainly became a political issue and provided the fodder for *political payback* and the implementation of a number of government policies that would have otherwise been difficult to carry forward. Specifically, the municipal response involved the resumption of harbour-side land including wharves and warehouses and the building of incinerators. In an outburst of recriminatory rhetoric, the City Council blamed the Government, and the Government blamed the Council. The Sydney City Council responded by asserting that the wharves around the harbour, the principal breeding grounds for rats, projected over the water and hence were outside the jurisdiction of the City and therefore not its responsibility.

The cleansing of the city of Sydney became a political imperative that extended to the resumption of large tracts of harbour-front land and the creation of the Sydney Harbour Trust in October 1900. At that time three commissioners were appointed for seven year terms to 'administer the affairs of the harbour and of fostering its interests...by taking control of the port and shipping, lighthouses, beacons, buoys, wharves and docks, and empowered to levy tolls, dues rates and charges and to resume or purchase lands or buildings.' The Commissioners set to work dredging and cleaning up the harbour and this included 'taking means to prevent rats and other vermin from finding a harbourage in the produce stores and in the vicinity of the wharves' (Knibb 1901-1907).

Fitzgerald and Keating suggest in their book, *Millers Point, The Urban Village* (1991) that the plague was merely a pretext for the government to take control of harbour frontages.

The conventional wisdom about these resumptions is that they were made in response to the plague, but the evidence suggests a more complex set of reasons... [T]he petition which 90 members of parliament had signed asking for the resumptions had been couched in terms of the need to control plague, but the wording was vague and stressed that *it is advisable the Government should own this property* (Fitzgerald and Keating 1991:69- 70).

Fitzgerald and Keating suggest that the plague enabled the government to initiate the implementation of longer-term strategies and, in particular, to acquire and upgrade wharves to international standards and also to have a free hand to select a site for building a bridge. 'Talk of a bridge was almost as old as white settlement...and had been on and off the agenda, more or less seriously, since the 1880's' (Fitzgerald and Keating 1991:73). In June 1906 Premier Lyne introduced the Bill that was to become the *Darling Harbour Wharves Resumption Act*.

In the midst of the political wrangling the clear-headed Dr Ashburton Thompson insisted that; 'the best, and the only attainable, defence against epidemic plague lies in the removal of dangerous conditions which for the most part could not occur under good municipal management, even of the elementary processes of inspection, record, and scavenging (Thompson 1901). George Reid, the cynical observer, commented at the time that, 'the plague rules the destiny of the country...[and]...has galvanised the country into action'⁶ (Fitzgerald 1992).

The outbreak set off a scare throughout the whole of Australia, because the disease was usually fatal: but it had the wholesome effect of causing a sudden interest in personal and public hygiene. Vast quantities of rubbish were disposed of, drainage systems were improved, and insanitary housing areas were cleaned up (Cumpston and McCallum in Crowley, 1980: 584).

In Sydney, over the period 1900 to 1909, a total of 614 people contracted the disease of whom 210 died. In the same period there were only seven reported cases in Adelaide and twelve in Victoria (Cumpston and McCallum 1926:41).

Changes in the Disposal of Urban Waste in Sydney

During the 19th century, what we now term *environmental policy* with respect to waste disposal was predicated on the idea that the spread of disease could be caused by vapours from malodorous wastes. Accumulations of waste around Sydney were recognized as both harbourage for rats, and a source of the miasmatic threats, in the battle to rid the city of bubonic plague. Sydney health authorities focused on the unsanitary state of the harbour and adjoining squalid residential areas. The early 20th century, in an atmosphere of high community tension, the issues of waste management became decidedly political. Initially political responses were reactive rather proactive as anxiety in the community propelled both the government the Sydney City Council to act.

The intensity of the municipal response reflected the levels of individual and municipal concern. What Ashburton Thompson and his medical colleagues lacked in knowledge of the plague in the period 1900 to 1902 they made up for with their enthusiasm. Their zealotry, and that of the bureaucrats in government, 'led gradually to the compilation of records of great epidemiological importance' that eventually helped solve the riddle of the transmission of the disease (Cumpston and Lewis 1989:193). All aspects of the clean-up were methodically weighed, measured, counted and recorded.

⁶ NSWPD, LA, 1900, Vol CIV, pp 1131-1139.

In January 1900 the New South Wales Premier Lyne instigated a massive clean up of the city using over 2000 men. The workforce was divided into teams of six and dispersed to the dirtiest parts of the city that were then cordoned off. These teams set about cleaning out all the accumulated refuse. On the first day, the 27th of March 1900, 750 tons of garbage was removed from yards and houses and punted out to sea. Gallons of disinfectants were poured into drains causing tons of fish to die in the harbour. Through until the 11th of June 52,030 tons of silt and sewage was dredged from around wharves in Sydney Harbour, 28,455 tons of garbage taken to sea in punts, 24,430 tons of garbage was burnt on site and 1,400 dead animals taken from the harbour and burnt.

Over the first seven weeks of the outbreak the death rate from plague climbed, and with it, the level of alarm. On the 6th of February 1900 the New South Wales Health Department issued Notice in a Supplementary Government Gazette proclaiming Plague a *notifiable disease* under the Public Health Act. The Department of Health issued free rat poison and *Directions for Special Cleansing and Disinfecting, issued to the Staff of Sanitary Inspectors, Scavengers &c.* Certificates which read, 'These premises have been cleansed and disinfected, in accordance with the requirements of the Board' were signed and dated by the Sanitary Inspector in Charge and issued to householders. (Thompson 1901 Appendix O:80). The statistical data from the cleaning-up operations around the Harbour are graphic in their details.

A contractor, McCredie, who organised the cleaning gangs, reported that in the three months, April to June 1900, 3,808 premises inspected and cleansed, 45,000 rats destroyed, 1,400 animals taken from the harbour and burnt. (Coward 1988:210-211). Six months later, between January to April 1902, the inventory of filth dredged from the harbour included, '1252 rats, 382 cats, 539 dogs, 271 bags of meat and fish, 588 fowls, 25 parrots, 14 sheep, 6 pigs, 3 calves, 3 flying foxes, 1 goat, several rabbits and a shark' (Fitzgerald and Keating 1991:91).

The intensity of the public concern is reflected in the fact that Ashburton Thompson, realising that removal of refuse was only addressing a part of the problem, personally raised a Petition and went directly to Parliament for approval of capitation fee of two pence per head for every rat killed and delivered to the health authorities. As Chief Medical Officer of the Government, a senior public servant, this put Thompson directly at odds with Premier Lyne. Undaunted, Thompson railed against the intransigence of the government and argued that 10,000 rats would "cost" eighty four pounds and that the expenditure of ten thousand pounds, in the face of the pending threat, would be justified.

Ashburton Thompson's Petition was accepted by Parliament, and by the 27th of April 1900, the capitation fee was trebled to sixpence (Coward 1988).

From the perspective of longer-term urban waste management strategies, the most significant outcome of the plague scare in Sydney and elsewhere, was the construction of inner city waste Destructors. The plague galvanised the Sydney City Council into action. The chairman of the Citizens' Vigilance Committee, Dr Graham, was appointed Mayor and the Council created a full-time position for a Medical Officer. There was an all out war declared on rats and garbage around the city. The incidence of outbreaks of plague in the vicinity of the city's Moore Park dump did not go unnoticed; the dump was condemned in the eyes of the fearful public. Five hundred gallons of disinfectant were poured onto the Moore Park tip as a precautionary measure. Sydney City Council had no choice but to agree to the building of an incinerator at Moore Park.

Incineration, despite its cost, was now seen as the most effective solution to the waste disposal problem. On the 22nd of March 1900, two days after plague was diagnosed in Sydney approval was given by the Sydney City Council to build an incinerator. The *Committee appointed to Inquire into and Report upon the best method of Disposing of City Refuse*, initially convened in 1899, recommended acceptance of a tender to build a *Pinhoe* Patent Refuse Destructor and 'to obviate as far as possible the passage of garbage through the City'. The Committee therefore suggested that it be sited at either, Moore Park Tip, Pyrmont, or in the vicinity of the Power House at Rushcutter's Bay (SCA⁷ Proceedings MCCA 1900:275).

Sea dumping was maintained as a *temporary measure*. After considerable debate, a *Perfectus Destructor*, rather than the less expensive *Pinhoe*, was commissioned at Moore Park on the 25th of April 1902. It had the capacity to burn about seventy tons of garbage a day. In 1908 an additional unit to take a further eighty tons per day, was approved and commissioned at Moore Park in October 1909. Clinker and ash from both units was dumped 'in the vicinity to level off the park' (SCA, Annual Report of the City Surveyor 1915, CRS.42/4). Correspondence with the Adelaide Town Clerk in 1906 had suggested that two more destructors would be required at Moore Park to burn all of the city's refuse (ACA⁸ 1906-1907).

⁷ SCA, cited for Sydney City Archives.

⁸ ACA, cited for Adelaide City Archives.

By 1907 the incidence of bubonic plague had diminished markedly. While in 1900 there had been 303 reported cases in metropolitan Sydney; only two cases were identified in 1901 but there was a peak of 137 in 1902. Thereafter there were 42 cases in the four years to 1906 and a further peak of 47 cases in 1907 (Cumpston and Lewis 1989:193).

The incineration of garbage continued to be seen as preferable to other forms of refuse disposal even though the threat of plague had receded. The circumstances that led the Balmain Council to build an incinerator in 1907/8 are illustrative of what occurred in many other parts of Australia. Up to this time the whole of Balmain's refuse was dumped at Elkington Park and not surprisingly:-

[M]any complaints were made to the Council by the residents in the vicinity of Elkington Park, about the nuisances arising from the tip, consisting of noxious odours, flies, cockroaches etc., but the Council, having no other means at time for disposing of its refuse was unable to provide a remedy of the complaints. The residents at last presented a numerously signed petition to the Board of Health, praying for relief, and an officer of the Board (Dr Stokes) made a thorough investigation and inspection of the position. The Council was subsequently informed that an injunction would be taken out against it if the practice of garbage dumping did not cease. There appeared to be only two alternatives to overcome the difficulty, viz., (a) To punt the garbage out to sea, and (b) erect a garbage destructor (Thornton and Sommerville 1935:31-33).

The decision was taken that the Sydney Electric Light and Power Company erect the destructor in Balmain. It was intended to 'deal with the refuse from three other municipalities the size of Balmain'...and that the 'heat generated [be] utilised to raise steam for operating the electric light [sic]...and....during the hours the destructor is in operation no other fuel is [to be] used' (Vailoux and Reeves 1910:29 and Solling and Reynolds 1997:66). The decision to build the Balmain destructor was based on the conclusion that punting to sea involved great expense without any appreciable benefit apart from disposing of the garbage. Incinerators, however, produced heat that drove steam engines and in turn electric generators that could provide electric lighting and power electric trams (Thornton 1935:31).

The demand for more incinerators increased and on the 9th of February 1909 the Sydney City Council resolved to build an additional destructor at Pymont. The new destructor, with a capacity to destroy ninety to one hundred tons of refuse per day, was completed in May 1911 (SCA, CRS 42/4 Annual Report of City Surveyor 1915:9). Most municipalities around Sydney accepted the views expressed by the medical profession and sanitation reformers that incineration was the preferred method of waste disposal. Not surprisingly, these views were echoed by engineers and incinerator manufacturers alike.

Councils continued to incinerate garbage even though it was the most expensive waste disposal option available and despite the fact that most of them had ample vacant land that could be used for dumping purposes. Coward states that about thirty incinerators were built up until 1935 and these met the waste disposal needs of twenty-three municipalities in and around Sydney (Coward 1988).

The Proceedings of the Municipal Council of Sydney from 1910 to 1930 indicate that incineration at Moore Park and Pyrmont, land tipping at Moore Park, and sea dumping were all being utilised for the disposal of Sydney's waste. In 1915 the editor of *The Commonwealth Engineer* observed that while most of Sydney's 'refuse has been successfully treated at the Moore Park and Pyrmont destructors, but, at the same time, a larger quantity, and containing some of the choicer specimens [sic], has been punted to sea. The councillors hold diverse views as to the best means of the disposal of refuse, and, notwithstanding the overwhelming evidence against the practice of punting to sea, some of them actually believe in it' (Editor 1915 *Commonwealth Engineer*:241).

Waste now fell into specific categories predicated on its physical characteristics and mode of disposal. Waste was either *sinkable* or *unsinkable* for sea dumping purposes, or, *combustible* or *incombustible* in the case of the incineration option. Solid incombustible waste could either be sent to landfill or dumped at sea. Landfill remained a component of incineration as solid residues of ash and clinker had to be disposed. These residues generally went to landfill or were utilised in the councils road building and other works programs. It is interesting to note that in 1936 290 tons of *gully silt* went to the Sydney Sports Ground as *fill*.⁹

The Annual Report of Sydney Council (SCA 1919) indicates that, 28,643 tons of garbage was burnt at Moore Park, and 12,681 tons at Pyrmont. Punting to sea accounted for 43,844 tons and 2,774 tons went to landfill at Camperdown. Ten years later, in 1929, the Annual Report indicates that 19,476 tons were incinerated at Moore Park and 22,952 at Pyrmont; landfill accounted for 16,017 tons and 30,084 tons were punted to sea. It is interesting to note that the total tonnage of refuse in 1919 was 96, 072 and in 1929 this figure was 88, 529; a reduction of approximately 10,000 tons against the previous year's total.

By the late 1920's the Moore Park destructor was becoming less able to cope with the city's waste and in 1929 tenders were called for a new incinerator to be built at Moore Park.

The Report of the City Cleansing Engineer's Report in 1928 mentions that:-

During 1927, one destructor being a quarter of a century old and consequently costly in maintenance, unhygienic and unsightly, the Moore Park Tin Tip almost filled in, and the Moore Park Clinker Tip provocative of complaints from occupants of residences in the vicinity and tramway travelers, consideration was given to the question of the provision of modern methods of disposal with due regard to cost, and to this end world-wide tenders were invited for a new destructor (SCA 1928 City Cleansing Engineers Department Annual Report:13).

The City of Sydney's Annual Report of 1928 had indicated that in 1928 the punting of refuse to sea¹⁰ needed to be continued due to the pressure on the Moore Park facilities. It is to be noted that this policy, which had been approved as a "temporary measure" in 1900 had been extended *incrementally* from that time onwards. Urban waste disposal in Sydney, as a mix of incineration, landfill and sea dumping continued. Two issues though caused the Council headaches. Firstly the challenges to sea dumping and secondly, the related problem of capacity at Moore Park.

What might be termed the *punting debate* had been continuing for decades. Recriminatory, hostile interchanges between the City and sea-side suburban councils, concerned with refuse being washed onto their beaches, had been commonplace since the late 19th century. The Editor of the Commonwealth Engineer summed up the problem poetically as early as 1915 when he wrote, 'The sea, however, has the habit of giving up its dead...to cast-up on the pretty and thickly populated foreshores...disfiguring the surroundings and creating a disgusting effluvium' (Editor Commonwealth Engineer 1915:241). However, complaints about the sea dumping of garbage resulting in beach pollution did not go away; 'It is so bad at Coogee that the sharks will not go there now', quipped one politician in 1929 (Coward 1988:259).

The *punting debate* came to a head in 1932 when the Commonwealth Government enacted the *Beaches, Fishing Grounds and Sea Routes Protection Act* in December of that year. In response to this Commonwealth legislation the New South Wales government had no choice but to ban sea dumping within fifteen miles of the Sydney coast in 1933 (Coward 1988:259-260). The Council immediately ceased punting refuse to sea and relinquished its lease with the Sydney Harbour Trust with respect to the jetty at Gipps Street, Pyrmont which had been used to load barges.

⁹ City of Sydney, Engineers Department Report 1948:84

¹⁰ Incineration was roughly 10/- per ton as against 6/3 per ton for punting; \$1.00 vs \$0.65.

The state of urban Sydney's refuse disposal, following the banning of punting, is reflected in the following statistical data from the Council's Annual Report for 1933 (MCS 1933) showing that 7,947 tons of refuse were incinerated at Moore Park and 25,116 at Pyrmont with 38,187 going to landfill at Moore Park. Incineration of urban waste was still being strongly promoted yet landfill had to take the overflow.

The cost of incineration, and the onset of the Depression, which raised the need to create employment were factors in the early 1930's which the Council took into account in considering the need for a larger waste disposal capacity. On the 21st of October 1931 the Health and By-laws Committee of the Sydney City Council called on the City Engineer to 'submit a report on the question of disposal of the City's refuse generally'. In series of Council Minutes (SCA, TC 5252/31), November 1931 to October 1933, outlined the issues. Five *schemes* for disposal of refuse were put forward at a time when the disposal options remained incineration, tipping and punting. The *reasons for adoption of any particular method* are stated as:-

1. Climate and seasonal changes.
2. Population and quantity of refuse
3. Area
4. Proximity to sea.
5. Possibilities for salvage and market for same.
6. Areas for reclamation available.
7. Transport facilities from Collection Area and length of haul.
8. Labour Costs

Correspondence on Sydney City Council files show that in 1932 there were discussions with George Shaw, the Town Clerk at Concord, on the subject of *Garbage Disposal and Swamp Reclamation*. Shaw proposed that the Sydney Council create a landfill at Concord arguing that it had the advantage of providing employment, would enable the City Council to dispose of garbage at a lesser expenditure, eliminate possible complaints of beach *trouble* from dumping at sea, create of additional recreation areas for the Western Suburbs and the eliminate low lying swamp areas with their attendant disadvantages (SCA 1932:Correspondence File MSCC). Shaw's proposal, while not accepted, serves to indicate what issues were considered relevant in the waste debate being waged in Sydney in the early 1930's.

Facing the realisation that sea dumping was about to be banned the Council resolved to build a 'Burley Griffin' Reverbatory Incinerator at Moore Park early in 1932. However this decision had to be reversed almost as soon as it was made as the site was found to be a

Dedicated Reserve. The Council quickly moved to overcome this obstacle with a Notice in the Government Gazette and a special meeting of the Works Committee that reversed the 'Dedication' and confirmed the earlier approval. Yet the Council then faced further fierce opposition from the local community living in the vicinity of Moore Park. Taking the course of least resistance the Council then opted to have the incinerator built on a site at Pymont (SCA, Proceedings of MCS 1932 TC 5254/31). Five years later the *Sydney Morning Herald* (4th of July 1937) reported that 'The new incinerator which was built for the City Council completed a stringent burning test as required by contract and the city engineer'.

The crisis faced by the Sydney City Council at this time is illustrative of a number of significant changes that were taking place in the urban waste disposal arena. The Council, in consultation with other councils, called for a Report to consider a wide range of waste disposal issues, which, significantly, included the unemployment problem. The intervention of the Commonwealth Government with respect to punting was a new, and significant development. It appears to be the first direct intervention by the Federal Government into the area of urban waste disposal.

The processes adopted by the Council to put new policies in place also stand out. The degree of consultation, leading to iterative policy adjustments, what has been discussed in Chapter Four as the 'small experiments' of policy implementation, are noteworthy. The Council took a chance in deciding to build the new incinerator at Moore Park on a "decide, announce, defend" approach. However, bowing to pressure this became a decide, announce, defend and concede approach. The processes of the Policy Cycle discussed earlier come into focus and illustrate the need for flexibility and compromise as the 'public voice' began to be heard.

During what I have termed the *second wave* of incineration, incinerators were also commissioned for both Mosman and Glebe in the early 1930's. On the 1st of May 1933 the Editor of *The Commonwealth Engineer* stated; 'It is a matter for surprise that so many cities and towns throughout Australia adhere to the disgusting and insanitary practice of tipping refuse' (The Commonwealth Engineer May 1933:283). A report by Dr J S Purdy on behalf of the Director General of Public Health NSW in 1934 expressed the view shared by the Government and the Council when he stated that:-

It was demonstrated that the incinerator is a public utility, the erection and operation of which replaced a serious nuisance from the burning of refuse at the tip. Since the decision of the Commissioner one has not heard a murmur against the incinerator. It is evidently realised that the alleged depreciation of the value of property from proximity thereto was due to the publicity given to the agitation (Coward 1988:260).

In the immediate post War period incineration was on the wane as most of the metropolitan incinerators had closed by late the 1940's and early 1950's (Mertz 1997:1). There were dramatic changes in the volume and the nature of the waste stream at a time when the continued use of incineration was again being questioned. A report of the City Engineer in February 1948, entitled, *Overseas Cleansing Practice*, reviewed incineration, barging, waste reduction strategies, water borne disposal, and *salvaging*, as alternative disposal methods (SCC Annual Report 1948). The Council signaled its intention to return to a greater use of landfill when in June of that year it advertised in the press for 'disused brick pits, quarries or low lying land –for suitable use by the Council for the tipping of incombustible refuse on the basis of outright purchase or, alternatively, long term lease by Council' (SCA, MCS TC 1932/48). A series of landfills were subsequently created at St Peters¹¹ in 1948.

In 1952, at a time when each municipality still looked after its own waste disposal needs, a conference of Councils decided to refer this 'difficult problem confronting councils' to the Local Government Association. A report was then prepared by R D L Fraser, the Chief County Planner of the Cumberland County Council as an aspect of the County of Cumberland Planning Scheme. Fraser carried out an investigation over two years into the systems and methods of garbage disposal in use in the County of Cumberland. In the Introduction to his Report Fraser observes that;-

Garbage disposal is an essential urban service increasing in its importance with the size and rapidity of growth of a City. Sydney.....labours under an outmoded garbage disposal system which had become a serious problem to many Councils particularly those in the inner metropolitan area (Fraser 1954:1).

The report goes on to discuss alternative methods of disposal and notes in passing that 82% of Sydney's domestic garbage in 1952 was disposed of by tipping. Incineration ceased to be an attractive alternative due to its relatively high cost (16/- to 25/-) per ton as against (1/- to 12/-). Fraser confirms at paragraph 27 that the prime determinant of the mode of disposal is the cost as 'Councils are naturally anxious to secure disposal of their rubbish by the most economical method available (Fraser 1954). The only impediment to the universal adoption of tipping appears to have been a lack of suitable sites in some municipalities and the potential for causing a public 'nuisance' (Fraser 1954:4).

¹¹ Brickworks had been established in the area by the Goodsell family in 1848; initially they produced hand made bricks using local clays and in 1871 produced the first machine made bricks. (Report July 1982 Sydney Park Plan of Management, Department of Environment and Planning NSW pp19-20))

The Report acknowledges that while bacteriological digestion is still in the experimental stage the 'next most suitable (method) is controlled tippingan established satisfactory method both economical in itself and profitable in the land reclamation it makes possible'.

The rider Fraser adds is that:-

...controlled tipping could only be introduced generally in Sydney by the abandonment of the System [sic] of individual municipal control. This is because areas available for tipping are not well distributed and vary in size (Fraser 1954)

The overall conclusions of the Fraser Report in 1954 were that *controlled tipping* was the most suitable method of garbage disposal and, to implement this strategy, a collective approach was required of Councils to reserve appropriate landfill sites. A remarkable conclusion, implicit in Fraser's report was that domestic garbage, suitable for soil rejuvenation or salvage, was not considered *waste*. By 1955 the Council records indicate that the Council had agreed in principal to the acquisition of an eight acre brick pit at Euston Road Alexandria and was also negotiating the purchase of six other brick pits in the Alexandria area (SCA, MCS Ref 3387/54, Proceedings of SCC 1955:628).

On the 17th of September 1956 the Sydney City Council took a further decisive step in the process of controlling the return to landfill by making regulations under the Local Government Act 1919 which gave it control over the creation of tips and tipping on land generally (SCA, Proceedings of CCS 2129/56). The Council then agreed in October of 1959 to complete the purchase of an additional seven brick pits in the St Peters area, covering an area of over eighty acres, for the sum of eight hundred thousand pounds (SCA, Proceedings 1959:525 2390/58). In 1959 a further report was prepared by the Chief County Planner R D L Fraser, *Refuse Disposal in the County of Cumberland* (Cumberland 1959). The Terms of Reference of this report were to:-

...investigate and report on all aspects of the critical problem of industrial waste disposal currently confronting metropolitan Sydney and the urban areas adjoining it and, in the light of my professional training and experience, to recommend to the Government of New South Wales (a) measures which should be taken to relieve the immediate problem, and (b) measures which should be taken to prepare for and organise a comprehensive and organised approach to the overall problem of wasted disposal and pollution control in the future (Cumberland 1959).

At a practical level this report (Cumberland County Council 1959) served as 'a comprehensive survey to locate suitable areas for disposal of garbage by tipping' following a conference of councils concerned with the future operation of the St Peters Tip.

An addendum to the 1959 Cumberland County Council Report states that there have been 'two important developments in the garbage disposal situation in Sydney'. The first of these was the concern caused by the realisation that the (then) St Peters Tip had a future life estimated at only seven years and secondly, that with respect to the bacteriological digester plant operated by the Canterbury Council 'a number of problems had been encountered and these were too great for an individual council to surmount' (Cumberland County Council 1959:Addendum). The Forward to the 1959 Report recognised that landfill is 'strongly opposed in some quarters' when compared to incineration, however, 'landfill has the decided advantage of lower cost while it is also an effective way of ridding the community of unsightly and sometimes dangerous swamps and disused brick pits. Both advantages have been amply illustrated' (Cumberland County Council 1959).

In the body of the report, at paragraph 9, Fraser recognised that 'Incineration is perhaps the most satisfactory of all methods as far as far as health and aesthetics is concerned, in that garbage is rendered completely innocuous and the residues are small. However, initial costs are high in construction of the plant, the life of the incinerator is limited and maintenance costs can become a burden' (Cumberland County Council 1959).

Paragraphs 10 to 13 of the second Fraser Report capture the sentiments of the time and distil out the premises on which the Conclusions to the report are predicated:-

10 Burning in open tips has most of the advantages of incineration combined with the low costs of tipping. However, open-air combustion can only be carried out where the tip is well removed from residential areas and where the spread of fire can be controlled. It is difficult to find such an area within the Metropolitan area or even with the County but a few councils do burn refuse in open tips, confining the burning to periods of low bushfire danger. But even with the best precautions an open tip is a potential danger through spontaneous combustion and vandal fires [sic]. For these reasons fire tipping is not likely to become common practice.

11 Disposal of refuse by tipping and covering is by far the most popular form of disposal and is the most valuable and desirable in that large areas of land can be improved and put to good use. This conservation aspect of refuse disposal is most important. It was emphasised in Council's preliminary report and further investigation has served to establish it more firmly.

12 A distinction should be drawn between forms of tipping refuse. Refuse can be simply deposited in an area and allowed to accumulate, settling down and decomposing in the course of time to a point where sight and smell are not offensive and some use of the area is possible; or it can be deposited and treated in some way to render it innocuous. The first method was sometimes practiced in outer suburbs or country towns but is not encouraged and in fact is prohibited by legislation.

13 The second method has a number of variations ranging from simple covering of the refuse at intervals to sense compaction and covering adequately every day. The term "controlled tipping" is generally applicable to the majority of disposal work in the County where refuse is disposed by tipping and covering but where lack of plant for consolidation or inadequacy of covering material maintain some unsatisfactory features in the tips. The most satisfactory type of tipping is that where adequate compaction is achieved bureaucracy the use of proper plant and where putrescible garbage is sealed off every day by suitable and adequate covering materials. The term "sanitary land fill" is applicable to such a process. With few exceptions the tips in the County are the sanitary landfill type.

The Cumberland County Council Report (1959) outlines a picture of waste disposal in metropolitan Sydney, detailing those councils with, and those lacking, disposal facilities. At this time Sydney City Council is recorded as disposing of the bulk of its garbage at old brick pits at Alexandria. Willoughby Council still operated an incinerator in conjunction with a *controlled tipping* facility; the Leichhardt-Balmain incinerator has been closed due to 'breakdowns and prohibitive costs of operation'; Randwick, Waverley, Woollahra were giving 'consideration to incineration, it being almost impossible to find suitable tip sites in Waverley and Woollahra' (Cumberland County Council 1959).

MELBOURNE The Disposal of Urban Waste 1900 - 1960

Melbourne entered the 20th century as a relatively wealthy city with electric lighting, trams, and suburban railways. As discussed in the preceding chapter noxious trades had been banned from the city and in 1898 the long awaited underground sewerage system became a reality. Writing in 1905, Dr James Jamieson stated that, 'the adoption of a system of underground sewerage, bringing with it not only a drying and cleansing both of surface and subsoil, but also the almost complete abolition, in sewered areas, of the old and abominable pan system of nightsoil collection' (Jamieson 1905:425-426).

By 1900 though, Melbourne also had to face the implications of bubonic plague. As in the case of Sydney, the city's administration was galvanised into immediate action. As reported in the Intercolonial Medical Journal of the 20th of May 1900, the first case of bubonic plague was diagnosed in Melbourne on the 13th of May 1900. The patient, a twenty-six year old woman, died the next day. The plague caused great alarm and, as in the case of Sydney, it acted as a catalyst for change in urban waste management, as an aspect of the overall health management agenda of the city.

At this time the city's refuse, domestic and trade waste, was 'not kept separate, but indiscriminately taken up and carted to the West Melbourne Tip by the contractor' (MCA¹² City of Melbourne Council Proceedings 20th June 1900:np). On the 10th of March 1900

the City of Melbourne published *Precautions Against Bubonic Plague, A Special Notice to Ratepayers*. City residents were exhorted to exercise the 'utmost cleanliness...specially the regular flushing of all drains and sweeping of yard spaces',.... 'putting all house refuse (bread, bones, fruit, vegetables etc) into a properly constructed rubbish box (iron by preference), [for] removal by scavengers on the regular days fixed therefor', and prohibited the 'throwing of rubbish into the streets or rights-of-way or on any vacant land.' Furthermore the Council advised that complaints concerning existing nuisances 'will receive immediate attention' (MCA Proceedings 1900:np).

Following the advice of Ashburton Thompson and the example of Sydney, the killing of rats also became a priority. On the 9th of April 1900 radical measures were put in place that included the creation of a special fund from which capitation fees could be paid. The inner metropolitan municipalities took 'action for the extermination of rats in the Metropolis by agreeing to contribute upon the basis of valuation, to a common fund to be expended in the payment of a bonus of two pence per head for all rats brought to the various depots in those Municipalities '(MCA Proceedings 1900). This capitation fee was raised to six pence per rat in July 1900, but later reduced to three pence per head at the end of August 1900 (MCA Proceedings 1900:np). The size of the capitation fee being, in a way, a *risk thermostat* of the *dread factor* induced in the community by the fear of plague, as discussed by Adams (1995)¹³.

Melbourne City Council also turned its mind to building incinerators. On the 20th of June 1900, the City Surveyor, A C Mountain, reported to the Chairman of the Special Committee on Destruction of House Refuse 'on the various types of Refuse Destructors in use; their suitability for the requirements of this City; and, in the event of the Council's determining to erect Destructors in Melbourne, as to the best sites available' (MCA Proceedings 1900 np). The Council records indicate that in 1891-92 an experimental two cell destructor was erected in the city and was able to treat forty tons per day; 'but since the date named (1891-92) much development has taken place at home¹⁴ in connection with the treatment of refuse, and it remains to be seen if something more economical in working is not now in existence' (MCA Proceedings 1900). Details of eighteen different commercially produced destructors, all English, are discussed. The possible sites for a destructor were also considered; Lonsdale Street, Dudley Street, and the Horse Market Reserve near Flemington Road.

¹² MCA cited for Melbourne Council Archival Records.

¹³ See page 55.

¹⁴ This is a reference to England and recurs in several places in the Mountain Report.

In 1908 Mr Mountain, spent eight months conducting a survey of incineration in America, England and Europe. On his return he submitted his report, (the Mountain Report), to Council recommending the construction of an inner city incinerator. Tenders were called on the 23rd of October 1906 and the Council entered into a contract with the successful tenderer, Horstfall, on the 1st of May 1908; 'After considerable discussion of the site, it was finally decided to erect the Destructor on the Electric Supply Station site, in Spencer Street' (Report on Horsfall Destructor Contract, City of Melbourne Proceedings, 1911:321).

The Mountain Report went on to state that 'the completion of this plant will enable the whole of the garbage of the City to be destroyed by fire, and thus put an end to the objectionable *tipping* of offensive refuse' (MCA Notice Papers etc. City Council 1907-08:150-151). The furnaces were first lit in the 18th October 1909 and after extensive testing, and a number of adjustments, the Council took formal delivery of the plant on the 22nd of May 1911.

In Victoria there was a general governmental directive that municipalities should incinerate their waste. *The Commonwealth Engineer* (1913) commented that 'the time is in sight when this hygienic method of disposal of house refuse will be properly controlled....and.... the Board (of Health in Victoria) has given notice to 32 municipalities throughout the state that they should take steps, either singly or in conjunction with others, to abandon tips and destroy their rubbish by fire' (Editor 1913 Commonwealth Engineer). At this time there were only two major municipal incinerators in operation in Victoria; Melbourne's Spencer Street incinerator and the one at Prahran.

The management of waste in Prahran, a municipality within the greater Melbourne metropolitan area, reflects the trends already observed in Sydney at this time. The Prahran Council had used a worked-out brick-pit as a tip for the city's rubbish since 1885. 'Gradually the hole in the earth disappeared, and the opportunity was taken to devote it to the purposes it was originally purchased for, that of a municipal garden' (Cooper 1912:304). Thereafter the council could not find another convenient site to dump refuse which in turn led to the *mission* by Mr William Calder, City Surveyor, to take a global look at incinerator technology; 'the Council decided to send him to the Old World and to America' (Cooper 1912:304). Calder set out in June 1906 and inspected 35 incinerators and published a Report of his travels. The City of Prahran began incinerating its refuse November of 1907. The destructor plant, which included steam driven electric generators was finally completed and commissioned in April 1909 (Cooper 1912:306).

The bulk of the refuse from the city of Melbourne continued to be incinerated at the Spencer/Lonsdale Street destructor plant, with a non-combustible residue going to a nearby landfill at Dynon Road in West Melbourne. However, the City of Melbourne Municipal Proceedings, 1913-1914, comment on the decision of health authorities to ban refuse disposal at *tips*. In a Report of the 21st of September 1914, which took three years to prepare, the Chairman of the Public Works Committee expressed concern that the Lonsdale Street incinerator was only able to handle two thirds of the city's refuse. It was therefore proposed that a twelve-acre site at Dynon Road, West Melbourne, be used for the construction of an additional incinerator (MCA Proceedings 1913-14: 350).

In 1921 The Health Committee of the City of Melbourne took notice of an outbreak of bubonic plague in Brisbane; 'the sudden death of a man occurred there on the 23rd of August 1921'. The report refers to 'the danger of invasion of the City of Melbourne (by plague), and setting out the action which has been taken...the Committee have been assiduous in their efforts to combat the plague and destroy rats within the Council area' (MCA Proceedings 1920-21: 397-99).

The Council records of the same year report that 'the rat staff now consist of a foreman and four assistants' (MCA Proceedings 1920-21:455) . In the year 1921-22, 87% of the city's waste was incinerated and '13% is deposited in tips where it is covered with clean earth and ashes' (MCA Proceedings 1920-21: 462). By-law 150 of June 1919 prohibited the deposit of *offensive substances* upon the streets or lanes of the city and required the occupiers of houses or premises within the City to provide proper receptacles for the temporary deposit of house scraps and refuse (MCA By-Laws of the Melbourne City Council No's 1-151, 1843-1919). This marked the introduction of the domestic *rubbish tin* in Melbourne.

In 1921-22, Melbourne's City Engineer, H E Morton, visited America and Europe. Morton reported to Council on his return, discussing the advantages of the use of mechanical transport for the collection of garbage, but 'for haulage horses are cheaper over shorter distances...[and that]...the most sanitary method of treating household refuse is, without doubt, incineration' (MCA Proceedings Engineers Report, CMCP, 1922-23:725-747).

As in the case of Sydney, municipal incinerators continued to be built well into the 1930's and beyond even though the risk of plague had receded by the 1920's. New incinerators were built in suburban Sandringham in 1925, at Box Hill in 1927, Essendon in 1929 and at Brunswick in 1936. Various Victorian country centres also adopted incineration (Johnson 1977:124-125). As late as 1949/50 St Kilda completed a Monohearth furnace to replace its original destructor built in 1919. The "new" St Kilda incinerator, built at a cost of

£72,000 continued to operate into the late sixties. This facility was the subject of an undated report (most probably completed in 1967) by one C P Dundon entitled *The Problem of Municipal Refuse Disposal in General, and Refuse Disposal in the City of St Kilda in Particular*, which extolled the virtues of incineration and likened landfill 'to sweeping the dirt under the carpet'. Dundon in the same report described composting as the most controversial method of waste management a conclusion no doubt based on the proximity of sites to residential areas and the hence the level of 'nuisance' caused to nearby residents (Dundon 1967).

However, reflective of the pattern in New South Wales, the post war period saw the gradual phasing out of municipal incinerators and a return to the more economical expedient of landfill. The Minutes of the Public Works Committee of the City of Melbourne record that on the 5th of August 1946 the Council resolved to close down the refuse destructor in Lonsdale/Spencer Streets. Demolition was completed in 1949 and in its place a small incinerator was 'erected for temporary use at the City Councils Dynon Road Depot' (VPRS 8945/P2/86). The landfill at West Melbourne then continued to be used for the city's waste although it appears that small quantities of refuse were incinerated at Dynon Road until the 1950's.

The Proceedings of the City of Melbourne (MCA Proceedings 1956-57) indicate that the West Melbourne tip was reaching full capacity in 1956 (MCA Proceedings 1956-57:346) and in 1959 there is a passing reference to the Councils 'new tip' at Brunswick (MCA Proceedings 1959-60). While there was a scarcity of available space in the immediate vicinity of the City of Melbourne to accommodate a new landfill, overall, there was no actual or foreseeable shortage of existing landfill sites for domestic or putrescible wastes in the greater Melbourne metropolitan area. This is borne out by a spreadsheet database of known landfill sites maintained by the EPA (Vic) that lists well over two hundred sites in the vicinity of Melbourne. The majority of these landfills were reclaimed sand, clay or basalt quarries, many of which had operated for decades as municipal landfills (McIntosh, pers. comm. 2000).

As will be discussed in some detail in Chapters Eight to Eleven this was a time when clean air legislation was being widely discussed throughout Australia. The concern to reduce smoke pollution no doubt helped 'tip the balance' against incineration in those few municipalities still pondering the future of incinerators that were becoming progressively more expensive to maintain and operate. Following the lead taken in the United Kingdom, Victoria passed Australia's first *Clean Air Act* in 1958 (Act No 6620 of 1958).

The *Clean Air Act* had a direct impact on the burning of refuse in industrial and backyard incinerators as well as in open rubbish tip sites. The Act provides that the Commission of Public Health administers the provisions of the Act with the power to delegate to Municipal Councils. Clause 6 of the Act stated, *inter alia*, that 'dark smoke or dense smoke shall not be emitted from a chimney used in connection with any industrial plant' and section 9 directs that 'equipment for arresting air impurities which has been approved' be installed in new fireplaces. A fireplace is defined in section 3 to include 'any furnace grate stove or other place whether open or closed ...and includes an incinerator'. Such equipment was both very costly to purchase and to maintain.

The return to on-land urban waste disposal was clearly gaining momentum in Melbourne where there was an ample supply of worked-out sand and gravel pits. This factor, which when combined with the implications of the Clean Air Act, made the death of municipal incinerators virtually inevitable.

ADELAIDE The Disposal of Urban Waste 1900 - 1960

Adelaide entered the 20th century with an inner urban population less than half of that in Sydney and Melbourne (Ellery 1905:421 and Jamieson 1905:425). The city boasted a clean and reliable water supply, deep drainage and an efficient system of refuse collection. However, the sanitary disposal of the city's refuse remained a problem yet to be resolved.

The West parklands, on the fringe of the city, were still being used as the City's principal *tip*. Although Incineration was seen by many as a solution to the city's waste disposal problems the City Council was slower than its counterparts in the eastern states to respond to the threat of bubonic plague. What had been a remarkable catalyst for change in both Sydney and Melbourne had a significantly a lesser impact in Adelaide, even though Adelaide *hosted* the first reported case of bubonic plague on 15th of January of 1900.

The fact that there were only three reported cases of plague early in 1900, and no further cases until 1909, (Cumpston and Lewis 1989:193) was a critical factor in determining the City Council's response to demands that a destructor be built. The Town Clerk reported to Council on the 22nd of May 1900 'that the question of the erection of a refuse destructor had been under consideration for upwards of five years'. The *Medical Officer of Health* as he was known emphasised 'that the erection of the refuse destructor was absolutely

necessary in the interests of public health and should not be delayed (ACA¹⁵ Digest of Proceedings 1900:271). The City Fathers procrastinated. In 1900 the City Council passed, and then revoked a motion, at the behest of the Health Committee, to call for immediate tenders to erect a destructor.

The proposed siting of the incinerator in the parklands became a major stumbling block despite the fact that the parklands had hosted dumps since colonial days. In 1883 a committee of the Council considering the re-siting of the city's dump resolved that 'If the Council deem it desirable that the present site at ... the slaughterhouse¹⁶...should be changed, your Committee would recommend that a site on the West Parklands behind the cemetery be selected...(ACA Digest of Proceedings 1882-83:209). And so it was. The city's garbage and nightsoil continued to be dumped in the parklands for the next twenty-five years (Anson 1993:2). As in Sydney and Melbourne, the Adelaide City Council looked after the day-to-day administration of all health and local sanitation issues within the city. The Council employed four health inspectors under the direction of the Medical Officer of Health. The City Surveyor was responsible for the removal and disposal of household refuse.

No further action was taken in 1900 to build an incinerator; however, when in March of 1901 the City Surveyor reported that rubbish tips (in the parklands) *were nearly filled up*, the Health Committee resolved 'that it is necessary to erect a Refuse Destructor forthwith' (ACA Digest of Proceedings 1900:271). The government of the day was then asked to introduce a Bill into Parliament to authorise the Council to borrow the necessary funds and to set aside a portion of the Park Lands as a site for an incinerator. A Select Committee then considered the issues and rejected the proposal. This led to the passing of the Municipal Corporations Act Amendment Act of 1903 that specifically provided that no machinery for the destruction of refuse should be erected on the parklands.

Three years had been lost in discussion, and ironically, despite the fact that a destructor could not be built in the parklands, they were still being used as the city's principal rubbish tip. In September of 1905 the Australasian Medical Conference in Adelaide by the Town Clerk, T. Geo Ellery Esq. that 'The refuse is conveyed in open carts to a *tip* on the parklands, where the evils inherent in all tips are minimised by covering the refuse as soon as it is tipped, and by preventing rag and bone picking at the tip (Ellery 1905). The Town Clerk went on to state that 'but for influential local opposition to the site selected', (in the parklands) Adelaide would have a destructor in full operation.

¹⁵ ACA cited for Adelaide City Archives

¹⁶ Located in the Park Lands near Torrens River.

The objections, as familiar today as they were then, were based on the argument that the parklands were not to be built on but preserved for the recreational use of the community. In 1907 the *destructor debate* was still in *full swing* in Adelaide. The Town Clerk prepared *A Synopsis of Information Re Refuse* that was submitted to Council on the first of October 1907. This document comprehensively summarises the seven years of conflict and debate within Council in relation to the erection of an incinerator (ACA Digest of Proceedings 1906-7). Destructors were promoted as clean, and as representing no threat to health. The *Synopsis* referred to the Town Clerk's Annual Report of 1905 recounting that:-

...voluminous evidence was given by medical and engineering experts, on behalf of the Adelaide City Council when the question of Refuse Destructors was before Parliament, which conclusively showed they were no nuisance; and it is interesting to read in the *Magazine of Commerce* that Destructors are now-a-days built in whatever place is most convenient economically, without much regard to surrounding property (ACA Digest of Proceedings 1906-7).

A discussion then followed in relation to the smoke and nuisance free operation of a destructor in the City of Westminster and various other English cities and referred to the 'immense economic and sanitary advantages in disposing of their refuse by destructors' (ACA Digest of Proceedings 1906-7). The continued use of the parklands as a rubbish-tip was also under challenge. The Notice Paper of the Council's meeting of the 1st of July 1907 notes that dumping in the Park Lands:-

...has been stigmatised as *crude* and *insanitary*. Apart from the fact that the Council has no right to tip refuse on the Park Lands which are reserved for the comfort, convenience, health, enjoyment and recreation of the people, we are forced to admit that all available spaces on the Park Lands are full and we have no right to foul or defile them further (Adelaide City Council Digest of Proceedings 1906-7).

The *Advertiser* newspaper reported on the 16th of July, 1907, that:-

...the provision of a refuse destructor....will destroy by fire the household garbage now disposed of by the unscientific and insanitary [sic] method of *tipping* in the park lands. A Corporation *tip* is ugly and malodorous, but it is still worse — a nursery of disease germs.' 'In a few months there will be no more room on the Park Lands for the deposit of rubbish, and if garbage has to be carted outside the City bounds, the cost will exceed interest and sinking fund payments for an up-to-date destructor (ACA Digest of Proceedings 1907 Mayors Minute).

A destructor, it was argued, 'must be looked upon as an essential part of the sanitary equipment of the city...and this every authority agrees with [sic].' The need to provide for rubbish collection using covered carts in place of *ramshackle drays* was also discussed in the context of raising the necessary funds to undertake these projected *city improvements* (ACA Digest of Proceedings Mayors Minute 1907).

It is interesting to note that the argument that tips in the parklands were full was raised both in 1901 and again in 1907, yet the practice continued. The Council in pushing for its objective, garnered copies of specifications for destructors in Melbourne, Sydney, Wellington and Auckland. It also published the comprehensive 1907 report by William Calder for the City of Prahran on 'Refuse Destructors in Europe and Elsewhere'. This report refers to the fact that 280 refuse destructors were built in Great Britain and it linked this to a death rate from disease of '15.8 per thousand ... the lowest of any European Country' (Calder in Adelaide City Council Digest of Proceedings 1906-7).

On the 1st of July 1907 the Council approved the building of *Plant for the Destruction of Garbage* stating that:-

Apart from the fact that the Council has no legal right to tip refuse on the Park Lands which are reserved for the comfort, convenience, health, enjoyment, and recreation of the people, we are forced to admit that all available spaces on the Park Lands are full, and we have no right to foul or defile them further (ACA Digest of Proceedings 1907).

The members of Council then cast the vote to enable the *Bill for an Act to Borrow £80,000* to build an incinerator be sent to the Government (Adelaide City Council Digest of Proceedings of Council and Committee Meetings 1906-1907:243-245). By November 1907, after consultation with the City Councils in Sydney and Melbourne, the City Engineer settled specifications and tenders were called in London, Sydney, Melbourne and Adelaide. A *Special Health Committee* was set up to handle the incineration issue and the State's Agent General in London was instructed to assist prospective tenderers.

On Monday the 9th of March 1908 the City Council came a step closer to getting its destructor with the purchase of 'two fine acres between two main streets', in the City of Adelaide, which then became the site of what became known as the Halifax Street Depot (Adelaide 1908). A public debate raged with City residents fearing that smoke and refuse carts would cause a nuisance. At the meeting of the 9th of March a report, in the form of letter from the City Engineer, was tabled. The letter referred a *surprise visit* to the Prahran destructor during which he observed that it operated *without nuisance in close proximity to dwellings*. This was in contradiction to a report in the *Adelaide Advertiser* a year earlier, copied from the Melbourne *Argus*, that a Prahran ratepayer complained that the 'smell from the destructor was simply horrible, and so bad that it woke him up' at 3am on the day in question. The argument ended with the Council being informed that, on the advice from the City Surveyor in Prahran, the destructor was not operating at the time of the complaint.

The Council then went ahead and constructed the destructor at the Halifax Street site. The City Council's Annual Report, delivered as the *Mayor's Minute* on the 2nd of November 1909, outlined the successes of the Council during the previous year that included building the Destructor (ACA Digest of Proceedings 1909). The City's Mayor, Frank Johnson eulogised that:-

The Rubbish Destructor, which by the latest scientific methods of disposing of household refuse, will do away with the fever-disseminating and rat-breeding rubbish tips, and will further add to the healthiness of the city. (City of Adelaide Notice Papers Mayor's Minute 1909).

The Minute goes on to state that:-

...there was absolutely nothing arising out of the processes employed to destroy rubbish that was in any way offensive, and people would have no cause of complaint (City of Adelaide Notice Papers Mayor's Minute 1909).

The Halifax Street Destructor was 'a remarkable example of Edwardian recycling technology' (Morton 1996) that was modern for its times. It incorporated a steam disinfecting plant, a steam driven electrical generator, a tar distillery, a clinker mill, a mortar mill, a flag making plant, and an hydraulic tin-balling press to compress tins and other metals salvaged from the garbage. The completion of the destructor, albeit ten years after the first outbreak of bubonic plague, and fifteen years after it was first proposed, coincided with the first major recurrence of plague in South Australia which occurred at Port Adelaide in May of 1909. Five people were diagnosed with plague of whom four died (ACA Digest of Proceedings 1908-1909:26).

At a meeting of the Council on Monday the 12th of September 1909 it was reported that the Minister of Health and the members of the Central Board of Health had inspected the Destructor. The Council was congratulated on having such an 'up to date and sanitary appliance'. The meeting also referred to an illustrated article that appeared in *The Register* of the 3rd of September 1910, *Turning Waste to Profit* and directed that a thousand copies be printed. The article applauded the building of the Destructor as; 'One of the most recent indications of the importance that Adelaide is assuming as a city is seen in the adoption of modern methods of treating the refuse from dwellings business houses and factories'. The parklands were no longer home to smouldering heaps of garbage, or for that matter, the site of the new Destructor, which was located in the heart of the city.

The article in *The Register* went on to state that:-

...one would not need to go back far to recall how declivities were filled up with garbage of various descriptions, with just a topping of earth when the required level was about reached; and near the west of the city the smoke of a constant Gehenna arose day and night, even more recently where rubbish was purified by burning and the product from the fire was spread about in like manner [sic]...Henceforth, however, rubbish instead of being spread in unsightly heaps and left to carry disease or to offend the senses, will be speedily and innocuously transformed. Thus the kitchen refuse will find its apotheosis [sic] in a beam of electric light; the straw from the warehouse and the wastepaper from the office may help to drive an engine or propel a tram-car (*The Register* 1910).

The adulation was almost boundless, drowning out the dissenting voices of those who lived in the vicinity of the destructor who were made to suffer the discomforts of smoke, fumes, increased traffic, and showers of black cinders, as a sacrifice for the common good.

The Minutes of the Council Meeting of 19th of December 1910 reported that the representative of Heenan and Froude had formally handed over the Destructor to the Council. The age of incineration had arrived in Adelaide with a Destructor that not only met specifications in 1910, but which continued to handle the whole of the city's refuse until the early 1950's. In addition the Destructor earned income for the City by disposing of refuse from other municipal councils including, Unley, St Peters and Thebarton. It operated around the clock destroying 9000 tons of waste per year (Morton 1996:100). Designed and manufactured in England, it was one of the last of the large municipal incinerators installed during what I have termed the *first wave* of incineration.

During the *second wave* of incineration, three additional municipal Destructors were built in the Adelaide metropolitan area. One at Norwood in 1934/35 that was later managed by the East Torrens Destructor Trust. A second was built at Hindmarsh 1935-36, and a third at Thebarton, 1935-37. The Hindmarsh and Thebarton destructors were Burley Griffin designs using equipment provided by the Reverberatory Incinerator and Engineering Co Pty Ltd (Johnson 1977:125). The Norwood incinerator operated until about 1950 and within the ten years that followed both the Hindmarsh and Thebarton Destructors had also been decommissioned.

Decommissioning the Halifax Street Incinerator

In 1946, following the Second World War, the need to modernise the Halifax Street Destructor was raised in Council. A number of reports were generated by the Council in relation to its continued operation and the disposal of the city's waste. During the 1939-45

War, and in the immediate aftermath of the war, there was a 'scarcity of plant and machinery' to upgrade the destructor (ACA Special Files S4 File 329A). The Council simply had to make do with what it had, as did all other municipal services. The destructors *epitaph*, in the form of a report to Council by the Town Clerk, in the early 1950's, recounts that when 'installed in 1908 [sic], it was regarded as a very modern plant, but which over the years, [it] has fallen into the category of being more and more obsolete, until today it might be regarded as extremely so' (ACA Special files S4 File 329A).

The council considered a range of available options including Bacterial Reduction that was being trialed at Canterbury (NSW), incineration plants, including Reverberatory, Heenan and Froude, and the Monohearth, and finally, landfill. The Monohearth incinerator, which had been developed in America since 1942, was considered the most modern available. On the 26th of July 1949 the Town Clerk suggested that consideration be given to the installation of a new incinerator but that discussion be deferred pending the installation and operation of the new Monohearth destructor at St Kilda (ACA TCD (C15) Town Clerk's Special files S4File 329A).

The fact that the Council owned forty acres of land in Wingfield, in a declared noxious trades area eight miles from the city, no doubt had a bearing on the discussions. The Town Clerk's Report of 16th of April 1951 advised that the Enfield Municipal Council had given approval for landfill to be carried out on the land owned by the Corporation at Wingfield. The Report points out that the transport charges to Wingfield, whether to a destructor plant or to a landfill site, would be the same, however, 'the actual incineration cost would be approximately three to four times the cost of depositing the material in a land fill. The Report went on to state that:-

.....both methods are satisfactory from the hygiene viewpoint, but the life of the sanitary landfill, if the negotiations with the Department of the Army [to lease additional land near the site] are successful far exceed that of a destructor. Accordingly the method of disposal by landfill at Wingfield is to be preferred to the erection of a new destructor at Wingfield (Town Clerk's Special files S4 File 329A:4).

At a meeting of the Council on the 17th of May 1951 the Special Committee re Refuse Destruction, after considering a *comprehensive report* submitted by the Town Clerk, recommended:-

(a) That the Monohearth mechanical plant in course of installation at St Kilda, Victoria, and which will probably be placed in operation during the current year, and the bacterial reduction plant to be installed at Canterbury, New South Wales, be kept under observation.

(b) That experiments be undertaken with "sanitary land fill" method of disposal at the Council's land at Wingfield and for the purpose that two specially designed refuse collection vehicles be purchased at an estimated cost of L8,500. These vehicles would be equally valuable for any other method of refuse disposal (ACA Proceedings Notice Papers etc. of the City Council 1950-51:535).

A meeting of the Council on the 17th of September 1951 also had to consider the threat of legal action against it due to the 'highly offensive ...smell, dust and noise' caused by the operation of the bituminous concrete plant at the Halifax Street Depot. A letter from Messrs. Alderman, Brazel, Clark and Ward, Solicitors, informed the Council that 'our clients shall take such legal action as they may be advised to prohibit the nuisance' (Town Clerk's Special Files S4 File 329A). In fact the nuisance caused to local residents living in the vicinity of the Halifax Street Destructor can be related back to the tar distillery destroyed by fire in 1919 and the asphalt hot-mix plant built to replace it in 1922-23. The plant was later converted to oil that led to complaints of smoke and oily dust: 'a butcher nearby complained that his white cat had turned coal black' (Morton 1996:101).

In 1953 the General Purposes Committee of the Council voted the sum of £2000 'for the operation of the land-fill area of Wingfield (which) is to provide for the new method of disposing of City refuse' (City of Adelaide Notice Papers of the City Council 1953-1954:145). It was then reported by the Town Clerk on the 24th of June 1954 that 'the disposal of refuse at Wingfield was now in full operation and in consequence, the incineration of rubbish at Halifax Street has been discontinued' (ACA Proceedings Notice Papers etc 1953-1954:628).

The foreseeable future of the Wingfield site was assured in 1955 when the Adelaide City Council leased additional land adjoining the site from the Australian Government. By the 1990's, what became known as the Wingfield Waste Depot, had expanded to cover nearly ninety-five hectares. As will be discussed in Chapter Eleven, on the 1st of April 1999, a *sunset clause* was imposed on the site with passing the *Wingfield Waste Depot Closure Act 1999*.

Closing Observations

As has been discussed, by the year 1900, Sydney, Melbourne, and Adelaide were well established and relatively prosperous cities. Each had functioning colonial governments, soon to be state governments, and their municipal councils, actively administered matters relating to the health and sanitation. As had been the case in the preceding Epoch, city populations continued to grow and waste volumes inevitably increased. Axiomatically, available vacant land, in or near these cities, for on-land disposal of refuse close to its source of generation, diminished.

The period from 1880 to 1910, in terms of the political management model proposed by Halligan and Power (1992), was a period of innovation and reform. This was also a period of ongoing technological change that was to have an impact on how waste could be managed. City managers now had a new tool at their disposal, incinerators. Refuse destructors could be built within cities, in close proximity to the source of generation of waste, and incidentally, could be self-subsidising by powering steam engines and generating electricity.

What needed to change, and did in fact change dramatically, was public resistance to destructors due to their cost and polluting smoke. The impetus for change was the arrival of bubonic plague, and although the outbreaks in Sydney, Melbourne, and Adelaide were not simultaneous, the fear of plague which drove public responses, was common to each. This impetus for change ran in parallel in Sydney, Melbourne and Adelaide and appears to have peaked in the first few months of 1900 as deaths by plague caused alarm and dread.

While it is apparent that the reactions to the threat of plague in each of the cities reviewed were similar, the intensity of the responses varied as the nature of the perceived threats differed between the cities. Sydney having the largest and densest population led the way in all respects. This 'parallel' uniformity of change in each colony/state in the first decade of the 20th century contrasts with the 'serial' nature of change in each of the cities in the preceding decades as each took its own route, in its own time, to produce waste management reports that coincidentally led to fairly uniform urban waste management outcomes.

These events, at the beginning of the Third Epoch, also happened to coincide with improving means of communication between each of the capital cities, and, at a time when the Federation of the colonies brought with it unprecedented levels of cooperation and goodwill. Town Clerks, politicians, medicos and journalists were able to exchange and disseminate information with respect to the plague and its management with relative ease.

Changing perceptions of risk were a significant factor in driving change. Consistent with the discussion of risk in Chapter Three, the significance of the outbreaks of bubonic plague in each of the cities reviewed relates less to the resulting mortality figures, than to the levels of anticipated fear and dread that the plague generated. It was not unusual for a patient to be diagnosed in the morning and die later the same day. Initially the risk of death by plague was perceived, in the terms discussed by Cutter (1993), as dreaded,

involuntary and catastrophic. Furthermore, the epidemiology of the disease was little understood by the community. This factor made outbreaks appear random which, as discussed by Starr (1969), added to the resulting sense of communal fear. It was the working class poor who lived in filthy conditions, or close to unsanitary locations, that had the highest incidence of illness and death.

As can be seen from the narrative, the initial responses in each of the cities were swift and decisive. However, within two to three years the *scientific paradigm* shift that saw the *miasmatic theory* debunked made the risk better understood, and hence more manageable, less involuntary, and therefore less dreaded. The risk, as perceived, was reduced and with it the urgency of the municipal response. In terms of Cutter's Risk Characterisation Map (1993) [at page 62] the risk moved downwards and to the left as it became better understood and less dreaded. It is safe to conclude however that if it had not been for the initial dread of the plague the cities under review would not have been cleaned-up and incinerators would not have been built, or at least, not with the same degree of urgency.

To take the risk cycle a little further, it can be seen that the benefit-to-disbenefit risk calculus that led to the introduction of incineration, in effect began to reverse once bubonic plague was managed and hence became less dreaded. Within thirty years bubonic plague was virtually a forgotten issue and the risks associated with air pollution, paradoxically caused by the incineration of garbage, took precedence. Cost considerations, availability of alternative technologies, and quality of life issues, combined with the clean air considerations to become determinants of change in urban waste disposal practices. As appears, while the changes that occurred in 1900 were driven by a single cause, change thereafter involved a multiplicity of interconnected factors making even the most rudimentary cause-and-effect analysis more complex and less certain.

There were also changes in the role of the Bureaucracy. In 1900 the role of government *bureaucracies* was critical in the management of the plague crisis. The existence of strong and effective government infrastructure during this era of 'innovation and reform' (Halligan and Power 1992) was the outcome of what Peter Christoff refers to as the first wave of urban environmental governance that occurred between 1880 and 1900. This was a period when in Christoff's words 'domestic legislation and institutional initiatives were put in place' (1999:38-39). These 'initiatives', in the context of urban waste disposal, were an outcome of the Reports and Inquiries of the latter part of the 19th century. In practice, the emergence of a strong bureaucracy meant that the plague crisis could be addressed *head-on*, and, with great effect.

Reverting to the Research Questions posed in Chapter One, the answers to the *Who*, *How* and *Why* questions of urban waste disposal in this the Third Epoch are not uniform across the sixty year period under discussion. Up until about 1910 it was bureaucrats, such as Ashburton Thompson, City Surveyors and health officials, and not politicians, who drove the plague eradication program, which became in effect, a waste management initiative. They were assisted by the high levels of communal concern and cooperation which virtually gave city managers and bureaucrats a mandate to do whatever was necessary to keep bubonic plague at bay. Correspondingly, once the plague had been 'managed', the power of the bureaucrats in the *waste debate* appears to have diminished.

This was a time when balance of power between bureaucrats and politicians was also gradually being reversed by other factors. Until the early 20th century Australian politics was dogged by a multiplicity of parties and rampant factionalism (Jaensch 1992). These internal divisions diluted the power of politicians and this left the field open to the rising class of bureaucrats in the late 19th century. However, as the two party system matured, it appears that politicians, and not bureaucrats, began to 'call the tune'. Given the high cost of running cities, bureaucrats and city managers were reliant on politicians and parliaments to provide funding, or as in the case of incinerators, to underwrite the expenditures associated with their erection. Hence politicians could not be ignored and the Parliaments of the day had to be swayed. Waste disposal became politicised, as reflected in the words of George Reid, and as illustrated by the events surrounding the creation of the Sydney Harbour Trust.

Three further factors emerge. Firstly, the outbreak of the plague was linked to the accumulation of urban garbage and poor sanitary practice that resulted in 'waste disposal' becoming an important issue in its own right. It ceased to be treated as a secondary aspect of the health and sanitation agendas of municipal and state governments.

A second factor was the Commonwealth Government's involvement, for the first time, in the urban waste disposal debate in 1932. It effectively settled the Sydney sea dumping controversy by using its extraterritorial powers under section 51 of the Constitution.

Thirdly, and of great significance, the policy changes put in place, in the months and years immediately following the first outbreaks of bubonic plague, virtually set the urban waste management agenda, in each of the cities reviewed, for the next fifty years.

Once the risks of poor urban waste management were recognized, and it had gained a place on municipal agenda papers, the *Who* of urban waste management thereafter became a *housekeeping* matter for City Councils. The mechanisms of management became political, and took the form of waste management policies, regulation and legislation, in terms that will be discussed in later chapters. The emphasis moved from a single health related focus to a complex of wider environmental concerns.

A policy-shift in the Third Epoch began in the 1930's, when the plague was no longer seen as a threat. The observable effect was a gradual evolution of waste disposal policies and practices away from incineration and back to on-land disposal. Although the technology of incineration changed during this Epoch, it could not keep up with the increasing volumes and changing nature of urban waste, much of which was difficult or dangerous to burn without more sophisticated, and axiomatically, more expensive equipment.

Cost pressures on state and municipal budgets were reflected in the fact that the management of urban waste gradually became more *rationalised*, centralised and coordinated. In this context policy-making processes became more consultative, both within and between councils, and across metropolitan areas. As elected councils called for more reports on waste disposal issues from waste and engineering departments, communities became better informed and, more involved. Levels of regulation and enforcement increased. The media, ever able to create calm or disseminate anxiety, became more outspoken in its coverage of waste and pollution related events. By the late fifties and early sixties, as will be discussed in the chapters that follow, the environmental debate became a leading social and political issue, which eclipsed other issues in the waste-debate, and became determinative of a new urban waste disposal agenda.

As will be discussed in the chapters that follow, the *Fourth Epoch of Urban Waste Disposal in Australia*, 1960-2000, saw an end to incineration and a return to landfill.

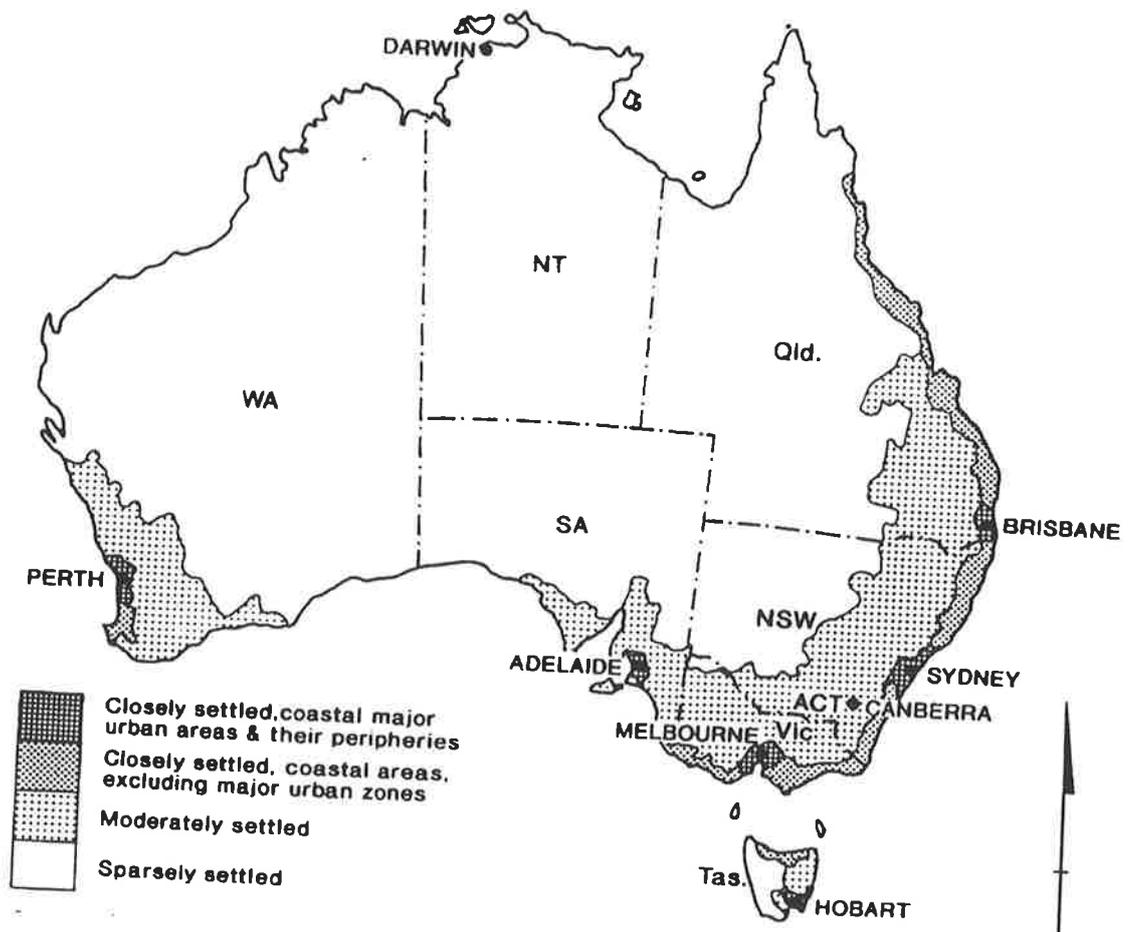
**Issues Relating to the Disposal of Urban Waste in Sydney
Melbourne and Adelaide**

An Environmental History

PART THREE

The Historical Narrative 1960-2000

| | |
|----------------|--|
| Chapter Eight | The Role of the Commonwealth Government |
| Chapter Nine | Sydney 1960-- 2000 |
| Chapter Ten | Melbourne 1960-- 2000 |
| Chapter Eleven | Adelaide 1960-- 2000 |



Population Distribution in Australia
 (Source: after Goddard 1883)

The Emerging Role of the Commonwealth Government in Environmental Issues

Introduction

This Chapter introduces the proposed *Fourth Epoch of Urban Waste Disposal* in Australia. Up to this point in the historical narrative it has been possible to centre discussions on each of the individual cities under review, virtually as separate entities. However following the Second World War, the Commonwealth Government, recognising world wide environmental concerns, became progressively more involved in setting uniform environmental standards across Australia. In this context, in consultation with State Governments, the Commonwealth Government initiated a number of reports and inquiries that led to the formulation of a range of environmental policies and regulatory instruments.

This chapter looks at key initiatives taken by the Commonwealth Government that significantly influenced waste disposal practices in each of the cities under review. The focus of this chapter, therefore, is not directly on waste disposal, but rather on those environmentally sensitive initiatives taken by the Commonwealth which influenced, if not actually directed, environmental policies adopted by State and Local Governments for the whole of the Epoch.

During the preceding Epochs the physical qualities of waste, whether flammable or non-flammable, sinkable or non-sinkable, putrescible or non-putrescible, generally determined its mode of disposal. Little or no consideration was given to such refinements as the chemical composition of wastes. In the 19th century, and well into the 20th century, virtually all wastes formed part of a general undifferentiated waste stream in which the hazardous potentials of discarded materials were either not known or simply ignored. It was common practice well into the late 1950's to 'dispose of' industrial wastes, whether liquid or solid, on land. 'Dispose' in this context meant 'dump' and, more often than not, liquid wastes including acidic or alkalinised industrial residues were *diluted* by co-dumping with inert refuse.

In setting the environmental agenda in the 1960's the Commonwealth Government, in effect, took on the role of an environmental watch-dog. Particular emphasis was placed on the hazards posed by the uncontrolled use of the new generation of synthetic organo-chemical compounds used in industry and in agriculture. The widely practiced unregulated disposal of these substances into the general waste stream was challenged. Regulation took the form of 'scheduling' wastes. The chemical composition and hazard

potential of materials then became determinative of their mode of disposal, or storage in, the Fourth Epoch of Urban Waste Disposal.

The Commonwealth's 'Environmental Powers'

As mentioned in Chapter Seven, while the creation of the Commonwealth of Australia in 1901 was a most significant event in terms of Australia's political and administrative life it had no direct impact on waste disposal practices for at least thirty years. The Commonwealth Constitution gave the Federal Government limited defined powers and protected the sovereignty of the States. Section 107 reads; 'Every power of the Parliament of a Colony which has become a State, shall, unless it is by this Constitution exclusively vested in the Parliament of the Commonwealth or withdrawn from the Parliament of the State, continue as at the establishment of the Commonwealth, or as at the admission of the State, as the case may be.' Yet section 118 of the Commonwealth Constitution states that: '-full faith and credit shall be given, throughout the Commonwealth, to the laws, public Acts and records, and the judicial proceedings of every State' (Australian Constitution 1901). The Commonwealth Government was granted no direct power under the Constitution to regulate the environment and superficially at least this implied that the States retained all regulatory powers over environmental matters. Nevertheless, despite its lack of any direct 'environmental powers'¹ the Commonwealth Government has taken a lead role in coordinating Australia's overall environmental agenda using various heads of power under section 51 of the Constitution. Specifically it has used the following:-

- Section 51(i) the power to regulate trade and exports;
- Section 51(x) the power over fisheries;
- Section 51(xx) the power to control manufacturing and mining by foreign interests;
- Section 51(xxxvi) the power to protect sacred tribal lands of the Aboriginal people;
- Section 51(xxxix) the external affairs power. (Doyle and Kellow 1995:146)

As discussed in the previous chapter the Commonwealth Government had intervened in 1932 in relation to sea dumping using the external affairs power. Yet at that time this issue was not characterised as an 'environmental' but, rather, the enforcement of a foreign treaty obligation. In contrast to this, as will be seen from the discussion that follows, the involvement of the Commonwealth in the 1960's and thereafter was predicated on what was unequivocally the pursuit of an environmental agenda.

¹ See discussion, Crawford, J. 1991, *The Constitution and the Environment*, *Sydney Law Review*, Vol13, No1, pp11-13.

Population Changes

To revert to a common theme in this thesis, the *sine qua non* of waste production is population. The larger the population within a given area the greater the waste produced and the less the space for its disposal. Australia continued to urbanise, and become more prosperous, and hence to consume more, in the 1960's. The Australian census in 1961 disclosed that the populations in New South Wales and Sydney were 3,917,013 and 2,183,388 respectively. The corresponding figures in Victoria and Melbourne were 2,930,113 and 1,911,895. South Australia had a population of 980,755 of whom 587,957 lived in Adelaide. (Commonwealth Bureau of Census and Statistics 1963:306).

At the 30th of June 1999 the *estimated resident population* (ERP) of New South Wales was 6,411, 680 of whom 63%, 4,041,381 lived in the Sydney statistical district which experiences a 1.5% growth in the preceding twelve months². Victoria had an ERP of 4,712,200 of whom 3,417,200, or 72.58, lived in the Melbourne statistical division, an increase of 1.5% over the previous 12 months. Correspondingly the overall ERP population of South Australia at the same time was 1,493,100 of whom 1,092,900 lived in the Adelaide statistical district, an increase of 1.8% over the previous twelve months³. On the basis of the above figures the population of Sydney and Melbourne almost doubled during the period under discussion. More people not only produced more waste, but as will be discussed, the nature of the waste produced was also changing.

Environmentalism

Referring once again to Halligan's historical categorisation of the eras of political management in Australia, the period discussed in the preceding chapter, through to the 1960's, was one of *consolidation and centralisation*; 'bureaucratist centralisation with the dominant policy paradigm being protected pluralism'. In contrast, the period currently under discussion, through to the 1990's, is characterised by him as one of *ferment* (Halligan and Power 1992:22-26). As will be seen from the historical narrative and discussion that follows, this was certainly an era of change and upheaval in the waste disposal arena. Policy making and regulation began to involve higher levels of community participation than ever before and people who were not formally included in decision making processed demanded involvement through protest.

To adopt the words of the environmental lawyer Gerry Bates 'the environmental movement must therefore rank as one of the great social revolutions of the century' (Bates

² <URL <http://www.abs.gov.au/Austats/abs%40.ns>>

1995:13). And, correspondingly, changes in urban waste disposal, particularly in regard to the provision and siting of landfills, were directly influenced by this 'great social revolution'. The late 1960's witnessed an awakening with respect to a range of socio-political issues, typified by the anti-Vietnam war response, which shook the traditional conservative complacency of many Australian politicians. Reflecting the fervour and passion of the times a Federal minister, speaking of the Vietnam War, vividly described anti-conscription marchers as 'a mob seeking to pack rape democracy' (Byrne and Davis 1998:3). As an outcome of this, and other popularist movements, individuals learned the power of public participation and collective public protest, a process that laid the groundwork for many of the activists of the sixties to become the political reformers of the seventies, eighties and nineties⁴.

Environmentalism, described by Dryzek 'as local as dog droppings on the grass in front of my house or as global as the greenhouse effect' (Dryzek 1997:21), became an increasingly significant focus of protest in the 1960's. Correspondingly environmental legislation, at both Commonwealth and State levels, now emerged as a primary instrument of regulation in the waste management arena. At the same time, the provision of landfills progressively became an issue of greater political significance in each of the cities under review.

As will be discussed, from the 1960's onwards the mass incineration of domestic waste progressively became a thing of the past. In this new age of environmental awareness the old incinerators were considered too polluting, and furthermore, the cost of their renovation and repair, to make them environmentally friendly, was considered too high given the low cost alternatives, landfills. Melbourne led the way with the closure of its destructor at Spencer Street and, coincidentally, Sydney and Adelaide were not far behind in closing down their old inner city incinerators. Melbourne, unlike Sydney and Adelaide, had no shortage of available landfill sites. Following the Fraser Reports (1954 and 1959) the Sydney City Council completed the purchase of numerous brick pits in the vicinity of St Peters. Adelaide, anticipating the need to move its municipal waste depot from the heart of the city, had made provision in the early 1950's by acquiring an extensive site at Wingfield; an industrial zone on the then-outskirts of the metropolitan area.

³<URL <http://www.abs.gov.au.Austats/abs%40.ns>>

⁴ For example, in Victoria Harry van Moorst and in South Australia Don Dunstan; John Bannon, Peter Duncan were activist undergraduates of the 1950's and 1960's. Environmental concerns ranked along-side opposition to the country's involvement in the Vietnam War, Unions' rights, gay rights, and feminism, which were taken to the streets in every capital city.

On-land disposal was introduced as 'controlled tipping, later to become 'sanitary landfill'. In the immediate post-war period it appears that few 'administrative' actions of government were questioned let alone challenged, which allowed the smooth transition to 'on-land' disposal in Sydney, Melbourne and Adelaide to proceed. What discussion there was appears to have focussed on the economics of the available choices.

The Role of the Commonwealth Air Pollution Report

In April of 1968 a Senate Select Committee (SSC) was appointed 'to enquire into and report upon air pollution in Australia including (a) causes and effects (b) methods of prevention and control and (c) matters incidental thereto (SSC 1969:1). The fact that a Select Committee was convened suggests that the Commonwealth Government, sensitive to its constituents, sensed that that intangible threshold of public concern may have been reached. In defining the scope of the inquiry, page three of the Report states that it was not written 'for those intimately connected with air pollution control but written as an information document for Members of the Parliament and the general public.' The sentiment of the times is captured in such statements as, 'Air pollution is basically caused by man's [sic] insatiable demand for energy' (SSC 1969:4 para 2.1, 12) and, 'Man [sic] has been using the atmosphere as a huge rubbish dump into which is being poured millions of tons of waste products every year (SSC 1969:4, para 2.1, 13). The SSC on Air Pollution spelled out the new awareness for the environment.

The Committee therefore considers that, in any future arrangements for the study of pollution problems, **cognisance should be taken of the total environment and the interaction of the different facets of what is virtually one problem** (SSC on Air Pollution 1969:64). (Emphasis added).

The Select Committee report determined, *inter alia*, that air pollution was a problem in Australia, that a more uniform approach was needed across Australia and that the Commonwealth was in a position to co-ordinate State and Commonwealth activity (SSC 1969:65, para 6). A most significant aspect of the Select Committee's report was that it effectively signaled a *paradigm shift* in policy formulation by adopting, and placing on the public record, an holistic view of the overall problem of environmental pollution.

It was brought home to the Committee many times during the enquiry that air pollution is but one small part of man's contamination of his environment. Pollution of the water resources of the world, pollution of the soil, and in this mechanised world of ours, pollution of the environment by noise of man's [sic] activities, are all parts of the same problem (SSC 1969:64, para 5.5, 220).

In the same vein the SSC Report on Water Pollution (SSC 1970), released nine months after the *air pollution report* in June of 1970, reinforced the public sentiment of environmental concern. The Report defined water pollution as 'an impairment of water function which has, or may have, an effect on subsequent water use' (SSC 1970:11). In introducing a discussion of *The Nature and Origins of Water Pollution* the Committee point out, at page eleven, that 62% of Australia's population live in ten cities of 100,000 persons or more and that urbanisation, as an aspect of the transition from an agrarian to an industrial economy, has important impacts on water resources (SSC 1970:11). 'The present concern with water pollution is associated mainly with other aspects of water quality: the correction of nuisances resulting from odours, soils, garbage and visible pollutants (SSC 1970:13). *Waste*, in its many manifestations, was seen as a threat to water quality. The recommendations of the Committee, which parallel those of the Select Committee on Air Pollution tabled several months earlier, include the need for a single national approach, the establishment of a national coordinating body, a comprehensive approach and mechanisms for support and control with respect to water management, and pollution abatement (SSC 1970:188-190).

These two Reports are reflective of the paradigm shift that occurred in the late sixties and early seventies with respect to governmental involvement matters of environmental management. Direct outcomes of the 'clean air' and 'clean water' debates were the death of the backyard incinerator and the beginning of the end of the *smouldering dump* approach to waste management. Pit burning and other polluting waste management expedients were eventually banned and a matrix of legislative and technical structures were put in place to monitor and enforce new standards of air and ground-water protection.

Ecologically Sustainable Development

The environmental ferment of the late sixties and seventies, which crystallised with the Stockholm initiative in 1972, the United Nations Conference on the Human Environment, gave credence and legitimacy to environmentally concerned individuals who, until that time, had generally been collectively branded as radicals or *ratbags*.

The notion of *sustainability* can be traced back to the World Conservation Strategy in 1980 and the 1987 report of the World Commission on Environment and Development, (the WCED) known as the Brundtland Report, *Our Common Future*, (Brundtland

Commission 1990). Other global initiatives included the Earth Summit in Rio de Janeiro in 1992, which led to what became known as the Rio Declaration. The Rio Declaration provided a broad set of political principles, in particular *Agenda 21*, which was intended to guide the world towards ecological sustainability and social justice. *Agenda 21* encapsulated, in general terms, policies that could implement environmentally friendly principles (Dryzek in Low 1999:264-282). In the same text Dryzek also put forward the view that sustainable development should not be bounded by definition but seen rather as an 'ongoing discourse'.

In the 1980's, as an emerging concept, sustainable development was succinctly defined as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED, 1987). *Sustainability* by definition being 'the ability to maintain a desired condition over time'⁵. The principles of ESD recognise that the Earth's resources are finite and seek to minimise the depletion of non-renewable resources and avoid the over-exploitation of renewable resources. ESD aims to take account of the principles of *intergenerational equity*, protection of biodiversity conservation, and ecosystem integrity. ESD encapsulates the notion that 'We do not inherit the earth from our forefathers but borrow it from our children' (Murphy, 1995).

The United States of America had already taken the lead and translated environmental rhetoric, and in particular the concept of sustainable development, into functional planning legislation. The outcome was the codification of procedures formalising the environmental assessment of major projects that were incorporated into law with the passing of the National Environmental Policy Act in 1969. This was the beginning of Environmental Impact Assessment (EIA) which I introduced in Chapter Four and which will be discussed at greater length towards the end of this Chapter.

Over time the inchoate *environmental movement* in Australia in the 1950's, with its initial single focus on smoke pollution, can be seen to have progressively matured to address the wider environmental issues within the community. Once recognised, the *inter-connectedness* of 'environmental events', and the administrative actions taken that reflect their recognition, are part of ongoing social and political adjustments. It was recognised that a co-operative approach, with and between the Commonwealth and the states in addressing environmental issues, was preferable to fragmented and uncoordinated 'environmental' initiatives (Fowler 1984). This policy shift was exemplified with the passing of the *Australian Heritage Commission Act* in 1975. This Act created the notion of

⁵The Institute of Engineers, Australia, 1994, Policy on Sustainability, AIEA.

the national estate and provided for the protection of places of heritage value based on historical, environmental, cultural and architectural considerations' (Fabricius 1994:163).

Changes in the 1990's

In June of 1990 the Commonwealth Government set about the task of identifying what Australians need to do to comprehensively and systematically embrace ESD (Commonwealth of Australia 1992:12). This initiative led to the Prime Minister, Bob Hawke, setting-up nine sectoral working groups across industry, consumer and other community groups to examine sustainability issues. The immediate outcome was the publication, in December of 1992, of the National Strategy for Ecologically Sustainable Development (Commonwealth of Australia 1992).

In a separate, earlier initiative in October of 1990 a special Premier's Conference had agreed to the development of an inter-governmental agreement on the environment. The amalgamation, in July of 1991, of the Australian Environment Council (AEC), which was formed in 1972, and the Council of Nature Conservation Ministers established in 1974, to form a non-statutory Ministerial Council, the Australian and New Zealand Environment and Conservation Council, ANZECC, was a most significant step towards creating the mechanisms for unifying environmental policy initiatives across Australia. ANZECC, which as the acronym suggests is a joint body, comprises ministerial representatives from the Commonwealth and States of Australia and the governments of Papua New Guinea and New Zealand, and 'provides a forum for member governments to exchange information and experience and develop coordinated policies in relation to national and international environment and conservation issues⁶'

In October of 1991 ANZECC presented a report to the Commonwealth Government, *A National Approach to Environmental Impact Assessment in Australia* (ANZECC 1992). This led to the publication of *Guidelines and Criteria for Determining the Need for and level of Environmental Impact Assessment in Australia* in June 1996. A further ANZECC document, *Basis for a National Agreement on Environmental Impact Assessment*, was published in June of 1997. The two components of the Commonwealth Government's waste minimisation strategy, the *National Kerbside Recycling Strategy* (1992) and the *National Waste Minimisation Strategy* (CEPA 1992), which will be discussed later in this Chapter, were also outcomes of Commonwealth and State collaboration through ANZECC at this time.

⁶ URL <http://www.kaos.erin.gov.au/psg/igu/anzecc/index.htm>.

Together with establishment by the Commonwealth, New South Wales and Victorian Governments of the Independent Panel on Intractable Waste in 1991, and the publication in 1992 of their three volume report entitled *A Cleaner Australia* (1992), all of these initiatives are reflective of the dramatic policy changes in relation to the issues of waste management.

Another milestone was reached in May of 1992 when ANZECC published the *Intergovernmental Agreement on the Environment* (IGEA) which 'set out ground rules under which the Commonwealth, State/Territory and Local Governments will interact on the environment. It includes a broad set of principles to guide the development of environment policies and, in a series of schedules, sets out cooperative arrangements on a wide range of specific issues'. IGEA states that the 'parties agree that the concept of 'ecologically sustainable development' should be used by all levels of Government in the assessment of natural resources, land use decisions and approval processes' (1992:cl.1).

In October of 1992, as an outcome of a study conducted by the Centre for Resource and Environmental Studies at the Australian National University, Brown, Orr and Smith published *Acting Locally, Meeting the Environmental Information Needs of Local Government* (1992). This publication took account of the Brundlandt Report (Brundtland Commission 1990), IGEA, and the work of the ESD sectoral working groups, and recognised the pivotal role of local government in implementing *Agenda 21*, and related global environmental strategies, to which Australia was committed.

In a parallel initiative, that had a direct bearing on the future of waste disposal, in 1991 the Prime Minister's Science Council, 'a national forum for discussing issues of national importance in the fields of science and engineering', published a paper entitled *Commercial Opportunities in Waste Management* (OCS 1991:v). This paper 'develops a reasoned argument for both Government and the private sector to undertake a number of initiatives aimed at boosting the commercial prospects of the Australian waste management industry' (OCS 1991:1). The recommendations in this paper articulated the Federal Government's support, as a matter of policy, for the commercialisation of the 'environmental management business of Australian companies'.

The recommendations in *Commercial Opportunities in Waste Management* included the proposal that the Federal and State Governments 'establish appropriate standards for waste disposal'; and 'support the newly formed Environment Industry Association of Australia' (OCS 1991). Of particular significance was its encouragement to private

enterprise to take over waste disposal and management roles traditionally managed by municipal and state governments.

The adoption of the Intergovernmental Agreement on the Environment eventually led to the establishment of the National Environment Protection Council, (NEPC)⁷, which has the responsibility of formulating National Environment Protection Measures, (NEPM's), (NEPC 1996-1997). Significant in this regard has been the NEPC's role in formulating the *National Pollution Inventory* published in February of 1998 and the *Draft Environment Protection Measure for the Movement of Controlled Waste between States and Territories*. A current initiative of the NEPC is the development of a *Draft Environment Protection Measure on the Assessment of Site Contamination*⁸.

Site contamination remains a contentious issue as one of the legacies of past urban waste disposal practices, on the outskirts of cities that hosted 19th century dumps, are sites that are now being touted as 'desirable suburbs'. Without digressing on this point it can be noted that there have been numerous examples of the toxic wastes of the past resurfacing in suburban residential locations.

The Report of the Select Committee on Waste Disposal (September of 1994)

In November of 1993 the Senate Standing Committee on Environment, Recreation and the Arts received a reference to report on existing and developmental waste disposal facilities and methods including:

- (a) the use of incineration as a means of disposal of waste and energy recovery;
- (b) the application of alternative technologies to the disposal of toxic and hazardous wastes...;
- (c) the potential for commercial development and export opportunities of methods of waste disposal and waste disposal technologies' (Senate Standing Committee, 1994:Preface).

The terms of reference specifically directed the Senate Standing Committee to consider the reports of the Independent Panel on Intractable Waste (1992) and the ANZECC Scheduled Wastes Working Group (1993). This report examines waste minimisation, and also considers existing landfill and incineration technology. The unresolved issues of the disposal of scheduled and hazardous wastes were also examined and a national approach, involving the Commonwealth, was canvassed by the Committee.

⁷ The NEPC first opened its offices in Adelaide in 1996.

⁸ URL <http://www.nepc.gov.au>

One of the principal concerns expressed in the SSC Report was the 'lack of progress in a number of areas since the introduction of the *National Waste Minimisation and Recycling Strategy*' (SSC1994:266,11.74). To put the Committee's concerns in perspective it is interesting to note again that the ANZECC, *National Waste Minimisation and Recycling Strategy*, had been released in June 1992, some two years and three months earlier. This report, in 1994, served as a timely *wake-up* call. It stated that absolute priority must be given to waste minimisation and recycling strategies through the use of strong incentives and disincentives (Senate Standing Committee 1994: paras 11.3 – 11.4).

The SSC's *Concluding Comments* (1994:259-266) incorporated seventeen key recommendations. At risk of understating the importance of this Report in setting future agendas, within both the Commonwealth and State arenas in relation to waste management, the recommendations have been paraphrased.

- that the Government investigate appropriate low risk strategies for the transport of hospital wastes across borders;
- that approvals for the construction of incinerators include recycling and waste to energy facilities;
- that technologies to reuse or recycle scheduled and hazardous wastes be designed and that preferably more environmentally friendly means than HTI be considered; 3
- that enterprises disclose to the National Environment Protection Council (NEPC) quantities of stored
- scheduled wastes and that their storage and disposal be overseen by the NEPC; 4+5;
- that the government investigate the use of cement kilns for disposal of particular parts of the waste stream; 6
- that the government investigate the use of materials for recycling rather than as *supplementary fuel*; 7
- that independent Panels be convened to resolve ongoing disputes regarding waste management issues;
- that Panels be appointed by the National Environmental Council and not have members from the State or Territory in which the dispute arises;
- that there be a permanent ban on the import and export of scheduled waste unless technologies are available to recycle them;
- that if technology is available government and industry should work to use recycled in lieu of raw materials;
- that as a matter of urgency a Commonwealth Environment Protection Agency (CEPA) be established to oversee and coordinate formal and informal consultative processes including the National Waste Minimisation Process;

- that a strategy to monitor and measure the National Waste Minimisation Strategy be put in place;
- that CEPA monitor the effectiveness of all such environmental measures put in place;
- that all available information relating to strategies for the treatment of scheduled waste be disseminated promptly;
- that the (Commonwealth) Government recognise the central role of Local Government in waste management; that a representative of local government associations be included in national waste management planning; that Government assist Local Government in its role and encourage the exchange of information between local governments; and,
- that the National Environmental Protection Council place determination of national standards on its agenda.

As will be seen, in the context of related waste minimisation and management developments occurring at Commonwealth and State levels, much of what was proposed in these recommendations was already in train.

The Intractable Waste Problem

A related aspect of the Commonwealth Government's involvement in the broader issues of waste disposal arises from the standardisation in the classification and disposal of what have been termed *intractable wastes*⁹. As has been discussed, industrial and agricultural wastes, mixed with putrescible, and what are now called 'green' wastes, were once part of a single undifferentiated, and often very dangerous, waste stream. As stated earlier, an examination of the disposal of these dangerous, intractable, or scheduled wastes, however described, lies outside the central focus of this study. However, in common with other waste minimisation strategies, initiatives taken with respect to the disposal of dangerous wastes, which were categorised or defined out of the domestic or urban waste stream, reduced the overall volume of wastes going to municipal landfills.

In practice many of the issues relating to the management of *intractable waste* are not dissimilar, other than in degree, to the issues faced with respect to disposal of the urban waste stream. Intractable waste simply lies at the most troublesome end of the waste spectrum. The key players in the intractable waste management debate are the self-same governments and communities wrestling with *locational* issues in the context of the

⁹ Intractable waste was defined by the JTFIW as 'waste for which there is no environmentally acceptable disposal facilities currently available in Australia. It is made up of organochlorine pesticides (such as DDT); PCB's (from electrical equipment); HCB's (from manufacture of some solvents and plastics); and, ozone-depleting CFC's' (JTFIW Information Sheet 1378a, nd)

urban waste stream. The 'not in my electorate', NIME, not in my term of office, NIMTO, and 'not in my back yard', NIMBY, responses all come into play with respect to both urban waste and intractable waste, however the degree of vehemence with respect to the latter tends to be stronger.

As will be discussed in the chapters that follow the century old practice of simply pouring industrial wastes, whatever their level of toxicity, into the ground, became a totally unacceptable practice in the 1970's. Once community groups and *environmentalists* realised exactly what was being done, (or in some instances proposed), in such places as Homebush and Castlereagh (NSW), Werribee and Laverton (Vic), and Wingfield and Highbury (SA), a *hue and cry* went up. These waste disposal sites remain as sad monuments to past waste disposal practices, and the risks they precipitated, in every Australian city. The monitoring and remediation of many of these sites will continue for decades.

While the Commonwealth Government has not concerned itself directly with issues relating to the disposal of green wastes or inert wastes, which include construction wastes, in 1982 and 1983 it produced two significant reports in relation to the management of hazardous industrial waste. The Standing Committee on the Environment and Conservation (SCEC), (1982) and the Australian Environment Council (1983) independently issued reports that were highly critical of the management and regulation of hazardous wastes at State and Federal levels. The SCEC stated that 'If State governments fail to introduce effective and comprehensive legislative and administrative machinery for the regulation of chemical hazards by 1985, the Commonwealth legislate to control these hazards to the fullest extent of its power' (JTFIW 1988:6).

In 1987 the *Joint Taskforce on Intractable Waste* (JTFIW) was established by the Commonwealth, New South Wales and Victorian Governments to 'examine and advise on the minimisation and management of intractable waste and the development of disposal facilities in south-eastern Australia' as the 'current lack of such facilities is widely recognised as a major gap in Australia's capacity to deal with its own hazardous wastes in an environmentally sound manner' (JTFIW 1988:5).

The Task Force considered the current and potential processes for waste disposal which were identified as,

- Landfill, Fixation and Encapsulation Processes;
- Chemical and Biological Processes;
- Thermal Processes.

Recommendations in the report of the JTFIW in 1988 proposed, in principle, that a government owned industrial plant be constructed in southeastern Australia for the destruction of these wastes by high temperature incineration. Recommendation 22 states; 'A fixed, land-based, central, high temperature incinerator facility be established in south-eastern Australia, utilising a rotary kiln as the primary combustion mode, together with associated facilities including a dedicated rail-based transport system, with auxiliary road-based collection, transport and transfer arrangements' (JTFIW 1988:18).

The New South Wales Government then seized the initiative by passing the necessary legislation to enable the Waste Management Authority to build and operate a high temperature incinerator in New South Wales (Ewald 1990). The Executive Summary of the Draft Final Phase 3 Report of the JTIW, in September of 1990, endorses the siting of an intractable waste management system incorporating high temperature incineration, and suggests *inter alia*, that the Commonwealth Government, in consultation with the States, develop model legislation for the management of intractable waste (JTFIW 1988:R3/3 R3.10). The Report also recommended that the Commonwealth, New South Wales and Victorian Environment Ministers 'actively promote effective community initiatives for the understanding of hazardous chemicals and wastes as a priority...and encourage their ANZECC colleagues to do likewise' (JTFIW 1988:R 3.4).

The site recommended by the Victorian, New South Wales and Commonwealth governments for the establishment an (industrial) intractable waste management facility was at Corowa in New South Wales. However, subsequent to an agreement being achieved by the task force and the local council, vehement local opposition to the proposal caused the Council to be thrown out of office and for the initiative to lapse in 1990. This then left the way open to private enterprise to meet what was a market demand for the managed treatment and 'disposal' of dangerous and intractable wastes.

From a 'risk perspective' the work of the tri-government task force was predicated on a series of risk calculations. The wastes themselves, the transport options, and the means of disposal, were part of an interconnected series of risk assessments. In this vein the rejection of the Corowa site by community stakeholders, as a consequence of a failure in effective communication, and a total absence of grassroots community participation, can be interpreted as a rejection of the risk to benefit trade-offs offered by those promoting the project. Better communication between the stakeholders may have given the project some chance of success.

In 1991 the Independent Panel on Intractable Waste (IPIW), following on from the 'solid technical achievements of the Joint Taskforce on Intractable Waste, sought to 'inquire into Australia's intractable waste problem and make findings and recommendations leading to its effective resolution' (IPIW 1992:4). The Final Report published in November 1992, *A Cleaner Australia*, (referred to earlier), does not include an implementation plan. The Report, addressed to the Minister of the Environment, and through her, to the Australian and New Zealand Environment Council (ANZECC), reflects a 'substantial conceptual shift', a policy paradigm shift, in the finding what it terms a *workable solution* to the intractable waste problem.

The critical change was to define the solution in terms of small, specific, localised and, often, relocatable facilities able to deal with various types of intractable waste at or near source according to the particular properties and characteristics of the waste (IPIW 1992:4). (Emphasis added).

An important lesson learnt from the failed outcome of the JTIW, relevant to all issues to do with the siting of what have been termed LULU's, is to be found in the covering letter of the chair of the IPIW, Ben Selinger, to the Minister of the Environment (Cwth), Hon Ros Kelly MP dated the 6th of November 1992. The Minister's letter offers what may be interpreted as an explanation of what went wrong with the Corowa proposal; the failure to fully involve and engage the host community in the decision making process.

Our consultations with the wider Australian community and with stakeholders has reinforced our belief that **it is virtually impossible in modern democratic societies to impose solutions to difficult social problems on communities which feel excluded from the decision making**. It seems to us that the community must be centrally and meaningfully involved in working through Australia's intractable waste problem at the implementation stage (IPIW 1992).

Once again, the emphasis has been added, to highlight in this instance a conclusion that is absolutely key to the success of any major development project, and not just to waste disposal facilities, that are undertaken by the public or private sector. The Panel, in its *Findings and Recommendations*, specifically recommended that-

... the community be recognised formally as stakeholders in the management of intractable waste and that this recognition take the form of effective representation and consultation on all appropriate occasions, including monitoring (IPIW 6 Nov. 1992:v 1,47).

As discussed in the context of public participation by Sarkissian (1994), if planners don't involve citizens, citizens will in fact involve themselves, as they did in this case, by aggressively, and successfully, opposing the proposal.

In November of 1992 ANZECC published a *Draft National Strategy for the Management of Scheduled Waste*. This document defined a scheduled waste as 'a material or article containing materials exceeding the threshold concentration and threshold quantity, which are organic in nature, resistant to degradation, toxic and bio-accumulative' (CMPF&S 1997:2). In May of 1993 ANZECC then published the recommendations of the Scheduled Wastes Working Group and collectively these two documents formed ANZECC's *National Strategy for the Management of Scheduled Wastes*.

The outcome of the intractable waste management debate has been the establishment of a series of separate, privately run, waste treatment sites around Australia to which scheduled wastes are now transported. This solution corresponds with the recommendations of the Independent Panel on Intractable Waste (1992:4) referred to on the previous page, and the outcomes of the Report of the Office of the Chief Scientist (1991), also referred to earlier in this Chapter.

In 1994 ANZECC published *National Guidelines for the Management of Wastes, National Manifest and Classification System* (ANZECC 1994). These Guidelines sought to establish a consistent approach following on from an earlier agreement for the management of hazardous wastes achieved in 1986 by the Australian Environment Council. Wastes have been classified, and a national manifest system put in place.

Yet the process of finding better technologies continues. In November of 1997 Environment Australia published the fourth in a series of reports on the management of *scheduled wastes* entitled *Appropriate Technologies for the Treatment of Scheduled Wastes* (CMPF&S 1997). The stated aim of this Report was to assist the Minister in determining 'whether appropriate treatment methods are available for the range of scheduled wastes within Australia or whether other options need to be considered', and secondly, whether the current national approach to the treatment of scheduled wastes is effective' (CMPF&S 1997:xii). In brief, the Reports advance the strategies put forward by the Independent Panel on Intractable Waste in relation the management of intractable wastes.

Environmental Impact Assessment (EIA)

As has been outlined in Chapter Four, EIA is the generic term for an administrative process by which the environmental impact of a particular development proposal is fully determined¹⁰. It was introduced into Australian legislation by the Commonwealth Government¹¹, and the various States¹², from the early 1970's. It has been defined by Nick Harvey in the following terms:-

Environmental impact assessment is a process of identifying and predicting the potential environmental impacts (including bio geophysical, socio- economic and cultural) of proposed actions, policies, programmes and projects, and communicating this information to decision makers before they make their decisions on proposed actions (Harvey 1998:2).

The simple premise is that environmental impacts must be identified if they are to be mitigated or minimised and EIA is the tool for achieving this. Yet governments and developers alike have had great difficulty with the processes and outcomes of EIA, as will be discussed in the context of siting proposals in New South Wales, Victoria and South Australia in the chapters that follow.

The role of the Commonwealth Government has been significant in attempting to promote a uniformity of approach to EIA across Australia. The publication of *A National Approach to Environmental Impact In Australia* by ANZECC in 1991 was noteworthy in this regard. From the joint and agreed perspectives of the Commonwealth and the States EIA was defined as:-

...fundamentally a process to achieve protection and management of the environment and the maintenance and enhancement of environmental quality. A process for the orderly and systematic evaluation of a proposal including its alternatives and objectives and its effect on the environment including the mitigation and management of those effects. The process extends from the initial concept of the proposal through implementation to completion and, where appropriate, decommissioning (ANZECC, 1991).

¹⁰ See discussion including historical background in Leeson, R. 1994, *EIA and the Politics of Avoidance*, Environment and Planning Law Journal, vol11, No1, pp71-92 and Martyn, A. Morris ML, and Downing F. 1990, *Environment Impact Assessment Process in Australia*, a discussion paper prepared for the Environment Institute of Australia.

¹¹ *Environmental Protection (Impact of Proposals) Act 1974 (Cth)*

¹² *Planning Act 1982 (SA), Development Act 1993 (SA)*

Environmental Effects Act 1978 (Vic)

State Pollution Control Commission Act 1970 (NSW), Environmental Planning and Assessment Act 1979 (NSW).

The aims of EIA were declared by ANZECC (1991) to be:-

- to ensure that decisions are taken following timely and sound environmental advice;
- to encourage and provide opportunities for public participation in environmental aspects of proposals before decisions are taken;
- to ensure that proponents of proposals take primary responsibility for protection of the environment relating to their proposals;
- to facilitate environmentally sound proposals by minimising adverse impacts and maximising benefits to the environment;
- to provide a basis for ongoing environmental management including through the results of monitoring;
- to promote awareness and education in environmental values.

EIA and the Siting of Waste Disposal Facilities

EIA is, and always has been, an evolving process that by its nature is contextually 'informed'. Until formalised through the medium of legislation in the USA, EIA tended to be an *ad hoc* procedure, more akin to *cost benefit analysis* than a total environmental audit of the impacts of a proposed development. In practice EIA has now gone well beyond the limited confines of *cost benefit analysis* by taking a progressively more holistic view of the impacts of any proposed development. Each EIA inquiry is intended, through scoping processes, to be tailored to address the specific proposal under consideration with reference to all relevant *environmental* factors ranging from the socio-economic, to bio-geo-physical, and to the aesthetic.

The intended outcome of an EIA is an holistic assessment of the development proposal. Ideally, a comprehensive *ex ante*, environmental appraisal of a project, which embodies elements of justification, and consideration of alternatives, while applying environmental precautionary measures, appropriate to the sensitivities of the receiving environment. The Environmental Impact Statement should include justifications for the proposal, relevant safety levels, tolerances, associated risks, and finally, it should incorporate ongoing monitoring requirements to ensure that outcomes are actually being achieved as predicted.

Each Australian jurisdiction now has procedures in place for EIA that can be invoked by governments as decision-making tools with respect to major planning projects. However, the assessment requirements and procedures vary markedly between the various jurisdictions (Bates 1995:154). As early as 1972, the New South Wales government introduced an *Environmental Impact Policy* and in 1979 incorporated it into their Environmental Planning and Assessment Act. The Commonwealth Government introduced EIA legislation in 1974, the *Environmental Protection (Impact of Proposals) Act* which applied in Commonwealth Territories, but could also be invoked by consensus, in the states jurisdictions. In 1978 the Victorian Government passed the *Environmental Effects Act*¹³ which put EIA procedures in place in that State, and in 1982, EIA was incorporated into South Australia's development and planning processes by the *Planning Act* 1982 (Harvey and Ferguson 1996:202).

The extent to which the processes of environmental impact assessment (EIA) have been useful, let alone determinative, in landfill siting outcomes is contentious. Even so, the mechanisms of EIA, as much a shield as a sword in hotly contested landfill siting and management debates in Australia from the early 1970's onwards, have clearly influenced waste disposal practice, without necessarily being determinative of actual outcomes¹⁴.

As the narrative that follows in the next three chapters suggests, while EIA has failed to play a decisive role in recent landfill siting determinations, except perhaps in New South Wales. In Victoria and South Australia it has been *strategic* by enabling greater transparency, and with that, facilitated levels of public participation, which in turn have opened the door to oppositional groups. A key to the success of EIA in NSW, in the overall context of 'strategic waste disposal', lies in the role of the Office of the Commissioners of Inquiry, and the enforcement of the 'justification' criterion, which in theory at least, is integral to the EIA process universally. To be effective, EIA in the siting of landfills needs to be 'strategic', rather than simply project based. Strategic EIA, as a relatively recent innovation, takes the wider view of a proposal in its regional planning context. It stands in contrast to 'project based EIA' which only looks at the merits of the project under inquiry.

¹³ Guidelines for Environmental Impact Assessment and the Environmental Effects Act, 1995, Department of Planning and Development, Victoria.

¹⁴ In practice it appears that the EIS process, can be skillfully adapted and manipulated by proponents and oppositional groups alike to produce outcomes which may promote less attractive siting options or block appropriate siting proposals. Final decisions are often discretionary and rights of appeal are limited.

Strategic EIA has effectively been achieved in New South Wales in landfill siting issues as a functional outcome of the application of the 'justification rule' and the active involvement of the Office of the Commissioners of Inquiry, as will be discussed in the next chapter. 'Justification' demands that unless there is proven need, for say a landfill facility, it will not be approved.

The *weakness* of EIA in Victoria and South Australia has been the ambit of Ministerial discretions exercised, first in deciding whether an environmental assessment will be undertaken, and secondly, in whether the recommendations made are adopted. As in the case of Werribee, where the process was applied, the processes of inquiry, the Panel Inquiry and HWCC inquiry, permitted interminable delays. In a corporate, *time-is-money* environment, delay can be orchestrated by opponents and can kill-off a project. In South Australia, while EIA has been called in aid more frequently than in Victoria, it has not been applied with rigour, and to the same strategic effect as in NSW. Final decisions have been discretionary, and proposals have been assessed on an individual, project-by-project basis, rather than regionally, or strategically. The 'justification rule' has not been rigorously applied. In summary, given the fact that economy of scale is a key to the economic success of landfills, which means that in the future they may be larger, but fewer in number, and located at a distance from source of waste generation, a more comprehensively strategic approach is essential.

Waste Minimisation

Once again, as in the case of intractable wastes, the initiatives taken in regard to waste minimisation are outside the direct focus of this thesis. However, as in the removal of intractable wastes from the waste stream, waste minimisation has had a similar effect in reducing the overall volumes of waste going to landfills. The public debate surrounding both intractable waste and waste minimisation issues have also served to raise public consciousness about just what goes into landfills and how dangerous it is.

In 1992 the *National Waste Minimisation and Recycling Strategy* was prepared by the Commonwealth EPA in consultation with ANZECC setting the optimistic target of a 50% reduction in waste to landfill by the year 2000. In 1996, ANZECC endorsed the *National Government Waste Reduction and Purchasing Guidelines*; a waste minimisation strategy for Commonwealth Government agencies. In 1996 the Department of Industrial Relations produced *Environmental Efficiency in the Australian Public Service: a Resource Guide* (Information Sheet 1996 CEPA Environment Protection Group), yet another attempt to set higher standards in the achievement of sustainability, and in meeting waste reduction targets.

The role of ANZECC is ongoing. In June of 1997 it published *Achieving Waste Reduction Targets* and in September of 1999, *Guidelines for the Assessment of On-Site Containment of Contaminated Soil*, (ANZECC 1999), an aspect of wider initiatives to remediate contaminated sites, a legacy of the poor waste disposal practices of the past.

Each of the States has since adopted its own waste minimisation strategies overseen by local agencies¹⁵. These bodies have set strategies, published waste minimisation guidelines and provided funding to municipalities and community organisations to conduct waste surveys and devise appropriate strategies. The role of these agencies will be touched on briefly in the discussions that follow with respect to Sydney, Melbourne and Adelaide. However, as in the case of the issues relating to the disposal of intractable waste, a deeper exploration of waste minimisation issues is a thesis in itself and lies beyond the scope of the present work. The focus of this Thesis is the lowest point of the *waste hierarchy*, the actual *end-of-pipe* disposal of waste to landfill.

Closing Comments

The major environmental initiatives undertaken by the Commonwealth Government during this Epoch, beginning with the clean air and water inquiries, the 'scheduling' of wastes and the introduction of EIA, each have a dominant 'risk' dimension. The Commonwealth sought to introduce uniform standards with respect to air and water quality, to categorise wastes that were dangerous, and intractable. It also sought to introduce a uniform approach to planning and risk assessment in Australia in the form of EIA.

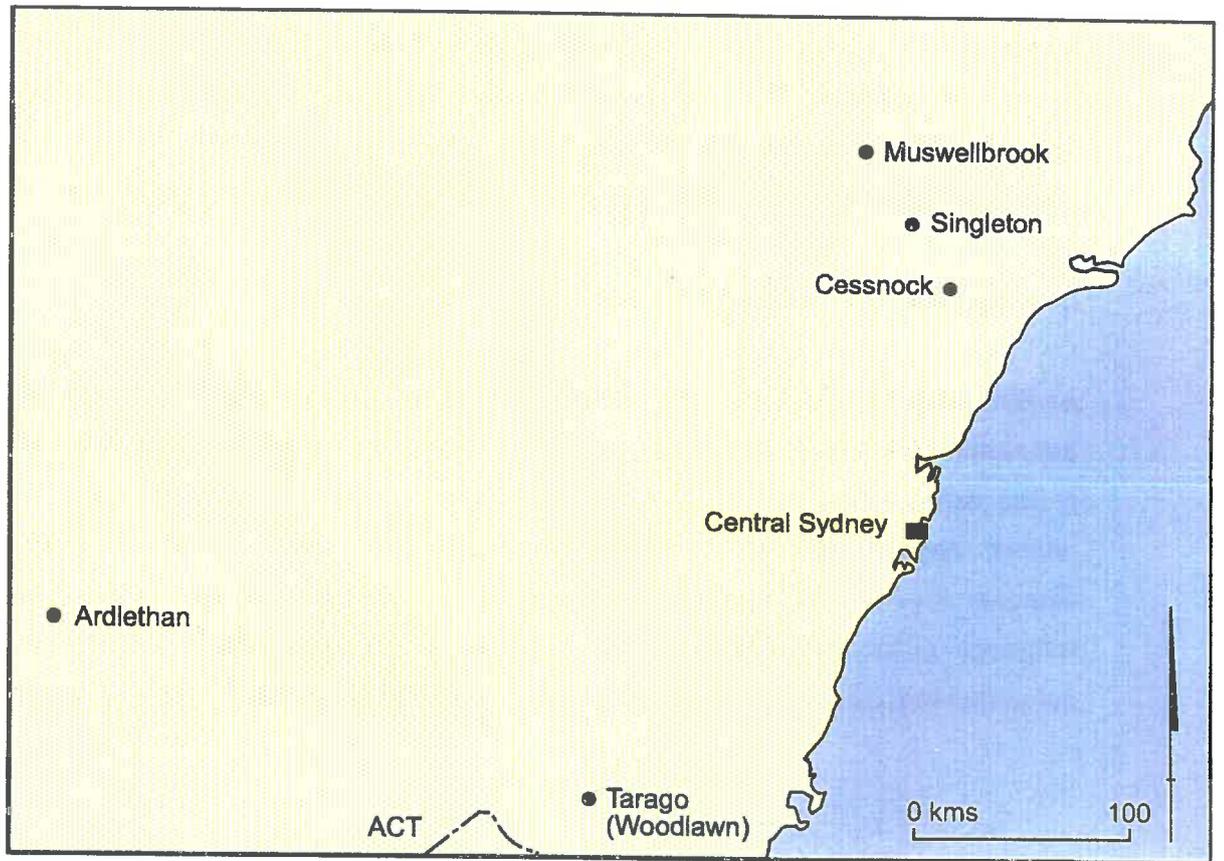
The period, from the 1960's onwards, was time when environmental awareness and risk communication, aided and abetted by the media, led to what Johnson (1999) has termed 'hazard knowledge' within communities. The 'acceptability' of a range of waste disposal practices was questioned as the *de ignoramus* approach discussed by Cutter (1993) gave way to a *de minimus* approach, and as a consequence, individuals and communities developed more strident oppositional responses to 'risk'. Risks, both known and unknown, were often amplified due to their uncertainty and gained the 'intensity and visibility' that ensured they secured a place on government policy agendas (Bridgman and Davis 1998).

¹⁵ In NSW the *Waste Minimisation and Management Act (NSW) 1995* and most recently the recommendations of the *Wright Reports (NSW Government and Wright 2000)*, (*NSW Government and Wright 2000*), *Eco-Recycle in Victoria, Recycle 2000* in South Australia (now absorbed into the Local Government office), and the EPA in each state.

Governments, and city councils alike, recognised that while hazardous technologies may drive the economy, there had to be trade-offs if not absolute safe-guards, if only to appease the electorate. For politicians, the politics of remaining in power has a lot to do with effectively managing public perceptions of risk.

At the same time, many of the risks that pose hazards to individuals, or to agriculture or other forms of primary industry, were also seen by governments to pose risks to the economy. Industry has had its practices and its products put under the environmental, public risk microscope. While individuals tend to focus on risk in terms of personal safety, or even the preservation of the wider environment, the State and Commonwealth Governments, taking the side of the national economy, have become progressively more concerned to ensure that local and export markets are absolutely risk free. As will be discussed in the chapters that follow, agricultural production and waste disposal sites are no longer considered compatible land uses.

As will now be discussed in the chapters that follow, State Governments, as partners with the Commonwealth in promoting uniform environmental regulation, and in the formulation of the intractable waste, and waste minimisation strategies, have adopted a relatively uniform national approach to urban waste disposal issues. The narrative of waste disposal 'events', in Sydney, Melbourne and Adelaide, will now be discussed with reference to the formulation of their individual urban waste disposal strategies, and the outcomes that have ensued, in the face of varying levels of community response.



Sydney relative to landfill locations.

Urban Waste Disposal Sydney 1960--2000

Introduction

This is the first of three chapters that examine urban waste disposal in Sydney, Melbourne and Adelaide respectively, during the years from 1960 to 2000; a period of ongoing change driven by a combination of political interventions, environmental concern and economic expediency. This was an epoch of unprecedented change.

...I chaired this Committee and discovered that Waste Management in the 90's is very different to that of the 70's and 80's; indeed the comparison can be that of a computer to an adding machine (Parliament NSW Chairman 1993).

Landfill is the only method that can universally accept all waste types for final disposal. To minimise environmental damage, properly controlled landfill sites need to be viewed as a very valuable resource, and their life expectancy extended by careful regulation of what is permitted to be buried (Senate Standing Committee 1994:4).¹

The momentum of urbanisation and industrialisation of the greater Sydney area increased after the Second World War. Metropolitan Sydney continued to expand to the extent that the metropolis of 1966 was thirteen times larger than it had been in 1891. Historically, the urbanisation of Sydney preceded its industrialisation, and correspondingly, as densities of population increased, the absorptive ability of this expanding suburbia, in environmental terms, diminished (Butlin 1976:5 et seq.).

As discussed in Chapter Seven, the (optimistic) conclusions to the Cumberland County Council Report on Sydney's metropolitan waste in 1959 suggested that there was ample landfill capacity to absorb wastes generated in the Sydney area for the next 35 years (Coward 1988:260-261). The Council conceded however, that while incineration was the most satisfactory method of waste disposal, it was not a practical solution due to both the cost of construction of the necessary plant, and the ongoing running costs. The high cost was due in part to the need for engineered smoke emission controls. The compromise, implicit in the findings of the Cumberland County Council Report, was that landfill was now an acceptable solution to Sydney's waste disposal requirements. Surprisingly, in contrast to decisions taken fifty years earlier, it was also suggested that burning in open tips, subject to the caveats of bush fire risk and proximity to residential areas, was an

¹ Submission 61, Waverley Woollahra Councils.

acceptable option. An altogether dramatic reversal of policy and approach by the Sydney City Council.

As discussed in the previous chapter clean air issues, together with the broader range of on going environmental reforms, were the backdrops of both reflective of community concerns and environmental change across Australia. Existing disquiet about urban pollution in Australia's largest city, Sydney, had escalated to alarm in December 1952 following the smog related deaths of over four thousand people within a matter of four days in London. This catastrophic event in London led to an investigation that produced the *Beaver Committee Report* in 1954 (Sullivan 1962:7-10).

In 1955 the New South Wales government responded to public concern by creating the Smoke Abatement Committee, (the SAC). In the same year a further 'environmental' initiative saw the creation of the Nature Conservation Council (NCC), an umbrella organisation for groups and individuals concerned with protection of the environment. In 1958 the SAC published the *Report on Air Pollution* in New South Wales that in turn led to the passing of the Clean Air Act, NSW, (1961). The Act drew on the Alkali Act UK (1863), the Beaver Committee Report and the Clean Air Act (UK) (1956), which was based on the recommendations of that Report.

The New South Wales *Clean Air Act*, 1961, sought to synthesise into a single legislative instrument the fragmented provisions of a number of uncoordinated and ineffectual smoke control regulations from five different acts, the *Smoke Nuisance Abatement Act 1902*, *The Public Health Act 1902*, the *Local Government Act 1919*, the *Maritime Services Act 1935*, and the *Motor Traffic Act 1909*.

The *Clean Air Act*, reflecting the environmental awakening happening worldwide, was a forerunner to environmental legislation in New South Wales. It was administered by a special body, the newly formed Air Pollution Control Branch consisting of 'engineers, and personnel with considerable industrial experience supported by scientific services for the evaluation of problems' (Sullivan 1965:5-7). The Act also provided for the creation of the Air Pollution Advisory Committee that was established in May 1962. This committee, comprising representatives of government, the community and industry, sought to promote 'a greater democratic approach' and to oversee the drafting of regulations 'framed in such a way that they will be realistic and capable of practical implementation' (Sullivan 1962:9).

In 1965, Sullivan, in a paper entitled *Progress Towards Clean Air in New South Wales* (Sullivan 1965), published three years after the Clean Air Act was passed, concedes, with respect to enforcement, that 'this proved to be a somewhat complex task'. In other words very little had changed over the preceding four years and the Act was effectively 'toothless'. Yet he optimistically concluded that the necessary mechanisms were then in place and that 'it is expected that the majority of industrial problems will reduce the discharge of pollution during the next two to three-year period' (Sullivan 1965:5-11).

The two waste disposal issues in Sydney that remained at the forefront of debate and public concern were the continued use of incineration for waste disposal and, secondly, the disposal of industrial liquid waste. While the disposal of solid inert waste and general domestic waste continued to be *managed* using various municipal and private landfill sites around Sydney, the disposal of liquid industrial waste was becoming highly contentious. In 1969 all municipal councils in Sydney banned the dumping of hazardous industrial liquid wastes and sludges in their garbage dumps and in 1972 the Land and Valuation Court ordered the closure of a major privately operated site at Alexandria. This led to widely reported clandestine dumping of liquid wastes in disused quarries and in bush land which put waterways in and around Sydney at serious risk of contamination (Coward 1988:260). As will be discussed later in this chapter, these events forced the Government of the day to intervene.

The Barton Report

In 1970 the New South Wales Parliament, faced by a waste management crisis in the Sydney metropolitan area, commissioned a report from an English engineer, Mr. A E Barton, to address on-land disposal of solid and liquid household and industrial wastes. Entitled, the *Report by A E Barton upon Investigations into the Problem of Waste Disposal in the Metropolitan Area of Sydney*, (the Barton Report), it was published in May, 1970 (Barton 1970). This report was a watershed in the management of Sydney's urban waste. Its outcomes, both good and bad², signal significant change in waste management policy not only in Sydney but throughout Australia.

² As will be discussed in some detail its recommendations put in train events which led to the creation of the Castlereagh Liquid Waste Disposal Depot.

Barton had been briefed by the New South Wales Parliament, through the Department of Decentralisation and Development, to 'investigate and report on all aspects of the critical problem of industrial waste disposal currently confronting metropolitan Sydney and the urban areas adjoining it...[and to recommend to the government]:-

- (a) measures which should be taken to relieve the immediate problem, and
- (b) **measures which should be taken to prepare for and organise a comprehensive and coordinated approach to the overall problem of waste disposal and pollution control in the future** (Barton 1970:Terms of Reference). (Emphasis added).

The report surveys what were considered acceptable and unacceptable waste management practices at the time and the range of methods used to dispose of household garbage and industrial wastes. Industries producing significant quantities of waste in the Sydney metropolitan area are listed along with some twenty tipping sites used for industrial solid and liquid waste and domestic garbage. He observed that all solid, liquid, industrial and domestic waste went to on-land tips with the exception of small quantities which went to one municipal incinerator.

Barton makes passing mention of the fact that an incinerator for the Waverley/Woollahra area was being planned; (it was subsequently commissioned in 1973). On a general review of facilities around Sydney Barton found that ownership of the tips was vested either in the source industries, municipal authorities, or waste disposal contractors. A quick *snapshot summation* of the overall state of waste disposal in the Sydney metropolitan area in 1970 can be obtained by making a *selective scan* of descriptions Barton provides of each of the twenty tips he visited and reported upon:-

- the Concord site is unsatisfactory due to lack of suitable coverage;
- the garbage tip itself is a very bad one...it is as good as vermin would ever want to find (Homebush);
- a typical contractors tip.. controlled by one man who burns whatever he can at the tip face (Homebush);
- there is no obvious control and the present embankment is a public eyesore (Homebush);
- it appears to be a "free for all"...it is nothing short of an open public dump (Homebush);saleable goods are salvaged.....there is a good operator on the gate(Homebush)³;

³The Homebush area, the site of the major Olympic games venues in 2000 was recognised as a highly contaminated area, the site of noxious industries and dumps for over 100 years.

- a trade waste tip and one would have to go a long way to find a tip in a worse condition;
- this is a quarry well fenced at the top...it may well be available for another two years;
- there are no fires but the control is poor....it has eighteen months life;
- a private tip...the control is rough but reasonable...(putrescible refused; proximity to airport);
- this is a well kept site with a bulldozer working regularly;
- an industrial tip...Ryde....if all sites were like this there would be far less complaints;
- a most imaginative scheme; the valley is being culverted...ingenious control of storm-water;
- minimum covering....not many more months life....the control is reasonable;
- the working face of the tip needs more attention and covering material than it is getting;
- large quantities of fat and grease-trap waste are deposited on the ground;
- this is a large site.....the control is not of a high standard;
- tipping going on down the valley....valleys of this kind invariably cause pollution;
- this is a good tip with plenty of cover;
- the bulldozer was pushing garbage into water...this could well cause pollution.

As appears, at best, only seven of the twenty sites discussed were considered reasonable and of these only two, or at most three, were described as acceptable. The Report contained nine strong recommendations. The first being 'That as pollution exists at the present time, an emergency scheme be put into action whereby liquid waste be sent to selected sites under strictly controlled conditions...'

By way of synopsis, the further recommendations in the Barton Report state:-

- that strong pressure should be applied by law and education to all forms of industry to install neutralizing and dewatering plant...;
- that a system of licensing of all industry be implemented;
- that contractors be licensed;
- that various contractors be encouraged to set up suitable treatment plants;
- that if contractors engaged in liquid and solid waste removal do not respond the government set up treatment plants;
- that comprehensive anti-pollution controls be built in that are, effective and actively enforced.

Overall, the Barton Report concluded that 'the present critical situation confronting the multi-million metropolis of Sydney should never have happened' (Barton 1970). Barton stated that the unsatisfactory situation 'could have been anticipated and suitable progressive action taken if a co-ordinated authority had been in existence, instead of the fragmented forms of control that have dealt with the pollution to date'.

Post Barton Report

The governmental response to the rebuff delivered by the Barton Report 1970 was the introduction of a package of 'environmental' legislation that impacted directly on waste management procedures. The legislation included the *Waste Disposal Act*, the *Waste Recycling and Processing Act*, the *State Pollution Control Commission Act*, creating the State Pollution Control Commission (the SPCC), and the *Clean Waters Act*. By this time the *Clean Air Act* had already been in operation for nine years.

While an analysis of environmental and planning law in New South Wales is beyond the scope of this work, it is appropriate to note the relevance of this legislation to waste management issues in and around Sydney. The passing of the *Waste Disposal Act* in 1970 was central to changes in waste management in Sydney as it created, for the first time, a single centralised co-ordinating authority, the Metropolitan Waste Disposal Authority (the MWDA). Once established in 1971 the MWDA set about putting strategies in place to address the disposal of the whole of Sydney's solid and liquid wastes.

The *Preamble* of the *Waste Disposal Act*⁴, which was assented to on the 9th of December 1970, states that it is:-

An Act to provide for the constitution of a corporation to be called the Metropolitan Waste Disposal Authority, to confer and impose on the corporation responsibilities, powers, authorities, duties and functions with respect to the transport, collection, reception, treatment, storage and disposal of waste within the Metropolitan Waste Disposal Region; and for purposes connected therewith.

The governance of the MWDA, by a board comprising one full time chair, (the Managing Director of Waste Service NSW), and six part time members, was provided for under the provisions of the *Waste Recycling and Processing Act*. The primary role of the MWDA

⁴ Act No. 97, 1970.

was coordinating urban waste disposal across some forty council regions⁵ in circumstances where there was a growing scarcity of metropolitan tipping sites (Coward 1988:288). As will be discussed at some length later in this chapter, the MWDA set about its task of inquiry, report and reform, by undertaking the preparation of the Sydney Regional Solid Waste Management Plans, Phase I and Phase II which addressed waste management issues from 1975-1978 and from 1978-1990, respectively.

The MWDA worked in close consultation with both the Metropolitan Water Sewerage and Drainage Board and the SPCC which in terms of its empowering legislation,⁶ had:-

...the responsibilities, powers, authorities, duties and functions of a supervisory and co-ordinating character for the prevention, control abatement and mitigation of pollution, the control and regulation of the disposal of waste and the protection of the environment from defacement, defilement or deterioration (SPCC Publication EL1,1974).

The role of the SPCC initially focused on detecting and monitoring sources of pollution, however, in 1972 it took on a more interventionist, regulatory role (Coward 1988:286). The SPCC, acting on the advice of its Technical Advisory Committee could impel government agencies and local government authorities to prevent or abate their own, or others, polluting activities and hence it had a vital role to play in the clean-up of existing dangerous sites (Butlin 1976:34). The SPCC also took steps to impose environmental planning controls by publishing an *Environmental Impact Policy* that was intended to encourage:-

...awareness by every element of the community, [of the need for] the proper assessment of the environmental consequences of actions before these actions are taken, and placing responsibility squarely on the shoulders of every public authority in the exercise of its statutory responsibilities...[to ...ensure that the environment is protected to the extent that it is appropriate to do so (Fuller 1974).⁷

This policy document provided that 'before any action that could significantly affect the environment is undertaken its implications shall be expressly identified and evaluated (Bosward and Staveley 1981:40-111). And while this initiative fell short of the corresponding provisions passed in the United States a few years earlier (discussed in the preceding chapter) it was the beginning of Environmental Impact Assessment in New South Wales. As will be discussed later in this chapter, the announcement of this policy

⁵ The councils continued to manage their own landfills and it was primarily the councils, and not the landfills, that were coordinated by the MWMA.

⁶ State Pollution Control Commission Act NSW, No 95 of 1970.

⁷ Hon Sir John Fuller MLC, New South Wales Minister for Planning and Environment, 1st October 1974 in Principles and Procedures for Environmental Impact Assessment in New South Wales, SPCC, EI-4.

coincided with the Government's urgent attempts to find a site for a liquid waste disposal depot, however, the steps taken in that regard appear to have totally ignored this policy statement.

A further aspect of the overall environmental legislative package introduced by the New South Wales Government in the 1970's was the passing of the *Noise Control Act* in 1975.

Environmental Impact Assessment in NSW

Seven years after introducing its environmental planning policy in 1972 the New South Wales Government passed the *Environmental Planning and Assessment Act (NSW) 1979*, (EPAA) which sought to formalised the integration of planning procedures and environmental assessment. This Act was predicated on the prevailing philosophy of environmental assessment as:-

...a process of public decision-making, involving wide community participation, for the allocation, use, conservation and management of land and related resources, which is designed to promote, within the tolerance of the physical environment, the social and economic welfare of the community and a better environment (Bosward and Staveley 1981:48).

This Act was significant as it provided for the establishment of the office of the *Commissioners of Inquiry for Environment and Planning*, (Division 4, s.18) and also established the Land and Environment Court. The *Commissioners of Inquiry* were given an advisory function and empowered to investigate and report upon contentious environmental issues at the direction of the Minister. Such matters as environmental arbitration and statutory interpretation, the adjudicatory role, were placed in the hands of the Land and Environment Court in terms of the *Land and Environment Court Act (1979)*⁸.

As will be discussed later in this chapter, both the Commissioners of Inquiry and the Land and Environment Court have played a crucial role in relation to the siting of new landfills, and the management and extension of existing sites disposing of Sydney's waste. It is surprising, given the proven importance and effectiveness of its role that no other state has created a permanent standing committee corresponding to the Commissioners of Inquiry.

The *Environmental Planning and Assessment Act* seeks to integrate the environmental assessment of a proposal with the development approval at the local government level by

providing that the local council is the 'consent authority'. However, in 1995 the Minister for Urban Affairs and Planning was given the power to be the 'consent authority' with respect to the approval of all major waste management facilities (SEPP 48). The EPAA is supplemented by Regulations⁹, and a range of Environmental Planning Instruments, (EPI's)¹⁰.

The EPI's include State, Regional and Local Environmental (Planning) Policies; SEPP's, REP's and LEP's, respectively. At the local administrative level there are also Development Control Plans, (DCP's), which are interpretational adjuncts to LEP's and deal principally with zoning controls and designations. A significant factor in regard to these planning instruments is that REP's and LEP's have local application only, while SEPP's apply state wide.

A further addition to the armoury of environmental regulation in New South Wales came in 1989 in the form of the *Environmental Offences and Penalties Act*.

Environment Protection Authority NSW

A more recent legislative initiative, key to environmental management in New South Wales, was the *Protection of the Environment Administration Act (1991)*, (PROTEA), that provided for the establishment of the Environmental Protection Authority in New South Wales in March 1992. This Act enunciated as its key objective 'protecting, restoring and enhancing the quality of the environment in New South Wales' having 'regard to the need to maintain ecologically sustainable development', (PROTEA, s.6 (1)(a)). The role of the Environmental Protection Authority (EPANSW), detailed in an undated pamphlet issued by the Authority, *About the EPANSW*, outlines its philosophy that 'pollution prevention is as important as control'. The EPANSW exercises control through no fewer than eighteen acts of Parliament including the *Clean Air Act 1961*, the *Pesticides Act 1978*, the *Recreational Vehicles Act 1983*, and of course, the *Protection of the Environment Administration Act 1991*.

In 1992 the EPANSW took over a range of regulatory functions from Waste Service NSW¹¹. The role of the EPANSW, as an environmental watchdog and regulator, has been progressively expanded since that time. Of relevance to the management of Sydney's

⁸ Act no 204 of 1979.

⁹ Regulations pursuant to s 157 of the Environmental Planning and Assessment Act 1979.

¹⁰ EPI's pursuant to Part 3 of the Environmental Planning and Assessment Act 1979.

¹¹ Indicative of the administrative reorganisation which occurred, over a quarter of the staff of the Waste Management Authority (38 of 144) transferred to the EPANSW in March 1992 (DUAPNSW 1996:75).

waste, the EPANSW published *Environmental Guidelines for Solid Waste Landfills* in 1996, and in 1998, *Environmental Guidelines: Assessment, Classification and Management of Liquid & Non-Liquid Wastes*. The latter document was issued after the closure of the Castlereagh Regional Liquid Waste Disposal Depot.

In September 1992, following the release of the ANZECC National Strategy for the Management of Scheduled Waste (1992) which set a waste to landfill reduction target of 50% per capita, (as discussed in the previous chapter), the Minister for the Environment in NSW issued a Waste Management *Green Paper* which adopted this target. The *Waste Minimisation and Management Act (NSW) 1995*, (WM&M Act), was passed three years later to facilitate achievement of the ANZECC targets. The Act contains reforms to minimise volumes of waste and established the framework for a significant structural change in the way solid waste is managed in NSW. The WM&M Act, Cl 3(1)(b) incorporates the waste management hierarchy of *avoidance, re-use, recycling and reprocessing*, and *disposal* as its core underlying principle.

SEPP 48 –Major Putrescible Landfill Sites

The operation of the WM&M Act 1995 coincided with the commencement of a new Environmental Planning Instrument, SEPP 48, which has been focal to recent landfill siting determinations. The most significant aspect of SEPP 48 was that the Minister for Urban Affairs and Planning became the *consent authority* for all major putrescible landfills in New South Wales (clause 7). This regulatory change in planning policy has placed the Department of Urban Affairs and Planning (DUAP), in a pivotal advisory role relative to the outcome of landfill siting issues in NSW (DUAP 1995).

The introduction of SEPP 48, which coincided with the implementation of Part 1 of the Waste Minimisation and Management Act (1995) on the 1st of January 1996, set guidelines for the 'determination of proposals for major putrescible landfills sites'. A 'major site' being one that receives waste from more than one local government area or which has the capacity to receive more than 75,00 tonnes per annum or 650,000 tonnes over the life of the site (SEPP 48, cl 6). The stated aims of SEPP 48, in determining the siting of putrescible landfills, can be summarised as: seeking to produce a consistency of approach; ensuring that the significance of proposals to the State are taken into account, and thirdly; that 'the use of landfill sites as a means of waste disposal is weighed against other waste management options' (SEPP 48).

However it is suggested that SEPP 48, which was intended to apply only to major projects, does more than was intended. Paradoxically, the factors that trigger the operation of SEPP48 may catch some smaller projects and exclude some major projects. This is due to the fact that in calculating the *volume of waste criterion* on an application for a variation to an existing licence, the volume-take over the life of the site, and not just the amount of the variation, comes into the reckoning. Hence even a small extension may be caught by SEPP48 if the site has been in operation for some years. Another effect of the triggering provision is that a major project in a (single) large municipality like Wollongong may not attract the application of SEPP 48 because of the two municipalities criterion even though it may be a 'major' project. Another potential anomaly is that SEPP 48 applies only to putrescible waste disposal sites. It is unclear at this time whether waste containing only a small percentage of putrescible material is caught by its provisions. Arguably an industrial waste site, taking primarily solid inert waste, may technically be caught by the provisions of SEPP48 (Mullins 2001 pers.comm).

With the passing of the *Protection of the Environment Operations Act*, (PEO), and the *Contaminated Land Management Act*, in 1997, the EPANSW became responsible for additional licensing and regulatory functions¹². The PEO, in the words of the EPANSW, 'simplifies, modernises, toughens and consolidates existing pollution laws in NSW, making them easier to understand and enforce. The PEO replaces the Clean Air Act 1961, the *Clean Waters Act* 1970, the *Pollution Control Act* 1970, the *Noise Control Act* 1975 and the *Environmental Offences and Penalties Act* 1989. It also incorporates the licensing and enforcement provisions of the *Waste Minimisation and Management Act* (NSW) 1995 (EPANSW 1999:1). The POE places an emphasis on pollution prevention, cleaner production and 'reduction to harmless levels of discharge of substances likely to cause harm to the environment' (POE Clause 3, Objectives).

Incineration

As discussed earlier, refinement of the technology of incineration was ongoing since *big burners* were introduced to manage urban waste in the late 19th century. Despite the fact that 'modern' incineration design progressed beyond the *reverberatory* destructors of the late 1920's, incinerators remained crude and environmentally unfriendly yet remained on many council waste disposal agendas across Australia long after the old the pre-WW II municipal destructors were decommissioned.

¹² In April of 1999 the EPANSW published a handbook entitled, 'Guidelines on Significant Risk of Harm from Contaminated Land and the Duty to Report' and in May of the same year, a 'Guide to Licensing under the PEO Act'.

The single factor that made incinerators an unattractive option, to all but a few councils, was the cost associated with keeping stack emissions, odour and smoke, to an acceptable level, within legislative limits. Within the existing constraints many hospitals, apartment buildings and offices blocks in Sydney still had 'on-site' incinerators in the early seventies (Iverach and Kirov 1971:65-68) and some of these continued to operate, subject to license from the EPANSW, well into the 1990's. The only major area of growth in incineration has been in relation to the cremation of human bodies, a practice that has promoted the technology of building more efficient high temperature incinerators¹³. This new breed of high temperature incinerator, of the type considered by the trigovernmental committee on intractable waste discussed in the previous chapter, was still promoted in many quarters as the most efficient means of disposing of both municipal and Scheduled wastes.

It has been argued that incinerators which decrease the volume of waste going to landfill, can be located close to the source of waste generation, occupy little space relative to landfills, can be used as a means of recovering energy, and effectively destroy contaminants that might otherwise put surrounding environments at risk. On the downside it was recognized that incinerators might produce new, and more dangerous, concentrated, intractable pollutants as residues, involve a high yet calculable capital expenditure, and have high ongoing maintenance costs (SSC 1994). The Commonwealth Government's Report on Waste Disposal in 1994, (SSC 1994), identified the fact that the Waterloo incinerator in Sydney, operated by the Waverley, Woollahra Council, was one of only two high temperature incinerators handling domestic waste in Australia. The other was in the Australian Antarctic Territory.

The SSC was told that the low usage of incineration in Australia 'is attributed to the public perception that incinerators are polluting and a political reluctance to grasp the issue' (SSC 1994:55). The Waterloo incinerator was planned and built in the late 1960's and early 1970's at a time when two of Sydney's municipal councils, Waverley and Woollahra faced a crisis in waste disposal and saw little other option but to take this costly route. Prior to 1964 the Council had sent its waste to a landfill at Marrackville, adjacent the Kingsford Smith Airport. However, this site was closed by the Department of Civil Aviation in the interests of air safety and the Council had no other option but to cart its refuse 34km through Sydney to tipping facilities in the Canterbury area.

¹³ Cremations increased across Australia from around 800 in 1930, to 16,000 in 1950 and have been increasing ever since. (Sergeant 1971:96)

This facility had a daily capacity of 520 tons when commissioned in 1973 and was able to meet the local waste intake as well as that from three adjoining municipalities, Randwick, North Sydney and Marrackville (Strait and Toner 1971:97-104). The operation of the incinerator remained a matter of ongoing community concern and contention until its sudden closure in November 1996; an election promise made good (WSNSW 1996:5).

The Sydney Region Solid Waste Management Plans

As discussed earlier, in response to the issues raised in the Barton Report the MWDA, with responsibility under the *Waste Disposal Act* 1970 for the coordination of solid and liquid waste disposal in the Sydney metropolitan region, set about the preparation of the Phase I, and later the Phase II, Sydney Region Solid Waste Management Plans. The MWDA was concerned not only with putrescible and other *domestic* wastes but also *industrial* liquid and solid wastes.

The Phase I plan, completed in June of 1974, was a short-term management plan for the period 1975 to 1978. The Phase II plan, released in October 1976, contained a revision of the Phase I plan and addressed the period from 1978 to 1990. Neither plan was 'designed to bring about changes in the pattern of collection, transfer and disposal of industrial waste and commercial waste handled by private contract' (MWDA 1976) but focused on solid waste disposed at council and regional depots.

The Phase I plan sought to 'rationalise the system of movement and disposal of waste in the region, to progressively improve the standards of transportation and disposal, to develop the least cost solution [sic], and to develop a continuous phasing plan with in-built flexibility' (MWDA 1976). Overall Phase 1 was intended to lead into the proposed Phase II Plan recommendations which were directed to long-term solutions. The Phase I plan 'precluded at this stage consideration of new disposal facilities utilizing sophisticated technology' and confined itself to landfill disposal. The study developed a mathematical model to simulate solid waste generation across forty local government areas with 49 actual or potential landfill sites and 22 potential transfer stations.

The projection for 1978 was nine landfill sites (including the new Heathcote Road landfill at Lucas Heights) and the Waterloo incinerator, working in conjunction with four transfer stations. The plan divided the greater Sydney region into nine sectors and outlined a *preferred solution* for each sector based on proximity to waste disposal facilities, volumes of waste generated and ease of transport. On the basis of this analysis the report concluded that it represented a 'first stage in the rationalisation of the Sydney region solid

waste transportation and disposal system with potential for achieving a significant reduction in environmental pollution from landfill depots'. It proposed *an economic solution* that would ensure that 'all councils have reasonable access, and use of, disposal facilities for the four years during which the Authority will develop and implement long term solutions for the Region as a whole' (MWDA 1974:7-35).

The Phase II report published in 1976, reflecting the charter of the WMDA, stated that the Phase I management plan was 'directed towards ensuring that adequate waste disposal facilities would be available for the Region as a whole' and 'aimed at reducing environmental pollution from landfill depots by upgrading certain existing facilities, phasing out some facilities of limited capacity considered environmentally unacceptable and the establishment of new regional facilities' (MWDA 1976:Chairman's Forward).

The Phase II report details its intention to continue the process of rationalisation of waste movement, improve standards of transportation and disposal 'at minimal cost to the community as a whole'. In outlining available options, the MWDA stated that it 'favours the landfill method for disposing of solid waste until other methods are proven to be both technically and economically viable for the Sydney Region' (MWDA 1976:3).

Volumes of waste were increasing along with the population projections for the Sydney Region which showed an increase of about 487,000 in the ten years, 1975 to 1985. The corresponding projected increase in waste was from 1.42m tonnes to 1.64m tonnes *per annum*. The MWDA's projections to the year 1980 indicated that six local government areas would have waste management facilities for their own exclusive use and 34 local government areas will be utilising regional depots. The projections to 1990 show a reduction from twelve to seven available regional landfills. In the same period the number of transfer stations will increase from three to eight by 1990. The study concludes that, by the mid-1980's all existing council-run landfills would be exhausted, however:-

....considerable landfill capacity is potentially available on the outskirts of the Region in the long term and it is considered that landfill disposal will continue to be an important method of solid waste disposal to the 1990's (MWDA 1976:22).

The long-term conclusions state that 'some indication of the feasibility of resource recovery systems in the Sydney Region should become available over the next few years. Should such indications be favourable, action would be initiated to introduce full-scale resource recovery (MWDA 1976:22). History shows that little was done in this regard.

The Phase II report used computer based modeling techniques incorporating costing projections as a measure of acceptability; *economics* being a prime criterion for *preferred* disposal methods. Against five possible waste disposal options which ranged from landfill sites in either inner or outer areas, with or without transfer stations, using either compaction or pulverisation of waste, the favoured option, at approximately a third the capital cost the other options, was the combined use of inner and outer regional landfills in conjunction with transfer stations.

The landfill option also presented the cheapest operating costs. In 1975 dollars the capital and operating costs per annum for the cheapest landfill option were estimated at \$12m and \$23m respectively. In contrast, the process plant option had projected expenditures of \$103m and \$34m respectively. It is therefore easy to see why the process plant option, involving incineration, was not considered viable.

The Liquid Waste Disposal Problem in the Sydney Metropolitan Area

As mentioned earlier, in 1969 municipal councils ceased to take industrial liquid wastes at their tipping sites and this in turn put pressure on private contractors to find alternative sites for its disposal. Many resorted to clandestine dumping practices. Barton (1970) highlighted this problem and indicated that if private contractors were not prepared to meet the needs of industry then Government must. As mentioned earlier, the crisis highlighted by Barton was exacerbated in 1972 when the Land and Valuation Court ordered the closure of private industrial liquid waste disposal sites at Alexandria. This worsened an already critical problem.

The MWDA then had little option but to re-double its efforts to find a suitable site for short term 'emergency means of disposal', pending the construction of a liquid waste treatment plant, 'that will control the disposal of all non-toxic liquid wastes from the Metropolitan area and to ensure disposal in a way which would cause neither health hazard nor pollution of the environment' (Rankine and Hill 1973:2). The underlining has been added to draw attention to what will be seen to have been a misleading and biased statement of intent in a report which exhibits a distinct bias in favour of a site which appears to have already been firmly decided upon by government.

The MWDA, in compliance with the guidelines published by the newly formed State Pollution Control Commission, sought an Environmental Impact Study that was prepared by a firm of consulting engineers, Rankine and Hill. The Report, dated January 1973, was lodged with the Penrith City Council in support of the MWDA's application dated

December of 1972 to operate 'an interim liquid waste disposal facility at Berkshire Park' (MWDA 1977:5).

The *Statement of Objective*, outlined in the Environmental Impact Study states that:-

A critical liquid waste situation in the Sydney Metropolitan area requires that the Metropolitan Waste Disposal Authority find an emergency means of disposal. The objective is to implement an emergency method of liquid waste disposal which will control the disposal of all non-toxic liquid wastes from the Metropolitan area and to ensure disposal in a way which would cause neither a health hazard nor pollution of the environment. **This operation will need to last a minimum time of one year and a maximum time of two years** (Rankine and Hill 1973:3). (Emphasis added)

At several points the Report refers to the selection of 'an emergency site' for liquid waste disposal 'pending the establishment of long-term treatment facilities' (1973:1) and outlines details of no fewer than fifteen alternative sites along with the option of dumping at sea¹⁴. The Report concludes that 'The only possibility which appears worthy of further investigation for an emergency means of disposal is the land-fill method on the New Castlereagh site (1973:6).

Attached to the Report is an undated letter addressed to the MWDA from the Metropolitan Sewerage and Drainage Board (MSDB) indicating that they had held consultations with them and did not oppose the 'disposal of non-toxic liquid industrial wastes' at the 'Castlereagh State Forest site', subject to certain conditions and with the overriding proviso that 'it reserves the right to call on the Authority to cease its operations with or without prior notice, and without having to furnish any reason for this' (sic) (Attachment Hill and Rankine 1973). In fact the MSDB never exercised this right even though problems did develop at the site.

The chosen site, near the residential area of Londonderry, then covered twenty acres (eight hectares) located fifty-eight kilometres west of Sydney and is variously described in the Environmental Impact Study as 'an area that has been devastated by gravel stripping operations', 'basically a barren and desolate area' and 'a definite health and safety hazard at present because of illicit dumping of liquid and solid waste' (Hill and Rankine 1973).

¹⁴ Paragraph 3.11 considers dumping at sea in the following terms: "Dumping of non-toxic wastes at sea presents the best method of disposal from the point of view of minimising pollution to existing facilities. The wastes which have to be disposed of generally meet the conditions of the International Convention on the Dumping of Wastes at sea and would not cause pollution of the ocean'(Rankine and Hill 1973:6).

The terms of the Hill Rankine document suggest that the site is so utterly worthless that it is good for nothing other than waste. However, it does not suggest that the site will be less of a health hazard once commissioned as a liquid waste 'depot'. The suggestion implicit in the report is that the dumping operations will be 'controlled' and will pose no threat to the environment.

Despite all the assurances contained in the Report, the emphasis on the short term nature of the operation, the urgency of the situation, the remoteness and lack of value of the site, and the unlikelihood of (further) damage to the site, the application was rejected by the Penrith Council. The responsible Minister then 'suspended the Penrith Planning Scheme and issued an Interim Development Order to enable the proposal to proceed' (MWDA 1977:5).

The Castlereagh landfill was then constructed as a short term, in-ground, non-toxic, liquid waste disposal depot¹⁵. The entire perimeter boundary was excavated to a point where impermeable clay was found. This trench was then backfilled with impermeable clay to create an in-ground barrier. Cells 15m long, 5.5m deep and 4.5m wide were then dug and these were filled with domestic garbage. The effectiveness of the site works was dependent on the low permeability of the clay and the levels of inter-reactivity of the substances placed in the cells. To limit migration of *fugitive leachates* it was also necessary to ensure that neither rain nor flood waters could percolate through the cells.

What then became known as the Castlereagh Regional Liquid Waste Disposal Depot was commissioned in 1974 with an anticipated life of 1-2 years, pending the design and construction of plant to provide 'physico-chemical and biological treatment and high temperature incineration' as a means of disposal of industrial liquid wastes (Coward 1988:290), (Butlin 1976:272). Initially it was intended that the site would take around 114,000 litres a week, yet even by 1976, Butlin recounts that the site was taking 350,000 litres per week (1976:272-273). However by July 1977, after a mere three years of operation, the rate of disposal was 50 million litres per annum using the 'absorption method' (MWDA 1977:14). That is, liquids were poured over absorptive putrescible waste which in a sense was intended to act as a sponge. However, in practice this was more likely to set in motion complex chemical reactions having unknown outcomes.

¹⁵ The site was not intended to take chlorinated hydrocarbons, phenols, pesticides, organic peroxides or wastes containing arsenic, cadmium, mercury, lead, or strong acids. However, Butlin suggests (1976:273) that diluted toxic wastes may be going to the Castlereagh site.

By 1977 the need for an extension and enlargement of the site became necessary and to this end an Environmental Impact Statement was prepared by the MWDA for a short term, five year, approval. The *Environmental Impact Statement for the Proposed Short Term Extension to the Castlereagh Regional Liquid Waste Disposal Depot* was predicated on the statement that 'The long term solution for the disposal of liquid industrial wastes in the Sydney Metropolitan Region has been revised because of changing needs' (MWDA 1977:2). The extension proposal put forward by the MWDA indicated that an additional fifty hectares (125 acres) could be added to the existing site. The 1977 Environmental Impact Statement canvassed all available options and concluded that:-

From a careful evaluation of the alternatives available...it is essential that the operation of the Castlereagh Regional Liquid Waste Disposal Depot be extended for approximately five years as there is no other alternative available at the present time' (Rankine and Hill 1973:11).

The MWDA was granted an extension given the urgency and emergency of the situation in circumstances where there were no other available options. Two years later in March of 1979, the Minister for Planning and Environment announced that 'a liquid waste treatment plant would be constructed on a site to be nominated' (MWDA 1986:1).

In 1980 the MWDA requested a further extension for the site. To achieve this extension the Government gazetted a site-specific SEPP; *State Environmental Planning Policy No3 - Castlereagh Regional Liquid Waste Disposal Depot*. This further extension was to a prescribed date, 'the 31st of December 1986, or such later date as the Governor may, by proclamation publish before 1st January 1987' (MWDA 1986:1). The extension carried with it an approval to add a further fifty hectares to the site.

Finally on the 11th of October 1985, six years after its announcement and fifteen years after the Barton Report, development consent was granted for the construction of the proposed Aqueous Waste Treatment Plant at Lidcombe. In the meantime a further EIS was submitted for an additional extension of the Castlereagh operation in November 1986. The justification for the extension was that:-

...construction of the plant and its commissioning, could not be achieved by December, 1986. In addition, there are a small quantity of liquid waste types which it is not practical to treat at the aqueous waste treatment plant, a number of industrial sludges which require secure landfill disposal and the residue from the plant (at Lidcombe) which would preferably be disposed of at a secure landfill. Accordingly the Authority is requesting an extension of area and the time during which further waste disposal operations may be carried out at the Castlereagh site (MWDA 1986:2).

Two years later in 1987 a fourth extension was sought and a further EIS was prepared on the basis that the proposed Aqueous Waste Treatment Plant at Lidcombe would not come on line until post 1988. This EIS describes the existing Castlereagh site as now comprising 140 hectares, with an additional suitable area of 105 hectares being available for liquid wastes and sludges, 70 hectares available for solid waste and 43 hectares available as buffer zones.

By this time residents living in areas adjoining the Castlereagh site were becoming concerned by the risks posed by leachates they alleged were escaping from the site to adjacent properties in what was now a residential growth area. Angry residents, getting no response from the Government organised themselves in 1989 and formed an *action group*, the Londonderry Residents Action Group for the Environment (RAGE), with the stated aim 'to fight for the protection, restoration and improvement of the local environment' (TEC 1996:1).

RAGE gained assistance from the NCC and the Total Environment Centre (TEC) and in 1990 prepared a Submission with the help of the TEC setting out the history of the site and challenging the assertion by the MWDA that no toxic waste had ever been disposed of in the landfill (RAGE 1990). This submission disclosed that as early as 1977 cells contained cocktails of acids, alkalis, and heavy metal solutions as well as organic wastes that included oils, solvents and pigments. The Report emphasized that the inter-reactivities of this cocktail of chemicals, and its impact on the integrity of the clay barriers which were supposed to contain them, remained totally unknown.

RAGE expressed the concern that the government, or specifically the Waste Service NSW, as successor to the MWDA, trading as the Waste Recycling and Processing Service of NSW¹⁶, would simply close the site and fail to contain or remediate what they perceived to be the inherent risks (Londonderry 1990, and WSNSW 1996). Although the MWDA and WMA claimed to police the site, and asserted that no wastes had escaped, the fact that in the testing process alone they sank 240 boreholes through the impermeable clay barrier was of itself a cause for uncertainty. RAGE continually asserted that 'out-gassing' had occurred and that biologically active wastes had escaped from the site. They also alleged a long record of 'mis-information' by the MWDA and its successor the WMA (RAGE 1990).

In November 1996 RAGE, using funds granted by Waste Service NSW, engaged the TEC to report on community concerns and the adequacy of government investigation with respect to the site (TEC 1996). The *TEC Report* reaffirms residents' concerns about the risk of toxic leachates and gases contaminating their living environment. Case studies were cited alleging birth deformities and spontaneous abortions in farm animals and human beings in the area that were attributed to environmental contaminants escaping from the site. The Report also emphasised the undisputed facts that the 'interim', 'emergency' facility's initial area of 8 hectares, with an operating life of one to two years, had ballooned out to 20 years and an area of 350 hectares, of which 250 hectares were used for mixed in-ground disposal of putrescible and industrial liquid wastes.

The intervention of RAGE in 1989 was significant in so far as it forced the Government to act. The site continued to take putrescible and industrial liquid wastes and had received successive extensions for nearly twenty years. It was finally announced by the government in 1994 that there would be no further extensions and that the site would cease to take waste by 1998. The 'political' factor, which finally ensured its closure, was a pre-election undertaking given in 1995 by the then opposition Labour party that they would close the site by the end of 1997, if elected to office. And so they were! Closure though has not solved the problems of remediation.

Castlereagh highlights the fact that waste management is essentially risk management. For a waste disposal site to be managed effectively the risk posed by the waste must be known and to this end, the chemical composition of the waste must be known. Hence the importance of waste classification. Consistent with the discussion of Risk in Chapter Three, the Londonderry residents continue to face a situation exemplifying the worst of risk scenarios involving what are perceived to be unfair, coerced, industrial, exotic, dreaded, and not knowable risks that are controlled by others (Cutter's 1993). Adopting the views of Fischhoff (1994), which extend Cutter's risk characterisation model, the residents endure these risks, receive no beneficial trade-offs and have option of avoiding them, short of attempting to sell (their now devalued) properties and moving elsewhere.

The actions of the governments that oversaw the approval, and continued operation of Castlereagh, border on the reprehensible by today's standards. This was not an example of 'policy on the run' or 'political compromise' among policy makers (Lindblom 1980), but a case of governmental 'policy override' dictated by expediency in an out of sight out of

¹⁶ Established under the Waste Recycling and Processing Service Act 1970 as a Government

mind management mode. As is evident, decisions were made incrementally over a number of years. The government initially paid lip-service to its own Environmental Impact Policy introduced in 1972 directing that all 'environmental consequences of actions' be fully assessed. The document submitted to the Penrith Council was flawed, misleading, and possibly, also deceptive reflecting a degree of stealth on the part of government which resulted in a political and environmental travesty of the most titanic proportions.

The facts disclose that the Castlereagh 'facility' was 'approved' outside then existing environmental guidelines and was never a treatment plant but rather a government sanctioned liquid 'depot' using technology that owed more to the 19th than the 20th century. Approval was autocratically 'imposed' on the local community, without consultation, using a modified decide, announce, defend, and in this case, ignore approach. It represents the nadir, the lowest point, in government waste management practice in modern day Australia and stands as an exemplar of what can only be termed world's worst practice.

The components that trigger early 'environmental' intervention and community participation, which in the discussion of risk has been termed 'hazard knowledge', were absent. The toxicity of the waste, although admitted in part, was down-played or simply misrepresented. The original Environmental Impact Study states that:-

Waste containing quantities of arsenic, cadmium, mercury and lead **will definitely not be permitted**. The wastes **likely** to be accepted at the depot will **mainly** fall into the categories of tannery wastes, greasetrap waste, ink waste, oil and water, soluble resins, solvents, vegetable and animal oils and fats, and miscellaneous organic chemicals not containing large quantities of halogenated hydrocarbons, insecticides and herbicides or peroxides (Rankine and Hill 1976:10)(Emphasis added)

To adopt the thoughts of Slovic (1987), the ability to avoid risk or harmful situations comes from the ability to learn from past experience. In this sense, the community had no past experience and Castlereagh was to become the 'past experience' of those opposing siting proposals in the thereafter. Due to fear of environmental damage, and a lack of trust in government, virtually every subsequent waste facility siting proposal put forward in New South Wales has been challenged. The Castlereagh debacle clearly highlights the political nature of waste disposal issues. Ironically the site was created ostensibly to

avoid a political embarrassment in the 1970's and was closed in the late 1990's for the same reason, and to fulfill a pre-election promise.

The long awaited commissioning of the Lidcombe Liquid Waste Plant in 1988 deflected liquid wastes from landfills to a plant that neutralized them, and thereby enabled their safe discharge into the sewerage system. Lidcombe 'reduced reliance on landfill disposal of residues, permitting the closure of Castlereagh' (WSNSW 1998:2). The operative word is *reduced*; as residues from treatment plants still have to be disposed of to landfill. The Castlereagh 'issue' remains unresolved. The Government was still attempting to address the rehabilitation in October of 2000; and 'is not possible to say how long it will take or how much it will cost. The plan is to cap it; to create a barrier' (G. Russell pers. comm. 2000).

In what may now be seen as an understatement, in 1998 the EPANSW published *Environmental Guidelines: Assessment, Classification and Management of Liquid & Non-Liquid Wastes*, which states that 'the disposal of liquid waste to land can lead to negative environmental impacts due to the presence of contaminants' (EPANSW 1998:95).

Reorganisation of Waste Management

The most comprehensive review of urban waste disposal in New South Wales following the Barton Report 1970, came in 1993. In 1989 the Metropolitan Waste Disposal Authority was *recast* as the Waste Management Authority (WMA) that was given a role which extended beyond the disposal of waste to the broader issues of waste reduction. On the 1st of March 1992 the WMA passed over its waste minimisation, recycling and environmental regulation functions to the newly formed EPANSW to be managed by the Waste Recycling and Processing Service (WRAPS). At that time also, the management of all existing waste disposal facilities (including Castlereagh) was transferred to Waste Service New South Wales (WSNSW). This organisation maintained the board structure of the WMA and became proactive in all aspects of waste management and disposal in the 1990's.

As an indicator of the size of the commercial operations managed by WSNSW, its 1999 Annual Report disclosed cash flows for the previous year of \$132.6m, a net cash flow of \$53.7m and total asset equity of \$86m. Since 1998, WSNSW has produced an *Annual Environmental Performance Report* which details the outcomes of the corporate environmental policy formulated in 1995 making protection of the environment a core element of its operations (WSNSW 1999).

Joint Select Committee Report 1993

In 1990 the WMA produced a *Green Paper*, the *Sydney Solid Waste Management Strategy*, which projected that Sydney's existing waste disposal facilities had capacity for no more than about eight years. The *Green Paper* proposed that a new landfill facility be established at Londonderry which, with hindsight, seems fairly courageous given the strong emotional responses to the Castlereagh debacle and the mobilisation of residents through the creation of RAGE. The proposal was dropped with the Minister of the Environment at the time stating that the circumstances reflected the need for a 'fundamental reappraisal of Sydney's whole waste handling and disposal strategy' (Parliament NSW 1993:2).

This *fundamental reappraisal* began in October of 1992 with the announcement of a *bi-partisan* Joint Select Committee on Waste Management (Parliament NSW 1993). In the Forward to the Report the Chair declared that 'society can ill afford a waste management strategy which is based on *feel good* principles and not on sound measurable environmental and economic argument'. He also declared that the Joint Committee was 'unique in the history of the Parliament of NSW as it was allocated two reference groups, the Community Reference Group and the Local Government Reference Group, whom it should consult and whose opinions it should note'. The Joint Committee's Terms of Reference were premised on a range of issues, including the ANZECC targets, and included:-

- the aim to achieve a 50% reduction in waste quantities per capita by the year 2000;
- the need to ensure community involvement in siting decisions for waste management facilities;
- the need to ensure that sufficient capacity is available to in waste management facilities to cope with NSW waste management requirements;
- other matters related to waste management including incineration and container deposit legislation;
- the creation of statewide strategies;
- long term safe disposal, or processing of remaining waste;
- proposals to transfer waste disposal to local government.(Parliament NSW 1993:2).

In September 1993 the Joint Committee tabled its report that concluded with forty seven recommendations. The recommendations, key to the present discussion included:-

- that the 50% ANZECC target be the minimum target acceptable (Rec 1);
- that the government be a leader in taking initiatives to promote the long term sustainability of the NSW environment and introduce policies and where necessary, legislation to ensure avoidance and minimisation of waste (Recs 2 + 6);
- that all landfill sites be 'designated developments' under the EPAA (Rec 13);
- that pricing of waste disposal should reflect short term environmental and social costs as well as full establishment costs, remediation costs and long-term replacement costs (Rec 15);
- that a diversity of waste service providers be permitted to own/operate putrescible waste disposal facilities (Rec 25);
- that a new waste authority be developed as a Local Government Business Enterprise (Rec 30);
- that a system of container deposit legislation not be introduced (Rec 37);
- that priority be given to the diversion of organic waste from landfill (Rec 39);
- that best available technology (BAT) incineration be included as an option in Sydney if it becomes economically viable (Rec 44);
- that no legislative changes be introduced that would make NSW industries uncompetitive with those in other States (Rec 47). see (Parliament NSW 1993:56-63).

As is apparent, the recommendations of the Committee were far reaching and led to significant changes in urban waste management practice in New South Wales many of which followed on from the introduction of the *Waste Management and Minimisation Act (1995)*.

New Landfill Sites for Sydney for the 21st Century

During the period from the Barton Report in 1970, through to the Report of the Joint Committee in 1993, there were fundamental changes in the administrative structures managing Sydney's waste. These developments reflected wide-ranging community based paradigm shifts in relation to environmental issues and consequent changes in governmental policy. Waste minimization and recycling issues had entered all local government agendas and, as will be seen, whole communities began to become highly involved as old waste disposal facilities were closed and attempts were made to open new ones. Inevitably though, the availability of waste disposal capacity within the Sydney

region was progressively diminishing, and at the same time, the volume of waste was progressively increasing.

Regulatory reforms were achieved through the *Waste Minimisation and Management Act 1995*, (WM&M Act)¹⁷; a direct outcome of the recommendations of the Joint Select Committee Report on Waste Management in 1993. This Act replaced the *Waste Disposal Act of 1970* and, as part of a *legislative scheme* providing *inter alia* for:-

- licensing controls on the handling, storage, treatment and disposal of waste;
- the creation of the State Waste Advisory Council (SWAC);
- empowered the EPANSW to license private owner/operators of putrescible waste management facilities;
- the creation of Waste Management Regions and Regional Waste Boards; and,
- set targets for waste reductions of 60% by the year 2000 (based on 1990 figures), with the proviso that if not achieved the surplus would attract a penalty levy, (higher than the \$17 levy per tonne currently charged).

Importantly, the WM&M Act took the management of waste out of the hands of Councils and provided for the creation of Regional Waste Boards. At the time of writing there are eight regional Waste Boards covering the Greater Sydney Region, and the Illawarra, Hunter and Central Coast Regions. What is termed, the Extended Regulated Area (ERA). In the metropolitan area of Sydney there are four Waste Boards; the Western, Northern, Southern and Inner Sydney Waste Boards. In terms of the licensing and other controls managed by the EPANSW, there are¹⁸ fifty five licensed waste disposal facilities within the ERA (EPA NSW 2000) (Bryan 2000 pers comm.). Until the passing of the WM&M Act, the WSNSW had a monopoly on the disposal of Sydney's putrescible waste.

As of June 1999 WSNSW operated *engineered landfills* at Jack's Gully (from 1975), Grange Avenue Marsden Park (1977), Belrose (1979), Easton Creek (1985), Lucas Heights 2 (1987), and the Liquid Waste Plant at Lidcombe (1988). In addition, WSNSW also manages seven solid waste transfer stations and two materials recycling facilities within the Greater Sydney Metropolitan area (WSNSW Annual Report 1999). Waste from

¹⁷ Operational on the 1st of January 1996.

the City of Sydney, is being managed by the Inner Sydney Waste Board, (ISWB), which also administers the council areas of Ashfield, Auburn, Burwood, Concord, Drummoyne, Leichardt, and Strathfield. The ISWB has waste transfer stations and recycling depots, but no putrescible landfill sites, within its region. As a consequence, it is reliant on landfills in the adjoining regions of St Peters, Lucas Heights, Eastern Creek and Kurnell and transfer stations at Chullora, Artarmon and Greenacre. Sixty percent of all waste generated in the central Sydney region is solid inert waste from construction and demolition; this is four times the per capita rate, overall, across the greater metropolitan area of Sydney. This construction waste, and most other solid inert material, is going to sites owned and managed by private corporations, a factor reflective of the commercial reality that waste disposal is now a growth industry.

The St Peters landfill operated by the City of Sydney, which once operated a paper waste incinerator and also took the solid residues from the Waterloo incinerator, now only operates as a solid inert waste site. The Kurnell site takes inert solid waste and most of the City of Sydney's domestic/putrescible waste, around one million tonnes per year, now goes to Lucas Heights (LH 2). A nearby site at Lucas Heights, known as Lucas Heights 1 (LH 1), was closed down in 1987 and is now subject to remediation. But, as will be discussed later in this chapter, it is possible that this site may be partially *revived* to meet waste disposal needs pending the opening of a site remote from the city. A further unresolved issue at the time of writing is whether LH 2, should continue to take waste from adjoining regions (pers comm, DUAP, October 2000)¹⁹.

In September of 1996 DUAP published a document entitled, *EIS Guideline on Landfilling* (DUAPNSW 1996). The Guideline 'identifies some important factors to be considered when preparing and environmental impact statement' with respect to a proposed landfill. Specifically, the Guideline states that 'A high priority should be given to:-

- considering environmental factors in site selection
- evaluating alternative sites
- ascertaining the suitability of the intended location (DUAP 1996:3).

¹⁸ As at 1999

¹⁹ URL <http://www.wasteboard.nsw.gov.au/about/facilities.html> and related sites

By the mid 1990's, the realisation that existing available capacity was running out and that the waste reduction targets were not going to be met, led to a number of proposals for extensions to old sites and for new sites to be approved. Given the implications of SEPP 48 it is not surprising that a number of the proposed sites have been relatively remote from Sydney. The fact that for the first time privately owned and operated putrescible waste management facilities could be licensed by the EPANSW led to a number of applications to extend existing non-putrescible sites, but more importantly, to open new *remote or long-haul* sites.

In 1996 WSNSW, recognising the anticipated shortage of landfill space in Sydney, sought to extend its operations at the LH 2 site and prepared an EIS for submission to the Minister of Urban Affairs and Planning (DUAP). WSNSW also opened negotiations with the Sutherland Council, who control the site, and who were seeking to meet waste reduction targets on the one hand, and also extend the life of this conveniently located site by reducing waste-take from around 1.2m tonnes pa to 600k tonnes.

A preliminary outcome of negotiations between WSNSW and Sutherland Council was an agreement, mediated by a former Judge of the Land and Environment Court Mr. John Woodward. The agreement provided, in part, that WSNSW would undertake further remediation work at (LH 1), and that some non-putrescible waste would be transferred, and/or, re-directed, from LH2 to LH1 thereby increasing the capacity of LH2, and that an alternative site be found for some 500k tonnes of waste per annum generated from the Northern Sydney Waste Board region and otherwise disposed of at LH 2²⁰.

The applications for extensions and expansion of existing sites, and the creation of new sites, included an attempt by Pacific Waste to expand its operations at Badgerys Creek. The proposed site was a clay/shale quarry site operated by Camide Pty Ltd., one of the Kolback group of companies, later taken over by Pacific Waste. Initially this site was licensed to take solid inert waste in terms of an EIS submitted in 1989. In October of 1993 a further EIS was submitted seeking to expand the waste management operations at the site to include putrescible waste. The site, situated in the vicinity of the proposed new Sydney West Airport, covering 81.5hectares, had a proposed life of 25 years and was to

²⁰ In fact, as will be discussed later in this Chapter, WSNSW have been unsuccessful in gaining approval for a large 'remote' site (at Cessnock) and as at December 2000, negotiations between them and the Sutherland Shire Council have broken down with the outcome that LH2 will have a longer life than anticipated, and the WSNSW site at Eastern Creek a shorter life (Mullins 2001pers comm.).

take solid waste, including putrescible waste, in what was described as a *wet tomb, bio-reactor or contain and seal* operation.

Following a protracted process, the Council rejected the application by Pacific Waste and the matter was referred to the Land and Environment Court in 1994. A judgment was handed down in February 1995²¹. In his conclusions, Talbot J observed that:-

...that there has never been any real dispute that Sydney has an ongoing need for landfill sites and this need will continue indefinitely and...Sydney is clearly approaching a critical point in regard to its capacity to dispose of putrescible waste (Pacific Waste Management Pty Ltd v Penrith City Council and Others[1995] NSWLEC 19).

In rejecting the application by Pacific Waste the Judge placed heavy emphasis on LEP 201, the local environmental planning instrument, and stated that the 'principal objectives of the zone are likely to be compromised by the development of Badgerys Creek Airport and mooted industrial development on the periphery' (Pacific Waste Management Pty Ltd v Penrith City Council and Others[1995] NSWLEC 19). The judgment provides a *snapshot* of landfill demand in greater Sydney in late 1994. Evidence was given at the court hearing by WSNSW, on behalf of the Penrith Council, challenging the statement in the EIS submitted by Pacific Waste that:-

[A]s at October 1993, there was approximately seven years supply within current putrescible waste depots serving Sydney. The evidence, based on survey calculations and actual waste statistics indicated that landfill capacity was marginally greater than Pacific Waste estimated; 5.3 years at the beginning of 1993 was revised upwards to 8.4 years at the beginning of 1995 (Pacific Waste Management Pty Ltd v Penrith City Council and Others[1995] NSWLEC 19).

This was not a great variation given the obvious demand and corresponding shortages of available space in the long term. The Judge went on to state that:-

....the (Waste) Service expects that the rate of waste generation per capita will remain constant between 1990 and 2000, but that recycling and waste reduction programs will have the effect of reducing the actual quantity of waste that will need to be disposed of to landfill.....compaction densities are continuously rising by the application of improved techniques and green waste is being gradually removed from the waste stream by compost programs and a market development plan (Pacific Waste Management Pty Ltd v Penrith City Council and Others[1995] NSWLEC 19).

²¹ Pacific Waste Management Pty Ltd v Penrith City Council and Others, No 10189 of 1984.

Community Based Oppositional Groups

From its inception in 1955 the NCC, which receives funding from both the Commonwealth and State Governments, has 'mentored' individuals and organisations in New South Wales concerned with environmental issues. In the year 2000 it had over 120 environmental groups and scientific societies on its register. In addition to government grants it raises funds by conducting seminars and conferences, the publication of a subscription based quarterly newsletter and through fee paying membership.

A significant feature in the resolution of waste disposal and landfill siting issues in New South Wales has been the involvement of well informed and highly organised community based, site-specific, oppositional groups that exemplify effective community participation. RAGE, formed in 1989, stands out in this regard. While the broadly based environmental organisations based in Sydney, the NCC, the TEC, and Friends of the Earth have played a role, the Waste Crisis Network (WCN), a sub-group of the NCC established in the early nineties, and a number of site-specific groups which include RAGE, CAST, PAAL and SCASG, that will now be discussed, have been highly effective in resisting more recent landfill siting proposals.

The focus of attention from the mid 1990's, following the passing of the Waste Minimisation and Management Act 1995, has been the proliferation of applications by private contractors to operate putrescible waste disposal sites outside Sydney. These included old mine sites at Cessnock, Singleton, Ardlethan, Muswellbrook and Woodlawn.

All but one of these proposals, Woodlawn, were strongly opposed by local resident's groups. The Hunter Residents Against Sydney Garbage, Cessnock Anti Sydney Tips (CAST), Singleton Citizens Against Sydney's Garbage (SCASG), People Against Ardlethan Landfill (PAAL), were but four of the highly organised and active groups. While some activists expressed concern bordering on distrust of the WCN, because it received government funding via the NCC, the consensus was that while the WCN was not always very obliging there were individuals within the organisation who were available when needed and particularly supportive and helpful (Oliver 2001 and C. Russell 2002 pers. comms.).

These regional opposition groups met regularly, rallied against landfill siting proposals, and made submissions to the various Commissions of Inquiry. Importantly these groups, which appear to be fairly informal, shared information and liaised with each other on issues of common concern (Oliver 2001 pers comm). Funding was always an issue and innovative means were employed. CAST and PAAL were incorporated, and they both had annual membership fees and raised money with charity auctions, social events, raffles and "T" shirt sales. CAST also made and sold protest signs for people to plant in their front gardens and elsewhere. In contrast the members of SCASG did not incorporate, and initially did not wish to assume a 'group' name or acronym. It was only on being advised that their submissions would gain more credence if they came from a 'group' that it was collectively agreed to adopt a name and compose a letterhead. The members of SCASG raised little money as individual members personally paid out-of-pocket expenses as required.

As explained by Carol Russell of SCASG these groups had confidence in their abilities to force change; 'we think we can do anything---we are so disparate a group and have such a wide range of skills (pers comm. 2002). Later in this chapter the role and actions of opposition groups will be discussed in terms of the theoretical concepts outlined in Chapters Three and Four. However, the wider discussion of the role of community based oppositional groups in the waste management debate in New South Wales and the rest of Australia, which could clearly support a research project in its own right, lies outside the direct focus of this thesis.

Cessnock, Singleton, Ardlethan, Muswellbrook and Woodlawn.

The passing of the WM&M Act in 1995 altered the waste disposal *calculus* in New South Wales in a number of respects. As discussed, it has enabled private contractors and site owners to enter the putrescible segment of the waste disposal market in Sydney. Once WSNSW no longer had a monopoly on this lucrative business a number of proposals were put forward, many by companies operating in inert waste disposal and extractive industries.

These applications have reinforced the seemingly inevitable *long-haul* waste management solution for the City of Sydney. The preference for remote sites is an outcome, not only of SEPP 48 considerations, but is also influenced by the practicalities of lower start up costs, the ready availability of cheap *space* which includes old mine sites, and the fact that the waste levy, imposed by the EPANSW as the licensing authority, is considerably less

outside the Extended Regulated Area (ERA)²². Furthermore, the more remote, and the less populated a region adjoining a proposed site, the less likely the oppositional response, NIMBY or otherwise, to a putrescible landfill (or other LULU²³) proposal.

Cessnock

An application for a putrescible landfill by WSNSW at Cessnock in the Hunter Valley, about 175 kilometres from Sydney in 1995 was not successful. The WSNSW Annual Report (1996) included in its 1995-1996 *Highlights* the fact that negotiations were 'well advanced with a number of Councils to continue to expand potential future landfill sites', to create a *landfill bank* (WSNSW 1996:8). The 1998-99 Report states that the Cessnock City Council supported this initiative and WSNSW had prepared an EIS and entered into discussions with DUAP. However, the Report goes on to add that the Cessnock City Council reversed its decision early in 1999 and WSNSW 'has consequently resolved not to proceed with public exhibition of its Development Application'.

In support of its application WSNSW sought to woo the local population by producing a number of publications which they disseminated widely to the people in the region. A Community Newsletter outlining the Cessnock proposal and a comprehensive report to the Cessnock City Council entitled *A New Proposal for Major Benefits to Cessnock Associated with A New Waste Management Centre* were produced at no small cost. The latter document, an impressive 104 page presentation, with 26 glossy appendices, was issued under the signature of John T Woodward²⁴, a former Land and Environment Court judge and former Chairman of the NSW Commissioners of Inquiry, then of the Office of Mediation and Inquiry.

The Report to the Cessnock Council, which might be described as a *hard-sell*, was made freely available to the residents of Cessnock. *The mediated proposal* detailed in the Report 'provides for \$22 million over twenty years with an initial payment of \$6m in 1999' which would save the local council \$58m, in not having to provide its own waste facility and would offer employment to twenty five local people (Woodward 1998:1-2).

²² \$17.00 in the ERA as opposed to \$10 per tonne in country areas.

²³ Locally Unwanted Land Use.

²⁴ J T Woodward had mediated the agreement between WSNSW and Sutherland Shire Council in relation to the use of Lucas Heights 1 and the continued use of Lucas Heights 2 by WSNSW.

Reflecting prevailing sensitivities, the Report declared that the proposed facility described as a *Waste Management Centre*, covering 93 hectares, (having been reduced from 127 hectares), was 'not a dump nor a mega dump' and is to be located in a *disused, worked out and degraded quarry site* adjacent the existing town landfill and would take all of Cessnock's domestic waste (17,000 tonnes), waste from contractors (23,000 tonnes) and up to 400,000 tonnes from WSNSW transfer stations in Sydney. The total capacity of the site was estimated at 8m tonnes of 'household domestic and commercial waste. Toxic, liquid and industrial waste would be prohibited wastes' (Woodward 1998:10-13).

Yet, despite the expertise of WSNSW the local people were not prepared to be *persuaded*, or even bought. WSNSW withdrew the EIS in 1999, having lost the support of the Cessnock Council. It was suggested to the writer that 'they were effectively *warned-off*, sixty per cent. of the houses in Cessnock had anti dump signs in their front yards and there were difficulties to do with road access and plant pathogens' (DUAP 2000 pers. comm.).

Singleton

In 1998, the mining company Theiss put forward a proposal to develop a worked out mine site near Singleton, the Ravensworth Mine, as a landfill. An EIS was submitted by Theiss and put on display in June 2000. The impediment to approval appears to have been the perceived risk to local agriculture. At the time of writing the matter remains unresolved in the face of strong local opposition. It is suggested though, that with the creation of an intermediate category of waste, *industrial waste*, the site may become a viable and acceptable option for development as an inert waste disposal facility. This proposal was still 'alive' at the time of writing (DUAP 2000 pers. comm.).

Ardlethan

In June 1996 Kolback Environmental Services put forward a proposal in the form of a DA to DUAP seeking consent to rehabilitate the former Ardlethan tin mine approximately 400km west south-west of Sydney. The mine had been abandoned by its owners with no obligation to rehabilitate in 1986 after seventy-four years of operation. The proponent proposed to transport waste to the site by rail from Sydney; an attractive option both from the point of view of minimising road usage, and hence, road gas emissions and one which at the same time made use of an existing under utilised State owned facility.

The EIS entitled, *Ardlethan Mine Rehabilitation Using Solid Waste Landfill*, submitted in June of 1996, was later revised and resubmitted in August of 1998. The EIS outlines SEPP 48 *justifications* with reference to the needs of the Northern Sydney Waste Board to find an alternative disposal site, to LH 2, from January 2001.

Approval was sought from the Minister for Urban Affairs and Planning 'to rehabilitate the mine by developing a putrescible waste landfill with a capacity of 23m m³ of waste.' 'The proposal will form the essential final stage of a comprehensive waste minimisation and management scheme for part of Sydney's putrescible waste and will form a long term disposal site for the Coolamon local government area...(Perram, & et al. 1998:S3-S5). The proposed site had the capacity to take up to 800,000 tons of waste per annum, employ up to fifty people, and easily meet the potential 500,000 tonne capacity shortfall predicted for Sydney in 2001.

In July of 1999 the Commissioners of Inquiry submitted a Report to the Minister of Urban Affairs and Planning which noted that 'Farmers in the immediate environs and in the irrigated agricultural areas some 60k to the west near Griffith hold fears for the escape of pests and disease'. The risk was described by the proponent as 'vanishing small'. The Commissioners of Inquiry concluded though that although the project:-

...would be likely to have only minor effects on the local and regional environment ...I recommend that it not be approved as currently proposed due to the risks to agriculture, which although low, have the potential for serious adverse consequences.

Yet the door was left open to the proponent by the Commissioners with the suggestion that an 'amended Landfill Project may be able to be approved provided the requirements I refer to above in relation to agricultural risks can be satisfied'. It is interesting to note that the Western Sydney Waste Board made a submission to the Commissioners opposing Kolback's application (Commissioners of Inquiry 1999:A3-3). Following the Report to the Minister the Commissioners of Inquiry for Environment and Planning were directed to undertake a Public Assessment in accordance with section 18(5) of the EPAA. The Commissioners Report was submitted in November 1999. Submissions were received from 23 parties, including the EPANSW, the NSW Agriculture Department, an overseas expert and (PAAL). Such issues as potential *bale tear rates* became an issue. The Commissioner concluded that 'I am not persuaded that agricultural risk arising from the Ardlethan Landfill Project would be non-existent or that the requisite degree of biosecurity could be achieved in practice as Kolback contends (Commissioners of Inquiry. 1999:1-11).

Muswellbrook

In June of 1998, Collex Waste Management Pty Ltd., describing themselves as one of Australia's five largest waste management companies, submitted an EIS for a putrescible waste disposal facility to be known as Bells Ridge Waste Management Centre, 1.5 km north east of the town of Muswellbrook. The site, an abandoned open cut coal mine, accessible by train, with available space of 20 to 25 million cubic metres, could take 400 to 600 thousand tonnes of waste per annum and would have a life of between 50 to 60 years, depending on compaction techniques. In terms of justification the application was linked to North Sydney's need to accommodate its waste post January 2001 discussed earlier (CH2MHILL 1998).

After going through the usual selection and adjudication processes the proposal was rejected, on the same basis as the Ardlethan proposal, given its proximity to valuable and vulnerable areas of agricultural production. Once again, strategic economic factors, which could impact on both the State and National economies, were successfully argued by those opposing the proposal, and were determinative of the outcome.

Woodlawn

On the 15th of October 2000, the Sun-Herald in Sydney ran a headline; *An offer city can't refuse*. Putting to one side the *double entendre*, (seemingly mandatory in most discussions of *waste*), the article foreshadows what is the likely solution to Sydney's post 2000 waste disposal crisis; 'Up to 500,000 tonnes of Sydney's rubbish will almost certainly be dumped [at Woodlawn] near Gouldburn each year, and the people in the southern NSW town couldn't be happier' (*Sun Herald* 15/10/2000).

In February of 1999, Collex Waste Management Pty submitted an EIS with respect to the proposed Woodlawn Waste Management Facility sited in a disused mine on a 3000 hectare property 7 km from Tarago; 250 km south west of Sydney. The facility is planned as a 'wet bioreactor'. Each cell incorporates sprinkler systems which keep the refuse moist thereby speeding up the process of degradation. The EIS refers to the same *justification* put forward for the Muswellbrook landfill, the need to dispose of waste generated by the North Sydney Waste Board, and extended it to the Woodlawn proposal; 'Collex have entered into a contract with North Sydney Waste Board with respect to Muswellbrook Landfill. Under the contract Collex have committed that should Muswellbrook fail to be awarded approval and Woodlawn be awarded approval then the

contract with the North Sydney Waste Board will apply to the Woodlawn site' (Woodward-Clyde 1999:ES-3).

The Woodlawn proposal proceeded through the process of a Commission of Inquiry pursuant to section 119 of the EPAA. Forty six written submissions were presented and 24 parties gave evidence. Commissioner Cleland concluded in January 2000, as stated in his covering letter to Dr Refshauge, Minister for Urban Affairs and Planning, that the 'Facility would have potential environmental impacts. Nevertheless, I am satisfied that they can be controlled and mitigated to suitably low levels by the proposals in the Environmental Impact Statement and supporting documentation enforced by the recommended strict conditions of consent which include deferred commencement' (Commissioners of Inquiry. 2000). Yet, still faced with a contentious decision with far reaching strategic implications, the Government considered that Sydney's overall urban waste disposal needs should be examined.

The Wright Reports.

This is a time of great opportunity to begin to change the paradigm of waste management in New South Wales. An abundant array of viable technologies exist to increase recycling and to gain value for various parts of the waste stream. No one technology offers a complete solution. Rather each can form a part of an integrated management system (NSW Government and Wright 2000:1).

In the light of the Government's concerns following the Deputy Commissioner Cleland's Report in January 2000, the final decision with respect to Woodlawn remained *on-hold* and the Minister of the Environment in New South Wales, the Hon. R Debus instructed a consulting firm, Wright Corporate Strategy Pty. Ltd. to examine the wider issues relating to Sydney's waste disposal needs. Tony Wright's report, the *Report of the Alternative Waste Management Technologies and Practices Inquiry*, was presented to the Minister in April 2000 (Wright 2000a). This report, the first Wright Report, then led the Minister of Urban Affairs and Planning to request a further report from Tony Wright in July 2000 detailing the actual availability of landfill space for Sydney. The second Wright Report, entitled the *Independent Public Assessment – Landfill Capacity and Demand*, was submitted to the Minister for Urban Affairs and Planning in September 2000 (Wright 2000b).

In its opening paragraphs the first Wright Report posed the question:-

Why do some communities manage waste with alacrity while others seem overwhelmed by the task? Are some communities wise in seeking value from waste, or should they choose least-cost disposal options?

Wright's response is to be found in the Report. 'The Waste Inquiry has sought to understand the potential contribution of waste management practices and technologies in seeking answers to these fundamental questions' (Wright 2000a:1). Wright, observes that 'Waste is both diffuse and heterogeneous. It is difficult to handle and often complex to recover for beneficial uses' (Wright 2000a:1). The Report's Executive Summary postulates Wright's Triple Manifesto with respect to waste management; 'choices of State and regional technologies, practices and strategy are inextricably linked. Determinations of one leg of the tripod cannot be made without impact of the other legs' (Wright 2000a:2). In fact this statement has relevance both nationally and globally.

The terms of reference of the second Wright Report, specifically took into account the Woodlawn proposal. Wright states that in the light of the findings of the first Wright Report, directed to the Minister of the Environment, this report was directed to the Minister of Urban Affairs and Planning with the express purpose of providing independent advice with respect to the 'Assessment of Current and Projected Needs of Landfill Proposals (including the currently proposed landfill at Woodlawn) (Wright 2000b:v). The terms of reference limited the second Wright Report to address:-

- A. available landfill capacity for solid putrescible (non hazardous) waste in the Sydney region to accommodate current and projected demand from 2001 to 2020, for three scenarios as outlined in the Inquiry report, viz: current; improved; and aggressive.
- B. The implications of the above on the need or otherwise for the proposed Woodlawn landfill at the proposed (400,000 to 500,000 tonnes of putrescible waste per annum capacity) in the immediate, mid-term (eg 2005), and long term (eg 2010 and beyond).
- C. Scope for a new major landfill to compromise the likely rate of introduction of improved technologies and practices, and if so, the scope for such an issue to be managed.
- D. Likely mid to long term justification of such a new major landfill in the light of various assumptions on the likely rate of the introduction of improved technology and practices, and any comments on the "justifiable demand" for additional landfill capacities in the short, medium and long terms in the light of the Inquiry findings and recommendations (Wright 2000b).

Wright's focus was on the disposal of putrescible waste. He notes that although a proportion of Commercial and Industrial Waste (C&I) and Commercial and Demolition (C&D) waste is captured in the recycling and reprocessing programs, the remaining bulk is disposed of to landfills. In Sydney, he notes that virtually all municipal residual waste is disposed to putrescible landfills, and some 39% of C&I. He observes that little C&D goes to putrescible landfill.

Wright outlined a model in his analysis applying three different groups of variables, *landfill input rate mix options*, to existing Sydney landfills. The model incorporates four *waste diversion scenarios*, nine *waste diversion take-up schemes* and three *waste allocation options*. In developing this model he applies the three different waste disposal scenarios discussed in his earlier Inquiry, to which he adds a fourth, to illustrate when, and at what rate, sites will reach capacity. The first of these *waste diversion scenarios* contemplates the impact of a *business-as-usual* approach, the second he terms *improved initiatives*, the third *aggressive initiatives*, and the fourth, *ultimate initiatives* (NSW Government and Wright 2000b:viii-ix).

The second Wright Report then put forward eight recommendations. The overall conclusion he reached was that substantial additional landfill capacity was required during the short, medium and long term future for the Sydney Region and that given the 'long time-frame from landfill project conception to commissioning, it is recommended that early action to establish a satisfactory new landfill site should be taken' (NSW Government and Wright 2000b:xvi).

The primary conclusions of the second Wright report relates to the future of Lucas Heights 2 (LH2) as it impacts on the longer term waste solution for Sydney. Wright provides the two available options with respect to LH2 both of which involve the creation of a *long-haul* landfill site. Wright states that LH2 can continue to take about 1.2m tpa until around 2010/2012 at which time its capacity will be exhausted. A *long-haul* option will then be needed. Alternatively, by establishing a long haul landfill in the near term the waste-take at LH2 can be reduced to 575,000 tpa, and its life thereby extended.

Other recommendations in the second Wright Report highlight the need for:-

- creation of a strategic policy framework;
- implementation of aggressive waste minimisation programs;
- application of market mechanisms using clause 12, SEPP 48, criteria;
- incorporating waste avoidance into mainstream waste minimisation strategies; encouraging adoption of alternative treatment technologies;
- allowing competition and using market forces to produce desired outcomes in the treatment and disposal of waste;
- making greater use of licensing as a regulatory tool;
- using financial incentives to promote recycling; and finally;
- adopting as a long-term policy goal which recognises that:- *Waste should as far as possible be treated or disposed of in the region which provides the best outcomes in terms of all economic, social and environmental factors* (NSW Government and Wright 2000:xiv-xx).

At the close of the Fourth Epoch of Urban Waste Disposal the Wright Reports are relevant and germane to the wider issues of waste management in New South Wales, and for that matter, the rest of Australia in the year 2000. Yet the importance of Wright's conclusions to the present discussion lie more in their application, instrumentally, in assisting the resolution of Sydney's pressing need for landfill capacity beyond the year 2000. Beyond this the Wright reports contain the seeds of future urban waste management strategies across Australia; as a significant point of reference to any future discussion on the disposal of urban waste in 21st century Australia.

The Woodlawn proposal was approved on the 30th of November 2000 when the Minister for Urban Affairs and Housing issued an Assessment Report and a determination outlining the basis on which Collex could proceed with their proposal. The Assessment Report (Minister for Urban Affairs and Planning 2000), recognised the proposal as a *designated development* in terms of the *Environmental Planning and Assessment Act 1979*, and found the *justification* requirements in SEPP 48 were met. It also addressed concerns raised with respect to heritage and agricultural impacts, and water quality and management, air quality, noise emissions and site rehabilitation issues. Noting compliance with all procedural and regulatory requirements the Department of Urban Affairs and Planning recommended to the Minister the granting of conditional development consent.

In making his determination the Minister imposed site-specific conditions on the proponent, in addition to the general statutory obligations implicit in the *Environment Planning and Assessment Act and Regulations*. Approval was granted for an initial period of twenty years with specified input rates not to exceed a maximum of 500,000 tonnes per annum. The input rates over the first twenty years of operation are scaled down from 400k tonnes in the first five years to 290k tonnes pa in the 16th to 20th years²⁵.

It is now anticipated that the Collex site at Woodlawn will be operational by the end of 2001 (Mullins 2001 pers.comm.). The Woodlawn decision, in so far as it can be assessed at the moment, appears to set a context for the wider discussion of urban waste management for Sydney, (if not the whole of Australia), in the 21st century.

Concluding Comments

The historical narrative has disclosed *Who* took decisions in relation to the disposal of Sydney's waste, *How* it was disposed of, and *Why*, in terms of the Research Questions. What emerges is a varied and complex interconnected series of events which bear out the observations of Hugh Stretton (1970), referred to in Chapter One, that the ongoing management of cities is as complicated and conflict-ridden as the government of whole nations, and 'Like any other activity of government town planning can be good, bad or indifferent, and it can distribute very different costs and advantages to different people' (Stretton 1970).

The Fourth Epoch of Urban Waste Disposal closed with the adoption, and partial implementation, of recommendations contained in the Wright Reports. The Epoch had begun, following the Fraser Reports (1954 and 1959), with the recognition that incineration posed serious air pollution problems, secondly that the disposal of industrial liquid wastes and, in particular, the co-dumping of these wastes with putrescible wastes in municipal landfills was hazardous. By a process of iterative policy decisions, which almost appears to have been a process of 'trial and error', Sydney got rid of its smokey incinerators, centralised the management and disposal of its waste stream, and set about finding new urban waste disposal sites.

²⁵ The full text of both the Assessment Report and the Determination were published on the World Wide Web at <http://www.duap.nsw.gov.au/consents/c_woodlawn.pdf> and <http://www.duap.nsw.gov.au/consents/pr_woodlawn.pdf>

The Barton Report (1970), which was totally independent report by a overseas expert and not limited, politically constrained, 'in-house' Council document, was a watershed in urban waste management and disposal in Sydney. It identified the inefficiencies and ineffectiveness of existing waste disposal practices and in particular highlighted the need to redirect liquid waste from the mainstream to safe disposal sites. It was predicated on the wider environmental concerns which had been addressed in part ten years earlier with the passing of the *Clean Air Act 1961* and recognised that liquid waste could no longer go down the nearest drain and be forgotten about in the hope that it would not be traced back to its source (Barton 1970).

The Barton Report led to significant legislatively underpinned reform. The legislative template reflected in the *Clean Air Act* in 1961, was a precursor to the consolidation of wide ranging environmental provisions into a legislative instruments which led to the creation of consultative boards and committees. *The Waste Disposal Act 1970* created the MWDA in 1971 and the *State Pollution Control Commission Act 1970* regulated the SPCC. The *Clean Waters Act*, and the *Waste Recycling and Processing Act* each addressed aspects of pollution and, directly or indirectly, impacted on urban waste disposal and management in Sydney.

Ironically, the Barton Report, that aimed at 'cleaning-up' critical aspects of waste management in Sydney led to the creation of an environmental nightmare of its own. The time-line of events at Castlereagh virtually cover the entire Fourth Epoch and, as a study within itself, the saga reflects the changing face of waste disposal over this forty year period. The governments of the day clearly overrode their own environmental safeguards in the interests of expediency. Initially, all those elements that we now recognise as essential to long term environmentally sensitive planning, consultation, public participation, adherence to the principles of ESD, the precautionary principle and the processes of EIA, were ignored.

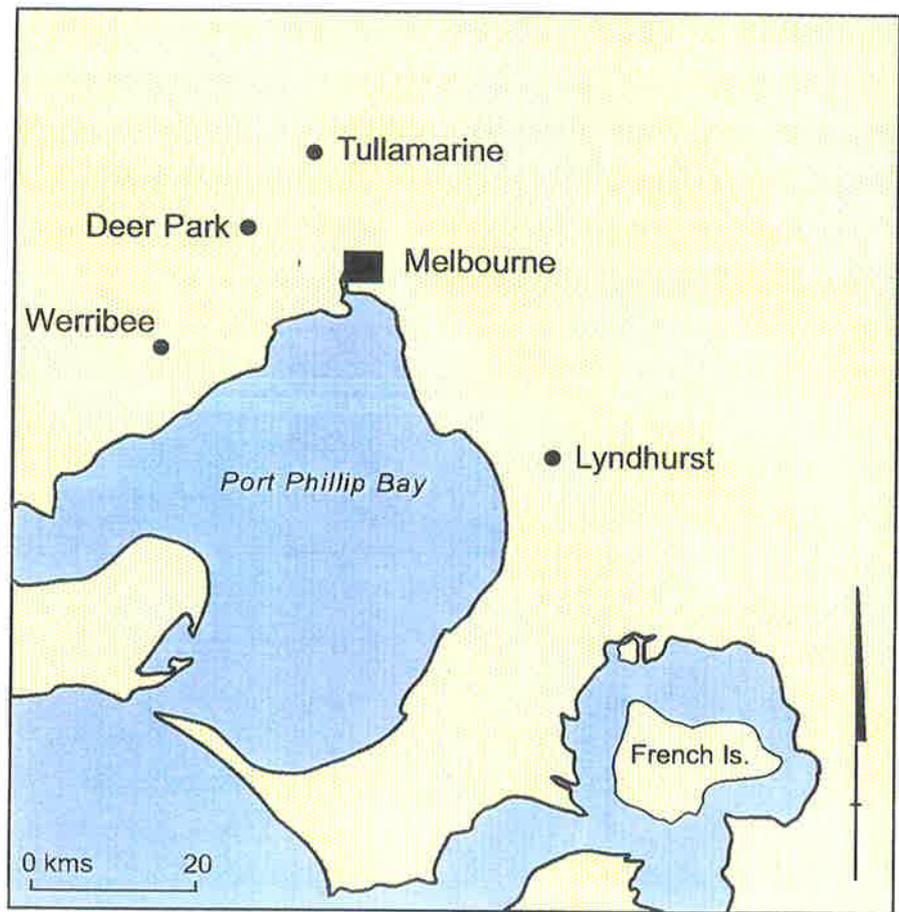
Castlereagh exemplified a lack of accountability by policy makers, shortcomings in applying technology, and a lack of long-term planning to such a degree as to generate a reactive backlash at both the political and community levels that remains today. In a sense Castlereagh has been Australia's own Love Canal²⁶. It has caused an 'explosion of public consciousness about hazardous waste' (Gerrard 1995) that both created and

²⁶ On the 2nd of August 1978 the city of New York declared the Love Canal neighbourhood of the city of Niagara Falls to be a public health emergency when it was discovered that a chemical

reinforced what Johnson termed 'hazard knowledge' (1999) in Sydney (and the wider Australian) community. Never again would a government in New South Wales succeed in siting a landfill without high levels of community involvement and risk assessment.

The present direction of urban waste disposal in Sydney was set in 1995 with the enactment of the *Waste Minimisation and Management Act* in 1995. This Act replaced the *Waste Management Act* of 1970 and broke the monopoly of Waste Service New South Wales on the collection and disposal of the main component of Sydney's urban waste stream, putrescible waste until 1995. As the discussion of events in the Melbourne and Adelaide will confirm, the disposal of urban waste is a most lucrative industry, yet private enterprise had been denied access to Sydney's putrescible waste stream. Once this logjam was broken there was a plethora of competing applications for new landfill sites which culminated in the approval of the Woodlawn facility, which is no doubt the first of a number of 'remote from source' landfill sites that will service Sydney in the 21st century, the Fifth Epoch of Urban Waste Disposal.

company had dumped 21,000 tons of liquid hazardous there in the 1940's and 1950's (Gerrard 1995:11)



Melbourne relative to landfill locations.

Urban Waste Disposal Melbourne 1960--2000

Introduction

Many of the changes in the management of the urban waste stream in Melbourne during this epoch inevitably mirror those discussed in the previous chapter with respect to Sydney. There were however some important differences. As has been mentioned in Chapter Seven, Victoria had a head start on New South Wales, and the rest of Australia, in regard to clean air regulation with the passing of its *Clean Air Act* in 1958. This Act made the continued operation of incinerators in Melbourne, and in Victoria generally, both more highly regulated and more expensive, and thereby made landfill a more attractive and easily justified option for municipal councils. Victoria also took the lead ahead of the other Australian States and the Commonwealth by passing legislation to create an Environmental Protection Authority. A third factor, given the strictures now imposed on incineration, the city was 'was blessed' with ample in-ground landfill capacity and hence did not face the same crises as Sydney. Yet despite these 'advantages' Melbourne City Council still had to pro-actively manage issues arising from its undifferentiated waste stream, and in particular, the liquid industrial waste component. As will emerge from the narrative, the most contentious issues in the total management of the urban waste stream going to landfill related to the coordination, centralisation and rationalisation of services and facilities in a growing climate of community distrust and anxiety.

Just as Sydney's early settlers were able to exploit the natural resources of the Cumberland Plains which yielded up raw materials in the form of clay and sandstone to provide essential building materials, so too, was the case in Melbourne. Melbourne had an abundance of sand, gravel, clay and basalt quarries in close proximity to its centre of settlement all of which became available over time for landfill. Hence, many of the critical issues that had to be addressed in Sydney through the Fraser and Barton Reports of the 1950's and 1970's did not arise in Melbourne.

By the late 1960's 'controlled tipping' had returned as the waste disposal norm for metropolitan Melbourne. As in the rest of Australia, this was a time when the adjectives, *industrial*, *toxic*, and *prescribed* became attached to the noun *waste*. In the late seventies communities became aware of the dangers posed by industrial residues, leaking landfills and leachates. Correspondingly, as in the rest of Australia, communities

better understood the benign nature of *household garbage*, *domestic waste*, and *municipal or urban waste and refuse*, which became synonyms for *harmless waste*. This was a time when Victoria also became actively involved in finding a solution to problems associated with the disposal of industrial wastes and was a party to the tri-government taskforce on intractable wastes. One significant factor that influenced waste environmental management in Victoria, and distinguished it from the rest of Australia, was the creation of the Environmental Protection Authority in 1970.

The Environment Protection Authority Victoria

The establishment of the Environment Protection Authority (EPAVic) was a defining event in Australia's 'environmental' history. By the 1970's, as discussed in Chapter Eight, a range of environmental initiatives taken by the Commonwealth Government were changing the way people thought about pollution, and waste. Just as Victoria had *stolen the march* in relation to air pollution control by passing the Clean Air Act in 1958, it was also first government in Australia to create an environmental protection authority.

Facing an election in mid 1970, and gauging the high level of public concern for what were emerging as *quality of life issues*, the Premier Sir Henry Bolte, promised stronger enforcement of the *Clean Air Act*, an increase in national parks, and the establishment of a Victorian Pollution Control Authority. At a time when the protection of water quality in Victoria was administered under twenty two acts of Parliament, by twenty six different authorities, clearly rationalisation was required (Russ and Tanner 1978:2).

Premier Bolte took a lead from the Commonwealth Government's Select Committee Inquiry into water pollution¹ and attempted, without success, to pass the *Water Pollution Control Bill* in 1969. This legislation would have created a Water Pollution Control Authority (Unglik 1996). The Bill failed, yet Premier Bolte persisted with promises of reform and in the face of a difficult election campaign, he promised the Victorian people, on the 12th of May 1970 that, if re-elected, he would create a pollution control authority.

Bolte's promises were made good (Unglik 1996), even though this was the same pro-industry Premier, reported to have said, 'we care about water pollution but it is not more important than a 100-million dollar industry' (Whittington 1970:3). Bolte's counterparts in Sydney, Canberra and Adelaide would have probably agreed with him.

Following a successful re-election campaign the Victorian Government introduced what at the time were radical, pro-active, environmental policy reforms. Taking a lead of the US Government, and utilising the services of an American adviser, Jack Fraser, the government drafted and successfully legislated the *Environment Protection Act*, 1970, thereby giving Victoria an umbrella organisation to oversee environmental issues within the State well ahead of the rest of Australia. In introducing the Bill to Parliament the Minister of Lands, the Honourable Bill Borthwick, stated that it was to form the basis of environmental protection for Victoria through the control of wastes and the prevention of pollution. The four principal objectives were:-

- to create the mechanisms for the formulation of policies 'as guidelines for action by all agencies in the prevention of pollution';
- to provide a means of preventing pollution' and to identify and monitor environmental degradation;
- to 'provide firm controls on pollution should it occur';
- to 'eliminate the fragmentation of responsibility' by establishing 'an authority to assume overall responsibility for environment protection' (EPAVic 1996:3).

The Environment Protection Council was created in March of 1971 and the 1st of July the EPAVic opened its office doors for the first time. Yet its path was far from smooth. There were *teething problems*. The Act defined pollution 'as an alteration to the existing environmental quality' (Russ and Tanner 1978:5). On this definition, maintaining the *status-quo*, however polluting, could arguably escape prosecution. Yet the greatest difficulties were organisational rather than operational. The promised status of the EPA as an independent statutory authority, free from bureaucratic restraints and restrictions, did not eventuate. The EPA was created as part of, and subordinate to, the Department of State Development. The first Chair of the EPA, Jack Fraser, who had drafted the empowering legislation, having failed to secure the necessary government assurances for the independence of the EPA, resigned in late 1972. Russ and Tanner suggest that 'as Fraser flew back to California the decline of the infant EPA began' (1978:6).

Fraser, who had unsuccessfully pleaded in a letter to Minister Borthwick that the EPAVic be given 'the status and small degree of independence from other departments it needs to do its job properly', was replaced by Dr Alan Gilpin. By May of 1973, Gilpin was in bitter conflict with the Government and was sacked in May of 1974, (Russ and Tanner 1978:6-16).

¹ The select committee on air pollution was appointed on the 3rd of April 1968 and reported on the 10th of September 1969. The committee reviewing water pollution was established on 7th of May 1968 and published its report on 10th of June 1970.

The titles of two histories of the Environmental Protection Authority in Victoria go part of the way in summing-up the difficult situation faced by it. *The Politics of Pollution* written in 1978, and *Between a Rock and a Hard Place*, which was published in 1996 (Russ and Tanner 1978), (Unglik 1996). The *Introduction* to Russ and Tanner's book rather scathingly states that:-

...since its early days, when it was little more than a small group of under-financed people attempting to implement ideals, the EPA has fallen by the wayside. After a promising start, when its outspokenness made other more secretive government departments nervous, the EPA is now only a gaudy, slightly tarnished ornament hanging in the Hamer Government's political window (Russ and Tanner 1978).

In 1996, Ari Unglik's book, sponsored by the EPA in Victoria with an acknowledged credit to an advertising agency, 'who met the challenge of producing a high quality publication in record time', 'is not a documented history...it is not the whole story...[but]...a sampling of events...the story of the conception, teething troubles, adolescence and maturing of an organisation', reflecting the 'changing attitudes towards, and understanding of, the environment' in Victoria. It is neither a *celebration* nor a *justification*. Arguably its very publication reflects the *politics of pollution* as discussed by Russ and Tanner in 1978. Yet in the year 2000 the EPA in Victoria, as in New South Wales and South Australia, continues to play a most significant role in policy formulation, and the regulation of environmental issues, and hence, of waste disposal outcomes.

However, the Victorian EPA, initially created as a dependant part of that state's bureaucracy, has survived the test of time as an aspect of government and as an independent environmental regulator despite its difficult beginnings. Its survival owes much to its ability to adapt to changing political climates through incremental growth of environmental regulation. In 1972 when the owners and occupiers of premises were made liable for waste discharges. Further regulation followed when in the following year a licensing regime for waste discharges, administered by the EPAVic, was introduced. Environmental impact assessment procedures, as an aspect of overall environmental regulation, were introduced through the *Environmental Effects Act* of 1978². In 1981 the *Clean Air Act, 1958*, was repealed and air pollution regulation was placed under the control of the EPA. In 1984 transport of waste was regulated and in 1985 industrial waste management policies were introduced by the EPA. In July of 1985 the EPA's *Draft Industrial Waste Strategy*, introduced industry to the concept of *cradle to grave* responsibility (EPAVic 1985).

² Act No 9135 of 1978

Waste Management Reports in Victoria

In the period under discussion there have been a number of key reports on urban waste management in Victoria, which, as in the case of Sydney's Fraser, Barton and subsequent reports provide freeze-frame images, *snapshots*, of contemporary issues and concerns and also set out future waste disposal strategies. In 1971 and 1973 the State Development Committee produced comprehensive waste management reports that were followed in 1974 by the first of a series of *Municipal Waste Services Reports* issued by the EPA. In 1990 the Natural Resources and Environment Committee re-examined waste management in the Greater Melbourne area and more recently, the Waste Management Council Report (1995), and the papers and reports of the Hazardous Wastes Consultative Committee, in 1999 and 2000, were central to the narrative on waste management in Melbourne.

As in the case of Sydney, Melbourne has had several *cause celebre* in the past ten years in relation to the siting of waste disposal facilities. In particular, the proposed *prescribed* waste landfill at Werribee and, related to this, the pending closure of the waste disposal site at Tullamarine, extensions to the BFI Sita (now known as the Pacific Waste Management) landfill at Lyndhurst, the siting of a proposed landfill at Niddrie and the less controversial Deer Park landfill, will be discussed as this chapter progresses.

State Development Committee Reports 1971 and 1973 (the SDC Reports)

The State Development Committee (SDC) in Victoria was given, as the full title suggests, a wide-ranging charter to inquire into and report to the Governor on 'The Disposal and/or Destruction of Garbage and other Rubbish'. It was directed by the Parliament to report on the:-

- balanced economic and industrial development of the State;
- decentralisation of industrial activities;
- improvement of the economic welfare of the State;
- amelioration of the conditions of industrial and rural life;
- organisation of industry; and,
- any other relevant matters or things (SDC 1971:4).

Given this broad charter it is not surprising, that at a time when the Bolte government was trying to re-cast its image as *environmentally caring*, the SDC was directed to report on the disposal and/or destruction of garbage. The SDC premised its Introduction to its first report with the comment that:-

The hygienic disposal of both solid and liquid wastes, in the most economic and aesthetic manner, is a problem which is exercising world wide attention (SDC 1971:10).

The SDC examined aspects of waste disposal issues over a three year period, interviewed 201 witnesses and produced what were in effect, two separate reports. The *Progress Report of the State Development Committee on the Disposal and/or Destruction of Garbage and other Rubbish* in 1971 (SDC 1971) and its Final Report, entitled *Disposal and /or Destruction of Garbage and other Rubbish with Particular Reference to the Disposal of Industrial Wastes*; (SDC 1973).³

The Committee, once it set to work, recognised that the disposal of *household waste* posed significantly fewer problems than trade waste, the by-products of industry. The first SDC report, in the words of the *Introduction* to the second report, 'dealt exclusively with the disposal of wastes of domestic origin' (Parliament Victoria Votes Proceedings and Papers 1973:11). It went on to state that the disposal of 'industrial, commercial and other wastes of a special character requires examination in greater depth, and this aspect of the inquiry will be the subject of a further inquiry to be submitted as soon as possible'. The second aspect of the Inquiry, virtually a second report on industrial waste disposal, followed nearly two years later under the chairmanship of J L Simmonds.

The SDC reports share seven terms of reference. What is problematical in attempting to briefly discuss the outcomes of the SDC's inquiries is that the first report has 58 Conclusions and 33 Recommendations, and the second report, 68 Conclusions and 15 Recommendations. A hint of the contrasting scope of each report is gained by noting that while the Definition section of the first report was limited to defining the terms *garbage, other residential rubbish, refuse* and *Council*, the second report defined *industrial waste, trade waste* and *Council*. In both instances a *Council* was defined as a municipal council.

Trade waste was given the same meaning ascribed to *industrial waste* which was defined as 'any matter or thing, whether solid gaseous or liquid, or a combination of any solids gases or liquids, which is waste generated by any industry, trade, business or

undertaking, institution or public utility; or any waste otherwise generated, not being of domestic origin' (Parliament Victoria Votes Proceedings and Papers 1973:11). As in the discussion of the reports in relation to waste disposal issues in Sydney, what can be termed, a *selective scan* of the documents, appears appropriate. A synopsis of the *Terms of Reference*, the particular issues discussed in the body of the documents, the Conclusions and the Recommendations follow, and will provide a basis for further discussion. The *Terms of Reference*, common to both reports, directed that the Committee inquire into the 'present and potential facilities for the disposal and/or destruction of garbage and other rubbish within the Melbourne metropolitan area, provincial cities and major urban areas, and in particular to investigate in respect of those cities and urban areas':-

1. the approximate volume of garbage to be disposed of from each municipality weekly, and where disposal is by landfill, how long existing facilities will be adequate;
2. what additional areas are available and what is their life span and whether other provision be made and if so, when and at what cost;
3. what facilities are available for unburnable rubbish, or other material not accepted in *normal garbage collections*;
4. whether individual municipalities should continue to be responsible or whether regional groupings of municipalities should be responsible;
5. whether there are health hazards associated with garbage disposal, and if so, what safeguards are required; and **'any other matters which it appears to the Committee to be relevant to the inquiry'** (Parliament Victoria Votes Proceedings and Papers 1973). (Emphasis added).

The body of the first SDC Report, refers to the Barton Report 'which recognised the gravity of the situation (in Sydney) and recommended that urgent remedial measures be undertaken'. An overview of urban waste disposal in Victoria in 1970 is given at page twenty:-

Throughout Victoria, including the metropolitan area, controlled tipping is the method of disposal widely practiced' and this usually takes the form of 'the reclamation of deep depressions such as abandoned quarry holes, sandpits &c., or the trenching and filling of land of quite different topography...commonly referred to as sanitary landfill....[A]ll executive functions in relation to the physical disposal of garbage and rubbish are the responsibility of municipal councils [in terms of the Health Act 1958] (1971:18).

³ J L Simmonds Esq. was deputy Chair initially and was Chair at the time the final report was released.

Municipal councils were criticised as having 'little regard for or coordination with neighbours, or without any serious efforts having been made to husband the natural resources available for sanitary landfill disposal' (SDC 1971:10). In terms of the volume of wastes the Committee estimated that the current 800,000 tons of waste produced *per annum* across Victoria, was likely to increase five fold, to 4m tons by the year 2000. Based on the belief that the population of Melbourne would be 5m by the year 2000, the volume of refuse from the City of Melbourne was expected to increase seven-fold in the same period.

The Committee conceded that 'a very large volume of refuse, of industrial or commercial origin, is being received into both council operated and privately conducted disposal sites. As for the quantities of waste, it is significant to note that the SDC conceded that **the total volume concerned is not readily calculable** (SDC 1971:27). This statement, of itself, is indicative of an absence of any close regulation or control prior to the 1970's. The period from the 1970's, as was discussed in the context of Sydney's waste, is characterised by progressively more classification, measurement and regulation, of urban waste.

The Report suggests at page thirty one that, on the 'evidence submitted, it has been suggested that the Committee should examine the feasibility of a number of long range alternatives' for the Melbourne Metropolitan area, including, 'large-scale sanitary landfill operations conducted on a regional or a whole city basis'. Sea dumping, the reclamation of the Port Phillip foreshore, or the creation of 'offshore islands within the bay' were discussed, yet discounted. The utilisation of worked out open-cut coalmines at Yallourn, about 130 km from Melbourne, was examined.

Although the Committee concluded that 'there are no insoluble transport problems associated with the transportation of refuse' the 'integration of garbage disposal with normal overburden disposal operations in the open-cut would be attended by many operating difficulties' (SDC 1971:32). Two further options, the use of rural and semi rural gullies 'and other natural features' and regional disposal schemes, were considered. As for the use of the natural terrain it was proposed that this *potential* should be 'integrated within the framework of the comprehensive survey of all currently available and potential landfill sites within the metropolis previously advocated by the Committee'(SDC 1971:33).

The suggested need for broad geographically based regional waste disposal schemes illustrate that the Committee was 'conscious that serious problems are even now developing within the Melbourne metropolis, centred around the exhaustion of sanitary landfill sites within the boundaries of fourteen municipalities, and the rapid depletion of sites within other municipalities' (SDC 1971:33). The Committee commented on the regional scheme operating in Perth under the aegis of the Western Australian *Metropolitan Rubbish Disposal Planning Committee* and summarised the factors it considered relevant to locating regionalised landfills as:-

- the availability of suitable areas;
- the cost of transfer stations in association with sanitary landfills;
- the haulage distances;
- the chemical and physical composition of the refuse;,
- the flexibility of the system to effectively deal with a constantly changing waste stream; and,
- the availability of all weather approach and access roads for heavy weight vehicles and equipment (SDC 1971:34).

Taken together these criteria are very straight-forward and appear as sensible and as relevant today as they were at the time they were proposed.

The key conclusions to the first SDC Report (1971) were:-

16 Refuse is continuing to alter in character, due to changes in packaging and marketing methods, housing standards, population trends and other factors.

22 Potential landfill capacity is being created by extractive industries at a faster rate than at which refuse volumes are being generated [sic], but quarrying sites are not evenly distributed or conveniently situated, to best serve the metropolis as a whole.

23 The potential of worked-out quarries, etc. for sanitary landfill projects has not, in all cases, been fully realised.'

31 Within the next decade, more than twenty (20) metropolitan municipalities will be dependent upon other municipalities for disposal outlets.

33 More efficient and economical disposal of refuse would be achieved by the implementation of regional, or joint disposal schemes, involving a number of participating municipalities.

37 ...if control over the establishment of privately owned disposal sites is not vested in a single coordinating authority, a proliferation of sites could develop, to the detriment of the public interest.

46 'Unless carefully regulated the incineration of refuse within high-rise and other flat complexes, institutions, industrial and other commercial premises, would contribute to air pollution.

51 The imposition of charges based on volumes of rubbish received, the operation of tips within restricted hours, and the prohibition on acceptance of rubbish from sources outside the municipality of origin, all combine to encourage the illegal dumping of rubbish.

53 The trend towards greater use of disposable goods, especially non-returnable containers and other packaging materials, is significantly influencing the quantity and character of refuse generated by the community, and aggravating the difficulties of disposal (SDC 1971).

And the recommendations that followed from those conclusions included the following:-

1 ...that the facilities and services required to meet Victoria's future refuse disposal needs be planned and co-ordinated on the basis of the needs of whole cities and/or regions;

2 that a comprehensive survey be conducted of existing natural resources available for, or with potential for sanitary landfill operations, with particular reference to extractive industry sites, and other terrain, in the form of deep and extensive gullies which are located to the north-east to west of the centre of the metropolis;

3 that the areas deemed suitable for disposal of refuse be reserved for that purpose;

7 that municipal councils be required to furnish annual returns showing weights of garbage generated 'and other data';

31 that unless otherwise indicated the Committees recommendations be implemented by the Environment Protection Authority pursuant to clause 13 of the *Environment Protection Act, 1970*.

Overall this report dating from 1971 reflects an enlightened discussion that in many respects appears to have been virtually thirty years ahead of its time.

The second SDC Report (1973), with its stated focus on the disposal of industrial waste, recognises that wastes have not been effectively categorised or segregated. The Report the Committee (SDC1973:11-43), recaps a number of issues touched on in the first report, and adds that it 'was conscious that the disposal of industrial wastes presented problems of a much more complex and technical nature'...and the Committee recognised, as the inquiry progressed, that 'it was impossible to divorce solid and liquid trade waste disposal from its deliberations'.

It is interesting to note that when the Committee learnt, in the course of hearings, that 'significant pollution of ground water resources of the western suburbs[was] occurring as a result of the entry into aquifers of liquid industrial wastes, and solutions formed by rain and drainage waters infiltrating through soluble solid wastes' it wrote to the Premier as a

matter of urgency on the November 25th 1971 and the Premier immediately convened an interdepartmental committee to investigate and report upon the matter.

The Committee commented on the fact that municipal councils 'almost without exception, do not recognise any responsibilities in relation to collecting and transporting industrial wastes' and are not consistent in their approach to the acceptance of industrial wastes.

The Committee was of the view that the 'implications regarding disposal of industrial wastes were not realised' when legislation regarding solid waste disposal, the *Health Act, 1958*⁴, was enacted. The Committee's Conclusions recognise that ;-

1 Until the enactment of the *Environment Protection Act 1970*, the **legislation controlling the disposal, destruction, discharge or emission of domestic and trade wastes has tended to emphasise public health aspects to the detriment of the environment generally**'; (Emphasis added).

3 ...in the absence of uniform policies or guidelines, binding on all municipalities, each arbitrarily decides what forms of industrial wastes will be accepted;

5 ...in future municipal councils will be mainly concerned with domestic wastes while industrial waste disposal will move into a specialised field;

7 fragmentary control by a multiplicity of municipal councils in regard to the disposal of domestic and trade wastes has inhibited a comprehensive and coordinated program of environmental protection;

8 ...the bulk of solid industrial waste is disposed of at sanitary landfill sites operated by councils or private firms;

28 ...the selection of a site for a new industry is strongly influenced by the continuing availability of adequate and relatively inexpensive means of treating waste products;

33 the failure of many manufacturers to define the physical properties and chemical constituents of wastes is fraught with dangers;

35 a code for the transport of hazardous wastes is required;

40 when section 20 of the EPA Act comes into force 'existing anomalies regarding the treatment of liquid and solid wastes to water quality standards will be removed';

57+ 58 and 60 -65 recovery, recycling and the development of materials that are bio-degradable, or photo-degradable should be encouraged and further researched.

⁴ Act No 6270 of 1958.

These conclusions led to recommendations which included the following:-

- 1 that 'Municipal councils be absolved from responsibility of disposing of liquid and semi solid trade wastes, untreated solid wastes containing chemical constituents which are dangerous, noxious volatile and extremely bulky or heavy solid wastes which are generated in very large quantities';
- 2 that the position be clarified by defining or prescribing in legislation the forms of trade wastes for which councils should continue to assume responsibility;
- 3 that the Victorian Government take the initiative for uniform legislation throughout Australia in relation to the handling transport and disposal of radioactive wastes;
- 8 that to facilitate reuse and recycling segregation of materials be carried out at source or at disposal sites;
- 9 that the Health Act be amended to ensure that establishment of privately operated tips are subject to the same regulations as municipal tips;
- 10 that there be closer supervision of privately operate tips;
- 13 that regional treatment plants be established to handle liquid trade wastes;
- 18 that the provisions of the Environment Protection Act be used to place tighter controls over the transport of trade wastes;
- 20 all hazardous wastes that cannot be disposed of recycled or reused be safely stored;
- 21 **that all hazardous wastes be classified into groups** according to their predominant characteristics to facilitate their safe handling; (Emphasis added).
- 28 that unless otherwise indicated the EPA assume responsibility for the implementation of the Committees recommendations.

The reports by the State Development Committee clearly represent a watershed in the regulation and management of waste in Victoria and were well ahead of their time. They clearly set out the state of waste disposal in Melbourne in the early 1970's and put forward sensible strategies for its future management.

A crucial observation was that the available space for the disposal of urban domestic waste in the vicinity of Melbourne was not seen as a serious problem in the early 1970's, however, the lack of cooperation and coordination between authorities created difficulties for particular municipalities.

Furthermore, the pollution of acquifers due to poor waste management practice, the failure to properly classify wastes, and the inadequacy of disposal facilities for trade wastes, especially liquid trade wastes, were identified as matters of genuine concern.

The Committee foreshadowed an enhanced regulatory role of the EPAVic in regard to industrial waste disposal through the licensing of waste carriers linked to the categorisation of wastes. Symptomatic of the poor state of regulation of the waste management industry, the Committee conceded that it was hampered by the lack of records maintained by councils and virtually unregulated private contractors. The main consequence of this was an 'inability to differentiate between industrial wastes and other forms of wastes' (SDC 1971:42-43).

The principal outcomes of the SDC reports were reflected in the regionalisation of waste management in Victoria and the more active involvement of the EPA in the regulation of *pollution control* and waste disposal practices.

Given that the central focus of this thesis is on the urban waste stream, a clear and relevant conclusion to be noted is that the SDC considered that there was no immediate overall shortage of landfill space in the greater Melbourne area for the disposal of domestic waste. It is also relevant to note that at the time under discussion in their reports, 1971-1973, most of what we now consider 'toxic waste' or intractable waste was going to landfill. The Committees' findings contrast markedly with the conclusions of the Barton Report (1970) in Sydney

Five years after the second SDC Report the Government introduced the *Local Government (Regional Refuse Disposal Act 1978* which had the effect of amending the *Local Government Act 1958*. In November of 1979, pursuant to the provisions of this new Act, the Governor-in-Council declared four Regional Refuse Disposal Groups covering the greater Melbourne area. The City of Melbourne was located in the Western region. Coordination between the Regions was achieved through the creation of an informal group known as the Metropolitan Refuse Disposal Consultative Committee (Parliament Victoria Votes Proceedings and Papers 1990:18). Yet this attempt to *regionalise* waste management did not bring with it *rationalisation*, as will be seen from the discussion that follows.

The greater Melbourne area continued to have sufficient available waste disposal space to meet its overall needs. Those suburbs, home to extractive industries, continued to act as *hosts* for municipalities lacking landfill capacity. The EPA reported in 1978 that 'overall availability of landfill sites has not changed markedly during the period (1976-77) due largely to the acquisition of a large site by the City of Sunshine.....and.....' due to the continued high rate of extraction of quarry products in and around the Greater Melbourne Area' (EPA Vic 1978:3); the rate of extraction exceeded the volume of waste production.

The Changing Waste Stream in Victoria

The management and disposal of industrial, solid and liquid, waste in Victoria continued to be problematical. And while, as stated earlier, the issues relating to the management of *industrial waste*, its generation and disposal, are peripheral to the core of this narrative, they cannot be totally divorced from an examination of the disposal of the general waste stream. As discussed in Chapter Eight, a fully differentiated and segregated *industrial waste stream* only began to emerge in the 1970's as an outcome of the risk related categorisation of hazardous substances. It can also be seen that an inherent characteristic of the urban waste stream has been its ever-changing nature which, of itself, has been a catalyst for change.

In addition to the categorisation of the waste stream, which began to segregate industrial waste from the early 1970's, there were also important changes in both the nature and volume of wastes going to landfill due to the implementation of waste minimisation strategies. The introduction of policies to 'reduce, reuse, recover and recycle' would-be wastes, and the removal of green-waste from the general waste stream, began to have a significant impact on waste disposal practices. Clean air legislation had led to the banning of the ubiquitous backyard incinerator in the late 1950's and early 1960's, a fact that redirected a lot of 'backyard' waste to the general *waste stream*, and hence to landfill. However, the *green movement*, and the popularisation of organic gardening, reversed this trend by encouraging the use of composting from the late 1960's. In effect, green and biodegradable wastes were *rebadged*, and gained value, which resulted in them being deflected from landfill and back into the garden.

Industrial Waste in Victoria *a relevant digression*

While the issues relating to the disposal of the municipal waste were being managed, if not resolved, the disposal of industrial and trade waste, particularly intractable waste, had not been fully addressed in Victoria, as in most other parts of Australia.

In the early 1980's continuing discussion in relation to setting-up a high temperature incineration facility in Victoria led to a formal study being commissioned by the EPAVic. The engineering firm, Civil and Civic Pty Ltd were instructed to report on the establishment specialised intractable waste incinerator. Their report, *Incinerator Facilities for Industrial Liquid Waste Disposal — a feasibility, study* was published in 1981. The broad conclusions were that the construction of such a facility was 'not a viable commercial venture' because of predicted reductions in volume of liquid waste. It

was suggested in the Conclusions that 'the economics of the operation would be improved if the plant would operate on a larger scale, possibly by handling intractable waste from other states'. It was also pointed out that 'a burial site would also still be required for the disposal of significant quantities of residues produced'. The Options then outlined included 'development of secured and adequately monitored landfill sites' and 'the possible involvement of the proposed MWDA incinerator facility in Sydney'. In the course of discussion the building of a plant is not totally discounted and 'based on current landuse zoning' it was suggested that sites at Laverton or Carrum could be utilised (Civil and Civic 1981:2-5).

As discussed in Chapter Eight, in 1985 the Commonwealth Standing Committee on Environment and Conservation advised state governments that they must take steps to regulate chemical hazards (JTFIW 1988:6). In the same year the EPA in Victoria made a renewed effort to address the issues of disposal of industrial waste. In July of 1985 it released the *Draft Industrial Waste Strategy for Victoria* (EPA Vic 1985) which led to the *Industrial Waste Strategy* being put in place in 1986. The issue of intractable wastes had still not been resolved when the Joint Task Force on Intractable waste was convened in 1987.

In 1987 the *Environment Protection (Prescribed Waste) Regulations 1987* were passed along with the *Environment Protection (Transport) Regulations 1987*. Consistent with what was occurring elsewhere across Australia, and in terms of the guidelines set by ANZECC, the *Environment Protection (Prescribed Waste) Regulations*, list those wastes that are *prescribed* for the purposes of the *Environment Protection Act 1970* and the related transport regulations. However, both the *prescribed waste* and the *transport Regulations* included a 'sunset clause', and were set to expire on the 22nd of July 1998. Steps were then taken in the mid 1990's to determine whether the existing regulations should be retained and if so in what form.

In November of 1997 the EPA released the *Prescribed Waste and Transport Regulations Options Paper* and, in May of 1998, the *Regulatory Impact Statement, Environment Protection (Prescribed Waste) Regulations*, leading to the formulation and release of the draft *Environment Protection (Prescribed Waste) Regulations, 1998*. The outcome eventuated on the 1st of July 1998 when the *Environment Protection (Prescribed Waste) Regulations 1998*, revoking the 1987 *prescribed waste and transport regulations*, came into force. The stated purposes of the Regulations, (clause 1), were first, to prescribe *waste and industrial waste* for the purposes of the Environment Protection Act;

secondly, to 'prescribe requirements for the transport and management of prescribed waste', and thirdly, to provide for exemptions⁵.

The Natural Resources and Environment Committee

In 1987 the EPA, in conjunction with other government agencies, local government, conservation and community groups, set about establishing a comprehensive framework for the siting and management of landfills in Victoria. This resulted in the release, in 1989, of the Draft State Environment Protection Policy (SEPP), entitled *The Siting and Management of Landfills Receiving Municipal Wastes*, in 1989 (SEPP S40) (EPAVic 1989). After completion of a lengthy process of consultation and review, SEPP S40 was Gazetted on the 5th of July, 1991. As will be discussed later in this chapter, SEPP S40 has been critical to issues of regulation and siting proposed new landfills in and around Melbourne. As an aspect of the processes leading to formulation and finalisation of the draft of SEPP S40, the Government announced, on the 25th of August 1988 following a State election, that a Parliamentary Committee, the Natural Resources and Environment Committee (NREC), would be appointed to:-

.....examine domestic and commercial but not industrial waste collection and disposal in greater Melbourne and make recommendations on ways in which a more efficient waste service, better management of landfills and the minimisation of environmental and amenity problems that arise from these wastes can be promoted (NREC1990).

By this time virtually all municipal waste in the greater Melbourne area was being sent to thirty landfills, and there were about 400 landfills in operation across Victoria, some of which served populations of less than 150 people. Municipal incinerators had been phased out, however, three continued to operate in country areas⁶ (EPAVic 1989).

The NREC issued a preliminary report in July of 1989 and its final report was published in May of 1990. The NREC's Terms of Reference directed that it should give consideration to 'whether the current regional arrangements for refuse disposal are functioning effectively'; 'whether there should be upgraded regional waste disposal authorities' and, in particular, whether Melbourne should emulate Sydney with the establishment of a *waste disposal authority*.

⁵ Schedule One to the Regulations lists wastes that are *prescribed* and Schedules Two and Three relate to transport of prescribed waste.

⁶ Benalla, Hamilton and Moe.

Issues relating to the possible involvement of multi-national waste disposal companies; waste minimisation, and the opportunities for introducing new technologies, were also examined by the NREC (1990:iv). The Committee's *snapshot* of the state of waste disposal practices in Melbourne in 1990 concluded that:-

Melbourne can generally boast a domestic and commercial waste management service which meets most current needs, given the achievements and improvements of the last few years. Landfill sites are well-located around the metropolitan periphery, a number of councils are already actively engaged in recycling programs, and several operate transfer stations which are proving most effective in the transport and sorting of municipal wastes' (NREC 1990:19).

The emphasis on the word *current* reflects the concerns of the Committee that 'while landfill is likely to remain the principal means of disposal into the foreseeable future, there is now a strong call for alternatives, particularly in the field of resource recovery' (NREC 1990:19).

The Committee recognised that, tipping had a poor *image in the public eye*; that landfills were neither satisfactory nor adequate as the sole means of getting rid of rubbish; there was a need for cost reductions; greater public participation and readier conflict resolution, with respect to issues surrounding waste disposal.

In considering waste disposal options the Committee recognised that 'Even with its acknowledged problems of health risks, litter, the presence of birds, and potential water pollution (all of which can be abated by proper site selection and improved operational techniques), landfill is still the cheapest and most convenient means of waste disposal available'.⁷ 'As an interim use, landfill also performs a very useful function in reclaiming land from sand, clay and basalt quarrying to form golf courses, sports grounds, parks and gardens, and other public open spaces in the long term.'

Incineration, it was noted, was likely to continue until well into the next century in some areas, yet have only limited municipal waste disposal applications (NREC 1990:42-44).

⁷ Pages 36 and 38 of the NREC report contain comparative tables of waste management procedures and costings between Sydney and Melbourne; all aspects of disposal costs being predictably cheaper in Melbourne.

The Committee put forward sixty five Recommendations which in summary included the following:-

- 1 the Metropolitan Waste Management Council (MWMC) be established and its performance reviewed after three years;
- 2 the Local Government Act be used to ensure that Regional Refuse Disposal Groups include in their agreements provisions which achieve commitment, conformity and desired outcomes from the participants and that there are wider opportunities for public participation in waste management issues, mechanisms for dispute resolution; and a statutory role in the approval process for private tips;
- 3 the MWMC oversee regional groups and act as a regulator, coordinator, monitor, and mediator;
- 6 waste categories be standardised;
- 9 there be a legislative code of practice for treatment and handling of wastes from all sources;
- 11 user pays be applied to non-recyclable waste;
- 22 private ownership of landfill tips be permitted;
- 27 waste reduction be pursued and recycling should be the principal component in any waste management/ minimisation strategy linked to well managed landfill operations;
- 30 there be education for recycling;
- 33 recycling incentives with respect to newspapers, containers etc.;
- 34 councils encourage composting of putrescibles;
- 38 if a voluntary code of waste minimisation is not successful a compulsory code be developed;
- 45+46 greater use be made of the Litter Act 1987;
- 47 emphasis be placed on recycling networks;
- 51 container deposit legislation be considered;
- 52+53 any appropriate new collection and sorting technology be applied;
- 61 landfill practice be reviewed and wrong practices avoided;
- 64 technology be applied to ensure tips receive only appropriate wastes;
- 65 financial mechanisms be used to ensure tips are properly managed and remediated on closure.

The NREC received a total of 105 submissions, which included personal representations by twenty five witnesses. Of the witnesses, fourteen came from either the EPA or Regional Refuse Disposal Groups, two were from the CSIRO and there was one private individual. Outcomes of the inquiry, of direct relevance to this discussion, are outlined in the *Summary of Findings* and include:-

- confirmation that landfill was the most practical means of municipal waste disposal for Melbourne;
- that waste reduction should be seen as a broad objective and that recycling should be the principal component in any overall waste management/minimisation strategy (para 6.10);
- that there should be an emphasis on the use of more sophisticated technology at sites;
- the use of pulverisation, shredding and baling should be encouraged; and,
- there was a need for greater regulation and controls in the form of waste stream categorisation, transport licensing, landfill management, and landfill siting guidelines.

All of these objectives were seen as achievable initiatives. Emphasis was placed by the Committee on the need to reduce the volume of waste going to landfill, through public education, recycling, and overall, waste minimisation programs (NREC 1990:xxiii–xxxi). The need to rationalise waste management and to address the issue of resource recovery during the nineties was recognised and a series of interrelated measures put in place.

Most importantly in 1992 the Waste Management Council (WMCVic) was established with a metropolitan wide planning, communication and coordinating role, in terms of the *Resource Recovery Act 1992*. As discussed earlier SEPP S40 addressing landfill siting was proclaimed in 1991 and the Landfill Levy Regulations (268/1992) were promulgated in 1992 and the *Resource Recovery Act (1992)* the Government gave form and effect to *recycling* and *reuse* policies consistent with the ANZECC National Waste Minimisation and Recycling Strategy (1992).

The *Resource Recovery Act* also provided for the creation of the Recycling and Resource Recovery Council, which with the WMCVic, sought to augment the educative community based role of such organisations as the Litter and Recycling Research

Association⁸ and such private sector bodies as *Keep Australia Beautiful* and *Clean Up Australia*. Under Section 50C of the Act the WMCVic was given responsibility to review regional Waste Management Plans.

During 1994 and 1995 the number of municipalities within the greater Melbourne metropolitan area was reduced from fifty-five to thirty-one, an outcome which had the effect of further rationalising waste management practices in the city (Golder 1995:10).

In 1996 the *Environmental Protection Act* was amended to create EcoRecycle Victoria which was funded from landfill levies. Its stated role was to 'minimise the creation of waste, promote the sustainable use of resources, and better manage the disposal of residues (EcoRecycle 1997:2). Under the terms of the Environmental Protection Act, EcoRecycle must report annually to the EPA and submit a business plan for approval by the Minister of the Environment. Its principle stakeholders, the Regional Waste Management Groups across Victoria, were established, following the recommendations of the SDC Reports by the Local Government (Regional Refuse Disposal) Act (1978)⁹.

The principal function of the Regional Waste Management Groups was to implement Regional Waste Management Plans that form part of the Australia wide strategies to reduce waste going to landfill in terms of the ANZECC (1992). Using funding received from EcoRecycle, each regional waste management group was obliged to prepare and submit to the EPA, a draft Regional Waste Management Plan which then had to be revised every five years (Golder 1995:10).

In the context of the Commonwealth Governments environmental initiatives in 1995, the Victorian government gave effect to Intergovernmental Agreement on the Environment (IGEA), by passing the National Environment Protection Council (Victoria) Act 1995¹⁰ (EPAVic 1996:4-5).

In 1998 the Government passed *Prescribed Waste Regulations* (95/1998) which replaced the 1987 *Environment Protection (Prescribed Waste) Regulations*. The *Environment Protection (Transport) Regulations* were also enacted and were amended in October of 2000 to streamline an exemption system to enable waste to be diverted for such uses as energy recovery or recycling (McIntosh, 2001 pers.comm.).

⁸ The Litter Act was passed in 1987 along with the Planning and Environment Act 1987.

⁹ The four Regional Waste Management Groups are the Western (which includes the city of Melbourne), the Northern, Eastern and South Eastern.

¹⁰ Act No 11 of 1995.

Waste Management Council Reports 1995 Melbourne

Three years after its creation in 1992 the WMCVic Commissioned two reports to address waste minimisation and management issues in Melbourne. Consultants, Gutteridge, Haskins and Davey Pty Ltd., prepared the *Waste Minimisation Strategy for Metropolitan Melbourne*, (the GHD Report), which was published in 1995. The principal focus of this report was the reduction of waste going to landfill.

Of greater significance to the issues of under discussion is the report commissioned by the WMCVic on the *Waste Handling Strategy for the Greater Melbourne Area*, (1995), from Golder and Associates, (the Golder Report) (Golder 1995). The Terms of Reference of the Golder Report relate to the logistics of collection, transport and handling of the city's waste. It examines the efficiency of waste management in the greater Melbourne area, its infrastructure, the location of landfills, resource recovery facilities, green waste processors, and transfer stations.

The Golder Report sets out to achieve four *Objectives* through its five *Terms of Reference* (Golder 1995:4-6). The Objectives, couched in terms of a Best Practicable Environmental Option (BPEO) approach, aim at documenting and auditing existing practices with a view to producing BPEO 'models to accommodate existing local constraints and conditions' and to 'develop short term and long term implementation strategy models for use by local government.' The objectives also reflect the need to develop appropriate community education and communication models in regard to waste management issues including the financial costs to the rate-paying community (Golder 1995:4). The five Terms of Reference, that follow on from the *Objectives*, state that the Report should;-

- 1 Monitor and review the various stages of the Waste Management Strategy Plan for its possible implications for this Strategy Plan, especially the implications of a reduced waste stream, changes to waste types for collection and when these events might occur.'
- 2 'Monitor and review the Waste Disposal Strategy Plan for its possible implications for this Strategy Plan, in particular the future location of landfill sites and their impact on transfer stations.'(emphasis added)
- 3 'Document current waste handling practices and evaluate the performance status of various practices in BPEO terms to assist in the establishment of Best Practice outcomes.'
- 4 Develop BPEO models
- 5 'Describe an implementation program and time frames for municipalities to consider, including optional approaches and possibilities, to change existing systems and /or convert existing plant and resources in order to achieve the principals of Best Practice.'

The main focus of the Golder Report is the *mechanics* of the collection of urban waste in Melbourne within the context of the existing landfill directed disposal regime. The Report collates factual details relative to Melbourne's waste management systems. There are fourteen Transfer Stations, twenty Material Recovery Facilities and eighteen Green Waste Processing Facilities operated in conjunction with landfills.

The Report confirms that 'Landfills are an integral component of the waste handling network in the Greater Melbourne area' and identifies 23 putrescible waste landfills and 17 solid inert landfills (Golder 1995:44-60). Such issues as best practice, contractual arrangements between councils, occupational health and safety issues and community education are discussed along with an evaluation of alternative technologies.

The Report also confirms that, within the greater Melbourne area, waste collection is labour intensive and has a poor record in the area of occupational health and safety. It suggested that the lowest cost of collection for recyclables is achieved by using 240 litre mobile garbage bins (MGB's) utilising single operator vehicle technology with fortnightly collections. Large, but unspecified volumes of green waste were identified as going to landfills. It also observed that Materials Recovery Facilities in the greater Melbourne area tend to be small and use low levels of technology yet the market is indicating a move to larger, high technology facilities to handle larger volumes of recyclables.

It is proposed that the WMCVic have a regulatory role in waste recovery and that councils be contractually bound to meet certain waste recovery targets. The philosophy of user pays, recommended by the GHD Report, is highlighted as a key consideration in the design and implementation of (new) waste handling systems for the greater Melbourne area.

Overall the Golder Report proposes a greater role for the WMCVic in such issues as occupational health and safety, community education and planning of waste collection services, and ensuring an integrated network of waste transfer stations for the whole of Melbourne.

Recent Developments

Melbourne Waste

Since the time of the WMCVic Reports in 1995 the issues which have dominated the waste management debate in Victoria have related, not so much to the disposal of putrescible waste but to the recurrent, intertwined, problems of prescribed waste management.

As discussed earlier, the Government promulgated the *Environment Protection (Prescribed Waste) Regulations 1987*. These regulations were extensively revised in 1998 which resulted in the promulgation of the *Environment Protection (Prescribed Waste) Regulations* in that year. More recently, the on the 9th of July 2000 an amendment to the *Environment Protection Act 1970* increased maximum fines for general pollution offences from \$20,000 to \$240,000 and fines for illegal dumping of industrial waste increased from \$40,000 to \$500,000, thus bringing sanctions into line with those applied in other states¹¹.

The ongoing review of the management of the industrial waste stream continued. Further changes in the late 1990's were wrought as a consequence of initiatives promoted by the EPAVic and events surrounding the proposed closure of the Tullamarine prescribed waste landfill which was linked to the contentious proposal to open a prescribed waste site, adjoining the existing putrescible landfill site, at Werribee.

In 1998, the EPA, after two years of public consultation and review, published the Industrial Waste Strategy, *Zeroing in on Waste: Pathways to Cleaner Production by Victorian Industries* (EPAVic 1998). This publication 'maps out strategies for the management of hazardous wastes for the next ten years' (HWCC 2000:1) and acknowledges that 'The disposal of solid industrial wastes to landfill remains contentious for much of the community'. It also concedes that what are termed *out of mind out of sight practices* are proper a cause for community concern, 'In all likelihood, however, some in-ground disposal of such wastes will be required for the next ten years' (1998:10).

Zeroing in on Waste proposed that, ideally, in the long term, 'custom designed facilities which provide a high level of security through best design practice and operation', were required (EPAVic 1998:10), (Van Moorst 1998:pers.comm.). These statements were a cause of both comfort and concern to those who argued in favour of *waste repositories* rather than new landfills to serve Melbourne's waste disposal needs into the 21st century. Recent events that have catalysed the waste debate in Melbourne in the years from 1995 to 2000 relate to the continued use of old sites and the creation of new putrescible and prescribed waste facilities at Tullamarine, Werribee, Niddrie, and Deer Park, (Ravenhall). Events which, as the balance of this chapter will illustrate, have *set the scene* for the management of Melbourne's urban waste stream well into the 21st century.

¹¹ URL: <http://www.epa.vic.gov.au/industry>

Niddrie and Ravenhall

The Niddrie site is a typical legacy of Melbourne's extractive industries. Situated ten kilometres from the centre of Melbourne this 47 hectare site, initially set in farmland, began operating as *Fowlers Quarry*, a source of 'basalt and other materials', in 1939 (Turrissi and Papaliaris 1998). At the time of its closure in 1976 it was operated by the publicly listed company, Boral. No requirements were imposed on this quarry operator to conduct even minimal rehabilitation works at the site. The quarry hole, which is 70 metres deep on its highest side, occupies 11.5 hectares of the site which contains a salt-water lake to a depth of 20 metres. Once remote from habitation, the site is now fringed on all sides by houses and also includes dedicated, tree filled, reserve. Significantly, this reserve, the Spring Gully Reserve, owned by the Moonee Valley City Council, was argued to be the only potential entry point to the quarry site and, it was asserted, would have to be sacrificed if any landfill *development* proposal was to proceed.

By the 1990's this site was seen by many as being ideal for a new housing estate, and in the process, landfill. It was proposed that the quarry be filled 'to the natural topology, using 5m m³ of fill, thereby creating up to 350 building sites for a new housing estate. The proposed *fill* was to comprise overburden already heaped at the site, and about 3.5m m³ of low level contaminated, acid sulphate soil, (LLCS), recovered from construction sites around the city. The net proceeds to the proponent, if the proposal was to proceed, were estimated by its opponents at about \$80m (Van den Berg 1998). As case of money versus the environment on a significant scale!!

The local community, including the municipal council, and the locally organised conservation group, the Friends of Steel Creek, opposed the proposal vigorously using every means within their power. Oppositional strategies included street protests, public meetings, obtaining the backing of consultants' reports, running an interactive web site, and litigation against the proponent¹². The campaign was run for a total of forty months and raised money by the membership fees of \$10 per annum per family, raffles, "T" shirt and sweater sales, cake stalls and collection buckets at meetings. In total about \$75,000 was raised against expenditures of around \$25,000 during each year of the campaign (van den Berg 1998 and 2001 pers.comms.).

An initial proposal, had been put forward in 1986 was for the site to be used as a putrescible landfill, however, *bird-strike* safety issues related to the nearby Essendon Airport, led to the rejection of that proposal. In 1996, Quadry Industries put a proposal to

the City of Moonee Valley. Quadry argued that the site was *derelict and deteriorating*, was receiving *indiscriminate and unlawful dumping of rubbish*, and was *extremely dangerous* given the height of the cliff faces and instability of the edges (Turrissi 1998:21), (Van den Berg, 1998: pers.comm).

In October of 1996 the Moonee Valley City Council refused a Planning Permit to Quadry who then appealed to the Administrative Appeals Tribunal (AAT). The Minister for Planning and Local Government, then directed the Registrar of the AAT to refer the matter to the Governor in Council pursuant to s.21(1)a of the Planning Appeals Act, to determine the matter without a hearing. Then, using his power under the *Planning and Environment Act* 1987, the Minister 'called in the appeal' on the basis that it raised 'issues of policy relating to the facilitation of development' in accordance with the objectives of the Act.

On the 30th of December 1996 the EPA refused a Works Approval to Quadry and once again they appealed to the AAT. On the 13th of February 1997 the Minister for Conservation and Land Management wrote to the Minister for Planning and Local Government requesting the Registrar of the AAT to also refer this appeal to the Governor-in-Council for a determination. The Minister then appointed an Advisory Committee pursuant to s151 of the *Planning and Environment Act* on the 18th of February 1997, to review the matter and report in writing within eight weeks after its last day of public hearings. The Advisory Committee submitted its Report, approving the *development* of the quarry site, on the 6th of August 1997 (Advisory Committee 1997).

The Minister then directed the Governor-in-Council to approve the Quadry proposal and the EPA was directed to issue a Works Approval on the 30th of April 1998. The opponents to the proposal took the view that while the Advisory Committee addressed the formal requirements under the legislative guidelines they did not address the social questions. The Moonee Valley City Council also contended that the Minister failed to take into account the provisions of the *State Environment Protection Policy* on landfill siting, and other legislative planning guidelines, and appealed his decision to the Supreme Court.

The Moonee Valley City Council was successful in challenging the Minister's decision in the Supreme Court; a victory to the community and for the environment. The site was subsequently sold by the defeated developer to the Urban Land Corporation (Vic). The Urban Land Corporation now plans to develop the site for residential use, retaining areas

¹² URL:<http://dingo.vut.edu.au/~westwe/environment/niddrie/index.htm>.

for open space and using the low-lying water catchment areas as a 'water feature'. Access will be from existing roadways so as not to compromise the adjoining Spring Gully Reserve and no waste material will be used in rehabilitating the site (McIntosh 2001 pers.comm.).

In stark contrast to Niddrie, the approval and commencement of operation of a new landfill at Deer Park, in an area now known as Ravenhall, has progressed virtually without a discernible ripple on the collective communal consciousness. Touted as 'an example of the benefits of extensive community consultation and comprehensive research and planning' (Schmidt 1999:5-12), the site 22 kilometres from Melbourne covers 1055 hectares and has a projected life of fifty to seventy years. The first stage of the site development, with a life of fifteen years, has available *airspace* of 15m m³, making it one of Australia's larger landfill sites¹³.

Over a period of six years, Boral Industries, the quarry operator, and Boral Recycling, as proponent for the landfill, consulted with the local community and the Western Region Waste Management Group and had their landfill proposal incorporated into the Western Region Waste Management Plan. A planning application then went to the Shire of Melton and a Works Approval was sought from the EPA. The size of the site meant that the planners easily complied with the *buffer zone* requirements. The nearest residential zone being two kilometres distant. A Community Consultation Program involved the establishment of a Community Advisory Committee in February 1997, a *freecall* telephone information line, and letterbox drops of brochures and fact sheets were initiated. Written material was translated into Maltese, Vietnamese, Macedonian, Croatian and Italian to accommodate the mixed ethnicity of the surrounding residential areas. A reasonable attempt appeared to have been made by the proponent to involve the community. It was hoped that by adopting this strategy it would be able to keep the local residents informed, obtain feedback, and monitor and address their concerns ahead of any public protest. As part of this overall strategy, aimed at avoiding community *outrage*, delay, and hence cost, CSR employed a staff member, David Maltby to staff an office in Werribee and to make himself available to address community inquiries and concerns.

¹³ It is proposed that Woodlawn in NSW, discussed earlier, is to have up to 22m cu m of airspace.

Werribee and Tullamarine

Since the early 1970's the bulk of Melbourne's solid prescribed waste had been disposed to landfill, either at Tullamarine¹⁴ in the Western Waste Region, or at Lyndhurst, in the South East region. As with the disposal of liquid waste at Castlereagh discussed earlier, the wisdom of the time in Victoria suggested that it was quite a *good idea* to mix solid and liquid wastes. 'Trucks would spray organic solvents and things like that into landfills...most of it has not come back out...Surveys have been conducted on old sites where hazardous and scheduled wastes were dumped to establish if they were leaching out. They are not coming out anywhere we can find' (Rae 1999 pers.comm).

In 1987, due to general public concerns about the dangers of toxic liquids and the fear that they could very easily enter the water table, the landfill disposal of liquid waste was banned throughout Victoria (HWCC 1999). At that time the Melbourne Metropolitan Board of Works (MMBW) was directed by the Government to store liquid prescribed wastes in safe repositories and to set about finding a site for a treatment facility. The proposal for 'an integrated facility', initially to be within ten kilometres of Melbourne, is detailed in publications issued by the MMBW, *Industrial Waste Treatment and Disposal: The Victorian Solution (1987)*, *Industrial Waste Project (October 1987)* and *Liquid Waste Treatment Facility, Planning Environment Report (November 1987)*. The site chosen, at Holden Road south-west of Diggers Rest in the Shire of Melton, about 35 kilometres from Melbourne, did not progress beyond the planning stages.

The *shorthand reason* for this proposal not proceeding has been given as *political* (Joy pers comm 1998) although Dr Peter Brotherton suggests that 'at about this time private transport operators and quarry owners began to realise the enormous potentials for making money out of waste' (Brotherton 1998 pers comm). Governments had begun to encourage private enterprise to take initiatives that would relieve them of the onerous responsibilities of waste disposal. It was the collapse of a series of proposals for disposal of liquid prescribed waste within Victoria that served as one of the drivers behind the establishment of the tri-government Taskforce on Intractable Waste, discussed in Chapter Eight. This initiative, as discussed, led to the (unsuccessful) attempt to establish a treatment plant at Corowa (Brotherton 1998 pers.comm.).

At the time of writing liquid prescribed wastes in Victoria are either stored in repositories, or treated at Laverton or Dandenong at facilities within the specially created Offensive

¹⁴ Opened in 1972 to take solid and liquid prescribed wastes.

Industry Zones, or transported interstate to one of several specialised treatment facilities¹⁵. Solid prescribed waste goes to landfills at either Lyndhurst or Tullamarine. The Lyndhurst site, previously operated by Sita-BFI, but taken over by PWM (Lyndhurst) Pty Ltd., had an estimated eight to ten years life remaining post 2001 in its existing configuration. The Tullamarine site¹⁶, which began to take prescribed waste, including liquid waste, in the 1970's, had an estimated life from February 2001, of about eight months (McIntosh 2001 pers. comm.). There are two other landfill sites at Lyndhurst, (including a putrescible landfill sold by CSR to PWM during 2000). BFI are, as at the time of writing, permitted to take prescribed waste not exceeding 25% of their total *waste-take*, however, the company has been attempting for some time to achieve a licence variation. On the 28th of August 2000 PMW lodged a Works Approval application (WA2828) with the EPA seeking to increase the volume of putrescible waste taken at the site and, related to this, to change the cap contour to increase the overall capacity of the site (McIntosh 2001 pers.comm.).

The local residents group, RATWISE¹⁷ vigorously opposed this initiative by the company and have been in discussion with Harry van Moorst of the Werribee Residents Against Toxic Dumps, (WRATD, to work out an effective oppositional strategy (van Moorst 2000). As at the end of January 2001 a total of seventy objections have been lodged to the Works Approval application. If the Works Approval was approved it was suggested that RATWISE would launch an appeal and the matter, and in the words of Colin McIntosh of the EPA in Victoria the matter remains, at the time of writing, unresolved and 'extremely complicated' (McIntosh pers comm. 2001).

The Tullamarine site has little chance of expansion, and has a limited future. It has ceased to take other than prescribed waste, except for essential cover, and much of its previous volume is now diverted to Lyndhurst. Five years ago 60% of Melbourne's prescribed waste went to Tullamarine and 40% to Lyndhurst. That situation has now been reversed (McIntosh pers comm. 2001). The search for an alternative site to Tullamarine, on the western side of the city, began as early as 1992, spurred on at the time by Melbourne's 1996 bid to host the Olympics (Joy 1998 pers comm). One significant consequence of this was the attempt by CSR to site a prescribed waste landfill at Werribee.

¹⁵In 1981 the EPA in Victoria commissioned two reports in relation to intractable waste disposal; Disposal of Intractable Wastes in Victoria—a Draft Strategy, and, Incinerator Facilities for Industrial Liquid Waste Disposal—a Feasibility Study.

¹⁶ Taking 122,000 tonnes of prescribed waste and 25,000 tonnes of low level contaminated soil of a total of 550,000 tonnes of prescribed waste generated in Melbourne.[Wooward-Clyde, 1997 #663]

¹⁷ The acronym stands for, *Residents Against Toxic Waste In the South East*

The Werribee Proposal

In 1995 CSR wrote to the Kennett Government setting out its proposal to develop a prescribed waste landfill and green waste composting facility as a joint venture with Brambles, who at that time operated the Tullamarine prescribed waste site. CSR suggest that, initially at least:-

The Government was basically happy about the Werribee project. There was a need for it and Kennett appeared very supportive of it. We give him full marks for that. It was all very chatty. The inference being that if it (the proposal) was right environmentally, and if it is right technically, it would get approved (Reid 1999 pers.comm.).

The implication being that, had the Government been at all unreceptive to the proposal, CSR would not have proceeded to prepare an EES.

At the time it was anticipated that the Tullamarine site would cease to take waste in 1997, with the proviso that even if given a licence extension by the EPA, the site could not operate beyond 1999. As a fall back position, in the event of a crisis, it was considered that Lyndhurst had sufficient capacity to take the whole of Melbourne's solid prescribed waste yet another site would eventually be required (Rae 1994 pers comm.). In any event, the Werribee proposal no doubt presented a very lucrative commercial opportunity to Brambles and CSR who were already well established in the 'market place'.

The proposed site at Werribee, located 35 kilometres to the west of Melbourne, and at least two kilometres from the nearest residential zone¹⁸, was owned by CSR adjoining a site leased by them in 1986 from the Wyndham City Council (WCC) and used concurrently as a gravel pit and as the municipality's putrescible landfill. With fairly minimal road construction, the site could be accessed without encroachment into residential areas. In June of 1997 a draft Environmental Effects Statement (EES) was prepared by CSR and so began a long and costly saga.

A Consultative Committee, chaired by a representative from the Department of Infrastructure, was appointed to ensure that the EES, in final form, was appropriately scoped to cover all relevant issues. This process took, in the words of the Chair, 'a little bit longer than usual'; rather than six to eight months it took 13 months much to the frustration of CSR (Street 1998 pers. comm.).

WRATD appears to have used the tactic of delay, CSR would suggest obstruction (Maltby 1998 pers.comm.), in slowing down the entire process to the detriment of the proponent CSR. The final EES was then produced and an Assessment Panel appointed pursuant to the *Planning and Environment Act 1987*, to review it. The Panel hearing took five weeks; once again an expense in both monetary and temporal terms to the proponent. WRATD made a written submission to the Panel of over one hundred pages emotively entitled, *In Defence of Our Families, Our Community & Our Environment*.

This submission challenged both the rationale and the findings of the Environmental Effects Statement and raised a wide range of environmental, health and social issues. It is of interest to note that on the one hand the submission refers to the 'Wests Road Prescribed Waste Landfill' on the cover page yet on the other hand the authors revert to the emotive descriptor 'toxic dump' in the body of the document. Impacts on the ground water, air quality and flora and fauna were examined. The social impacts, and in particular, the impact on the 'community image', 'social identity' and 'self image' of residents, in an area which had been home to Melbourne's sewage farm for over a century, were emphasised. In an age when image, aesthetics and appearance are now seen by many as all-important, it is not surprising that the 'ugliness' of waste, and the social and psychological stress and personal embarrassment it can cause, has become relevant.

Both the Council and the local residents continued to oppose the proposal and a long and fierce public campaign was fought out. CSR had not reckoned on the tenacity of the Werribee Residents Against Toxic Dumps, (WRATD) led by Harry Van Moorst. WRATD also had a letter written by Jeff Kennett, as Leader of the Opposition, in December 1986 to Councillor F X Purcell¹⁹, stating unequivocally that a 'toxic waste disposal facility' would never be built in the area. Copies of this letter were circulated widely bringing into focus the issue of the veracity of Government.

The Government began to waver particularly when thousands of local people attended rallies protesting the siting of the facility. Several thousand people attended a rally at Werribee on the 17th of March 1998. Later, on the 4th of May 1998 *The Australian* newspaper reported that 15,000 people attended a follow-up protest rally at the Werribee racecourse. The organisers stated the crowd to be closer to 20,000 people. The efforts of the local protesters were augmented by colourful and emotive newspaper and

¹⁸ There is, however, a farm house and outbuildings in closer proximity than the nearby residential zone.

television coverage. In April of 1998 the Assessment Panel found in favour of the project going ahead and the Minister declared that the 'proposed facilities can safely and efficiently be operated from the Wests Road site' (Minister of Planning 1998:Preface). The Minister went on to state that 'the challenge' faced by all parties, was 'a good neighbours approach based on an open, honest and cooperative consideration of potential problems, and any actual problems that may arise, so that these can effectively be addressed' (Minister of Planning 1998: Preface).

However, the Government didn't wish to take a decision that was politically unpalatable in a marginal electorate and preferred to leave the outcome to market forces and CSR's skills to woo the local residents. Yet, even with the approval from the Minister, CSR needed an approval from the WCC in the terms of the planning application lodged with them. In the absence of that approval CSR needed the Minister of Planning and Infrastructure to vary the Planning Scheme applying to the site, and thereby obviate the need for Council's consent. Without the Council approval, or a planning variation, the EPA would not issue a Works Approval, a prerequisite for construction of the site to begin, and a licencing application to proceed. A stalemate ensued. CSR met with Minister McClelland in October of 1998. He remained non-committal at the meeting (Street 1999 pers.comm). CSR left the meeting in the belief they would hear from the Minister, however, there was no further communication between the Minister and CSR (Maltby pers. comm. 1998).

In the meantime the WCC took issue with CSR under the terms of their quarry lease. At the time when CSR leased the quarry site from the WCC in 1986, it was agreed that in the event of a *change of use* to the adjoining land owned by CSR, the Council would have an option to purchase the site. When the EES was issued the Council contended that it amounted to a *change the use* that triggered an option to purchase on their part. The matter was referred into the Supreme Court and, at the same time, a representative of the Premier's Office advised CSR that no executive action would be taken (as sought by them) to adopt the Planning Scheme and thereby by-pass the Council and allow the approval to proceed, until the lease/option to purchase dispute was settled (Maltby 1999 pers comm).

The WCC, who opposed the prescribed waste landfill, continued to assert that their option to purchase had been triggered, an outcome which frustrated CSR's entire development proposal. At the same time the WCC made a substantial (undisclosed)

¹⁹ The letter states unequivocally, 'The Liberal Party will not allow a Toxic Waste Disposal Facility to be built in Werribee, nor anywhere in Victoria'. (Kennett 1986)

cash offer to CSR. After further considerable delays, including the *retirement* of the Supreme Court judge from the case on the insistence of the WCC when he disclosed a holding of CSR shares, the dispute was resolved between the parties. A *commercial in confidence* settlement was reached on the 13th of November 1998. The WCC then exercised its option and purchased the land owned by CSR. The WCC, and the residents of Wyndham, had won their battle at a considerable cost to prevent the prescribed waste landfill proceeding. A former employee of CSR has suggested that the WCC will have to run the site as a putrescible landfill 'for fifty years' to recoup the money they paid out to them to settle the matter. Premier Kennett, who arguably precipitated the entire debacle, was later scathing in his criticism of CSR, blaming them for the failure of the proposal (Maltby pers.comm. 1998).

CSR spoke after the event in terms of *moving goalposts* and *policy vacuums* (Maltby 1998 pers. comm.). Signalling the way it felt about the outcome, by February of 1999, CSR had begun the process of selling off all of its landfill operations; one of its 32 separate businesses, which had 'ceased to be a *core business*' (Maltby 1999 pers. comm.).

It appears that Government lacked clear, fixed policy guidelines and failed to stand firm with respect to the Werribee proposal, to the considerable cost of CSR and ultimately, to the citizens of Werribee and the wider community in Victoria. Many, including the independent referee, the Advisory Panel, considered the site to be strategically located as a solid prescribed waste landfill. Representatives of the EPA and Department of Infrastructure have expressed similar candid views.

As suggested in Chapter Four, the involvement of the public in the issues surrounding the Werribee site is a case study in itself, (sufficient to found a thesis), in effective public participation. An outcome of the Werribee campaign led to the creation of the *Enviro-West Environmental Centre* at Werribee by Harry van Moorst using funds remaining over from their *anti-toxic dump* campaign and a grant from the Wyndham City Council. CSR walked away from the Werribee saga with a degree of angst, but also with a large (but not disclosed) sum of money from the WCC and ultimately from the ratepayers. But, the ball was then back in the Government's court. Melbourne still needed an additional prescribed waste facility to take it into the 21st century.

The Hazardous Wastes Consultative Committee

In an official News Release on the 3rd of February 1999 the Victorian Government appointed a bipartisan committee, the Hazardous Waste Consultative Committee, (HWCC), to 'advise the Government on an integrated approach to managing hazardous waste, including landfill siting'; 'a comprehensive approach to waste management' (HWCC 2000:v).

The Committee, comprising ten members including the Executive Director of the EPA Mr Robert Joy, Professor Ian Rae Chair of the National Advisory Body on Scheduled Wastes, and Harry van Moorst of Werribee fame. The HWCC was chaired by a widely experienced politician and former Minister for Natural Resources, the Honourable Geoff Coleman. It met twenty times, made two site inspections, and published a final report in April of 2000. In September of 1999, the Kennett Government that convened the Committee lost office

The appointment of the HWCC was part of a wider initiative which included a statement of policy by the Government to reduce the volume of hazardous waste going to landfill by 50% over the next ten years and to increase the landfill levy, on all prescribed waste, to ten dollars per tonne²⁰. The actions of Government tended to reinforce some of the criticisms arising from the handling of the Werribee dispute.

Initially the brief to the HWCC was to produce a report within six months, however, an extension was obtained prior to a State election being called for September 1999. At the outset the HWCC issued a Discussion Paper, setting out its Terms of Reference and calling for submissions (HWCC 1999). The approach of the committee was to divide the task into *areas of inquiry*. The first was 'to gain sufficient knowledge and background to be able to provide cogent advice to the EPA as it developed a statutory industrial waste management policy for the management of hazardous waste and criteria for its safe storage and disposal. The second aspect of their inquiry was to report on world's best practice on all aspects of the design and operation of repository/landfill facilities and the criteria for siting of any facilities (HWCC 2000).

Responses to the first Discussion Paper raised a broad range of issues which included the classification of wastes, the management of contaminated soils, cleaner production

²⁰ The landfill levy on all other wastes is \$4.00 in the metropolitan area and \$3.00 per tonne in rural areas (McIntosh 2000)

and waste minimisation practices, refuse recycling, reuse and resource recovery, treatment of hazardous waste and treatment of the residual waste stream, the appropriateness of landfilling, and the location of prescribed waste facilities (van Moorst 1999 pers.comm.). Inevitably the scope of the inquiry grew a little as individuals raised a range of related issues to do with waste disposal.

The second Discussion Paper addressed siting strategies, principles, types of facilities, siting criteria and assessment methodologies including, exclusion criteria. The issue of *buffer zones* was raised in some detail and finally three siting models were proposed for discussion. The first was to use the HWCC (or its successor) to conduct the process; the government through the HWCC to lead the process; and thirdly, for the private sector to lead the entire process (HWCC 1999).

The Final Report contains fifty-three recommendations. Of particular relevance to the focus of this paper, and to the management of the urban waste stream in what may emerge as the Fifth Epoch of Urban Waste Management in Australia post 2000, are the following recommendations:-

- that in terms of waste management options, the ultimate aim should be to move waste further up the Waste Management Hierarchy;
- that prescribed waste to landfill be phased out over the next five years in favour of retrieval repositories and long term waste containment facilities;
- that the emphasis be on *containment* not *disposal*;
- that comparative data collection be systematised and upgraded to enable generation of reports on waste trends;
- that detailed guidelines for site screening, the design, construction and operation of repositories and long term containment facilities be developed and adopted under the Environment Protection Act;
- that buffer zones should incorporate a *core*, *inner* and *outer* zones;
- that the government monitor Cleaner Production Program outcomes;
- that the top fifty prescribed waste generators be subjected to Environment Improvement Plans;
- that the EPA give priority to *Divert Now* and *Divert Soon* waste strategies;
- that the Government through the HWCC (or its successor) lead the establishment process for new prescribed waste facilities;
- that graded, concentric buffer zones of up to 5km apply to new prescribed waste facilities;

- that the Victorian Government promote a National Environment Protection measure with respect to the management of hazardous wastes through the National Environment Protection Council;
- that using selected hazardous residues, as waste derived fuels (WDF) to fuel cement kilns be considered as a means of diverting such wastes up the waste management hierarchy;
- that guidelines be produced, involving the EPA, community and stakeholder input on the use of WDF.

The publication in the Victorian Government Gazette of the 5th of December 2000 of the Industrial Waste Management Policy (Prescribed Industrial Waste), honoured the Government's election promises. 'In line with community expectations this industrial waste management policy seeks to protect people and the environment from risks posed by prescribed industrial waste.....by specifically providing for a framework and tools to implement the waste management hierarchy for prescribed industrial waste consistent with ecologically sustainable development' (Victorian Government Gazette 2000 No S 183:1).

Later in the same week on the 8th of December, the Minister of Environment and Conservation, M/s Cheryl Garbutt, issued a policy statement aimed at setting the future direction of industrial waste management for Victoria. The key points of the strategy are:-

- to move away from production of hazardous wastes;
- promote recycling Centres, waste repositories, and soil remediation Centres;
- promote transparency by appointing a successor to the HWCC to advise on siting of new facilities;
- strengthen the role of the EPA by promulgating an Industrial Waste Management Policy²¹.

The Victorian Government's formal responses to the recommendations of the HWCC were released on the same day in a fifteen-page document published on the EPA's World Wide Web page²².

²¹ URL:[http:// www.EPA.vic.gov.au/industry/IWMP.htm](http://www.EPA.vic.gov.au/industry/IWMP.htm)

²² URL: <http://www.epa.vic.gov.au>

The Government gave its support to key proposals in the HWCC report including:-

- the adoption of a Draft Industrial Waste Management Policy (Prescribed Industrial Waste) subject to the recommendations of the HWCC;
- that the Industrial Waste Management Policy (IWMP) approved by government include a stakeholder committee to advise the EPA on all aspects of the implementation of the policy including the classification of hazards and management strategies for prescribed wastes and waste streams;
- the strategy with respect to storage and disposal of prescribed waste be predicated on moving waste up the waste hierarchy ie an emphasis on recycling and reuse;
- that while agreeing in principle that prescribed waste landfill be phased out recognises that 'further work will be required to establish the detailed characteristics of repositories.....';
- that the government will encourage and facilitate the development of a small number of long term containment facilities;
- that the nomenclature be changed from *disposal* to *containment*;
- the government will facilitate the establishment of soil remediation facilities thereby diverting large volumes of LLCS from landfill;
- that pro-active identification of hotspots, remediation and monitoring and testing regimes will be put in place by government;
- that the database maintained by government be upgraded to generate a wide range of reports on waste trends and related matters;
- that the government will adopt world's best practice as outlined in the HWCC report in relation to the establishment of hazardous waste facilities in Victoria;
- that the Government will monitor and promote the Cleaner Production Program and will devote additional resources from the levy on Prescribed Industrial Waste;
- that in the process of establishing new hazardous waste facilities the Government will work with the private sector and will appoint a successor to the HWCC to advise and assist it;
- that the suitability of potential sites be determined with reference to the recommendations of the HWCC;
- that the buffer zone recommendations of the HWCC be adopted subject to the rider that buffer zones are best set on a case by case basis with reference to a specific site after comprehensive assessment of the site specific risks;
- that the licensing procedure for hazardous waste facilities involve a Stakeholder Committee;
- that operators submit to adequate financial assurances and audit processes;

- that the recommendations with respect to WDF be adopted along with the EU prescribed standards.

On the 8th of December 2000 the Western Region Environment Centre, home to WRATD, issued a Press Release headlined *Community Victory on Toxic Waste*. The rhetoric is predictable in trumpeting a *major victory* over the CSR proposal at Werribee and congratulates the government for being 'pro-active in the establishment of alternative facilities, instead of waiting for market forces to eventuate [sic]' (EnviroWest, 2000).

Concluding Comments

The preceding narrative discloses the many parallels in the management of the urban waste stream between Sydney and Melbourne during this epoch. In the thirty years from 1960 to 1990, given that there was no shortage of landfill sites within the greater Melbourne metropolitan area the focus was on more on rationalising waste management practices and making them more efficient rather than finding suitable sites. In this regard the SDC reports led the way. By the 1990's though, and through to the year 2000, the commitment to reducing the volume of waste going to landfill and the contentious issues arising from siting liquid waste disposal facilities dominated the waste debate.

The *Who, How, and Why* of urban waste disposal in Melbourne, as in Sydney, changed significantly over the course of this epoch. Where waste was disposed of remained relatively uncontentious until the mid 1990's. However, who took decisions, and how and why they were taken, was as the historical narrative discloses, more complex.

As a legacy of the Epoch that preceded it, during the first ten years of the Fourth Epoch, waste disposal decisions were taken by a multiplicity of bureaucrats in the many municipalities around the metropolitan area who acted in compliance with their localised municipal agendas. By the 1970's though, uniform state- wide legislation, the result of political interventions and the SDC reports, began to directly influence and coordinate city-wide waste disposal decisions. The *Clean Air Act 1958*, the *Environment Protection Act 1970*, and the *Environmental Effects Act 1978* were three key pieces of legislation in this regard.

The establishment of the Environmental Protection Authority was the outcome of a political promise yet, initially at least, it remained shackled by the politicians. Just as the clean air debate and the shifts in environmental awareness took form in legislative changes, the initiatives with respect to safer and more efficient waste management in

Victoria, had their genesis in the political arena. The process was both 'political' and 'iterative'. Premier Bolte's candid disclosure that he considered a multimillion-dollar industry of greater importance than a clean environment reflected the social sentiment of the times.

The SDC Reports in 1971 and 1973, which are noteworthy for their far sighted and incisive conclusions, acknowledged that controlled tipping in the form of reclamation was an accepted practice yet required close regulation. They also recognised the need for the establishment of a coordinating authority for waste management and that to achieve this a survey of available resources was needed. Consistent with what was happening at the Commonwealth level, it was agreed that wastes needed to be categorised to ensure that hazardous wastes were safely handled. Criteria for the siting of landfills and the need to recover and recycle from the waste stream were also recognised.

The report of the Natural Resources and Environment Committee in 1990 reaffirmed that landfill remained the most practical means of waste disposal for Melbourne. The NREC also focussed attention on resource recovery. The establishment of the Waste Management Council and reports commissioned by them on waste minimisation and waste handling take the waste management debate in Melbourne to the eve of the 21st century. The one significant issue though, remained the disposal of industrial wastes.

The siting issues of the mid to late 1990's in Melbourne; Niddrie, Werribee, Tullamarine, and to a lesser extent the Lyndhurst and Deer Park sites, illustrate the political nature of the landfill siting issues confronting Melbourne. Linked to the issues surrounding these sites, the *elasticity* of politicians, and the effectiveness of public participation in determining siting outcomes are starkly revealed. Werribee, WRATD, and the formation of the HWCC, clearly illustrate that politics is as much about resolving conflict through compromise and advocacy (Sartor 1999) as coming up with the most sensible outcome.

Given that politics and power are intertwined, the issues relating to the siting of landfills can be characterised, as in the case of Niddrie and Werribee, as contests between politicians seeking to please, and thereby retain power, and the environmental will power and endurance of locally based activists to achieve what are often self-centred yet environmentally justified outcomes. In the case of Werribee, the fact that the government was too nervous, or wary, to take the advice of the Advisory Panel and approve the Wests Road site illustrates that the landfill siting issue was 'too hot a potato' for it to handle. As the narrative discloses the Government's solution to the prescribed waste issue was to handball the *potato* to the HWCC, in a sense distancing itself from

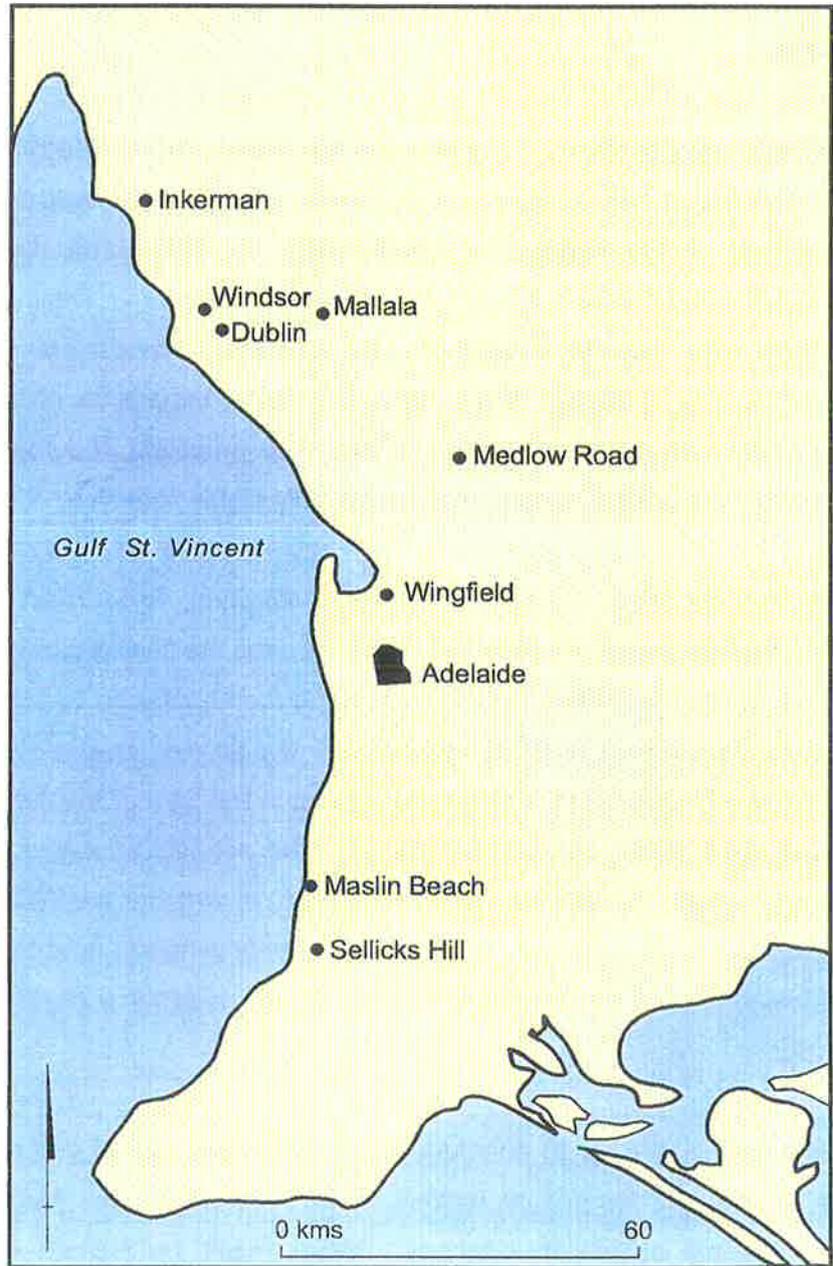
what could have been a difficult outcome politically. As it transpired, the outcome was most acceptable to the local community, in Werribee at least.

The politics of policy making with respect to the governance of waste in Victoria, as elsewhere, were carried along by the changing environmental sensitivities of the electorate. The policy outcomes, as discussed by Davis et al (1993) and Considine (1994), are seen to be both *political* and *dynamic* in the context of the landfill siting debates.

The risk considerations that played a significant role in determining outcomes in regard to Castlereagh, discussed in the previous chapter, were ever present in the discussions regarding all the Melbourne landfill sites, yet Melbourne did not have the level of environmental drama that coloured outcomes in Sydney. Despite that fact the possibility of risks was used as leverage in the anti-landfill campaigns. Emotive emphasis was placed on 'toxic dump' health risks, the likely damage to ground water and crops by leachates and plant pathogens, which were amplified and maximised. The language used by oppositional groups was predictably highly selective.

The final decision, not to proceed with Werribee, was driven by a number of factors including the desire of politicians to please, and the financial calculation by CSR that they would do very well financially to accept the money offered by the Wyndham City Council, and rid themselves of what had become a poisoned chalice. While it was a victory for environmental activism, it might be argued in the light of the Advisory Panel Report, that it was not a victory for common sense. The activists emerged as victors yet it is not so clear whether they can be said to have won, or whether the WCC lost, given the costs of paying out CSR (who may have been the only winners), and the likely costs associated with meeting the community's, as yet unmet, need for a prescribed waste *containment* facility.

It is now reasonable to conclude that the involvement of any successor to the HWCC, and of stakeholder groups typified by WRATD, to resolve this problem will ensure that the ongoing debate is vigorous. What might be termed the 'cosmetic' issues of 'community image' and 'social identity,' made relevant in the Werribee debate, are certain to be prominent in the argument. Finally, given the stringency of the *buffer zone* requirements, now proposed by the HWCC, it appears most likely that the *long haul* solution for all future waste disposal facilities for the City of Melbourne may be the only compatible outcome. The pattern that has emerged in Sydney, and will be seen to have occurred in Adelaide, may inevitably materialise in Melbourne as well.



Adelaide relative to landfill locations.

Chapter Eleven

Urban Waste Disposal Adelaide 1960--2000

Introduction

In the broad, events in relation to urban waste disposal as they unfolded in South Australia were not markedly different to those in Sydney and Melbourne during the 1960s'. Concerns in regard to the issues of clean air and clean water, and the widely held view that pollution needed to be eliminated, or at least regulated, were all part of a national, if not global, phenomenon. To this extent the issues in Adelaide mirror those in the eastern States driven by the same national environmental agenda as Melbourne and Sydney.

The significant difference in Adelaide, however, from the perspective of waste generation and management, was that it had a much smaller population than its sister cities¹. While the catalyst for 'environmental' legislation in New South Wales and Victoria related to clean air issues, the same concerns existed, but were slower to mature, in South Australia. Victoria and New South Wales had Clean Air Acts in 1958 and 1961 respectively, yet South Australia has never had 'dedicated' clean air legislation. In 1963 South Australia's Health Act 1935-1968 was amended to allow for a Clean Air Committee to be convened and for clean air regulations to be put in place (LeRoy 1971:10). Clean air regulation was later subsumed in legislation creating the Environmental Protection Authority.

South Australia did not face the environmental crises that drove change in Sydney and Melbourne in the late 1950s' and early 1960s', and hence, the pressure for change in relation to waste disposal practices was less pronounced in Adelaide. As was discussed in Chapter Seven, Adelaide decommissioned its inner city incinerator in Halifax Street in the early 1950s'. The transition from incineration to on-land disposal occurred smoothly, with little public debate, and by the mid 1950s' all of the city of Adelaide's waste was going to the landfill site at Wingfield, which was at the time on its urban fringe.

The *Metropolitan Development Plan Report* in 1962 identified the Wingfield area as Adelaide's major *dumping zone* but also recognised that 'with the expansion of the urban area this special industrial zone will eventually be situated in close proximity and it is,

¹The census in 1961 discloses that at that time South Australia had a population of 980,755 of whom 587,957 lived in Adelaide. The corresponding figures in New South Wales and Sydney were 3,917,013 and 2,183,388. In Victoria and Melbourne the corresponding numbers were 2,930,113 and 1,911,895 (Bureau of Census and Statistics 1963:306).

therefore, undesirable to accommodate noxious and offensive trades in perpetuity'. (Pak-Poy 1979:iii). Despite these utterances, the convenience of the Wingfield site to sources of generation of waste, has meant that it remained, subject to the imposition of zoning and other controls, the site of the city's principal landfills for the next forty years.

Many of Adelaide's metropolitan councils continued to manage smaller landfills within their municipalities or used sites in the vicinity of Wingfield or nearby Garden Island through until the 1990s'. There are over three hundred small landfill sites around the State licenced to take waste. In the metropolitan area of Adelaide, as at 1999 there were fourteen waste transfer stations and six solid waste landfills in operation. Liquid waste, once unregulated and co-dumped with solids, as in the eastern states, now goes to one of two treatment plants² (C R Hudson and Associates 2000).

In terms of volume, solid inert and putrescible wastes represent the bulk of Adelaide's urban waste stream and amount to about one million tonnes per annum (C R Hudson and Associates 2000). As outlined in Appendix Two of the Hudson Report, the major landfills currently in operation are at Maslin Beach and Peddler Creek (near Sellicks Hill) to the South of the city, and Wingfield, and Garden Island to the north³.

As in the eastern states the waste minimisation initiatives contained in the National Waste Minimisation and Recycling Strategy and the National Kerbside Recycling Strategy, which set local government and industry targets, promoted by ANZECC (1992), were embraced in South Australia. Agreements between the State Government and the Local Government Association in October 1990 and October 1992 led to the creation of Recycle 2000. This organisation, which played a similar role to EcoRecycle Victoria discussed in the previous chapter, continued until 1998 when it was disbanded and its role taken over by a sub-committee of the EPASA, the Waste Management Committee⁴. This Committee now plays a role in statewide education, funding and liaison between government and local government organisations, in relation to waste reduction strategies (Campbell 1998:pers.comm.)

This chapter will now examine the course of urban waste disposal events in Adelaide over the forty year period from 1960-2000. A period during which a proliferation of local *dumps*

² Treatment plants are operated by Cleanaway at Wingfield and Collex at Churchill Road Kilburn.

³ Writing in December 2000 three new landfills have been approved but are not operational as will be discussed later in this chapter and there is a 'trench and fill' landfill site operated at Nuriootpa by Remove All Rubbish taking some waste from the metropolitan area of Adelaide.

⁴ As will be discussed later in this chapter this Committee was initially set up as an independent body by the *Waste Management Commission Act 1979*.

was replaced by several *long haul* waste disposal sites, arguably reflecting a trend which will characterise 21st century waste management solutions across Australia.

Committee on Environment in South Australia 1970

In 1970 the State Government in South Australia, responding to similar community concerns as catalysed similar initiatives taken in Canberra, Sydney and Melbourne, set up the *Committee on Environment in South Australia*. This Committee was given extremely wide terms of reference to enquire into *all matters and things* relating to pollution in the State and to submit recommendations 'so that life in the community is improved and not impaired' (South Australia 1972:1).

In a sense this report *set the ball rolling* and, if nothing else, it is indicative of the fact that environmental issues were well and truly on the political agenda in South Australia and community environmental awareness was on the ascent. The Committee's Report published in May 1972 observed that:-

Man's [sic] interaction with his environment which produces significant and frequently harmful changes in the environment, has become recognised as a world problem (South Australia 1972:1).

With specific reference to the disposal of solid and liquid waste domestic waste, waste is defined as 'all waste material collected regularly...by municipal authorities' the volume of which 'is steadily increasing' (South Australia 1972:149). The Report acknowledged that this was a time when garden refuse and paper 'and some other forms of domestic waste, is burnt in incinerators or buried on the owner's property' (South Australia 1972:150). The report discusses the use of sanitary landfill and controlled tipping and makes the observation that:-

...there is some confusion in terminology between 'controlled tipping' and 'sanitary landfill', especially as there is no sharp distinction between the two methods (good controlled tipping being equivalent to bad sanitary landfill). In Great Britain sanitary landfilling is called 'controlled tipping' (South Australia 1972:154).

Once again reflecting similar observations to those made in the Barton Report in Sydney (1970) and by the SDC Reports in Melbourne (1971 and 1973), the Committee observed that 'The disposal of liquid wastes which are toxic, and not therefore acceptable as discharge into the sewers, is a serious problem' (South Australia 1972:157).

The pattern of waste disposal practices across Australia at the time, and of responses to what were recognised as 'problems', is remarkably consistent.

In 1971, while the Committee on the Environment was still sitting, the Government set up an advisory committee known as the *Refuse and Industrial Wastes Committee*. As in Sydney and Melbourne a very logical and orderly approach was adopted in addressing the task of ensuring effective waste management. The Refuse and Industrial Wastes Committee was directed to:-

- to investigate the disposal of domestic and industrial-commercial refuse;
- to advise on the methods of disposal of such refuse;
- to select location of sites;
- to consider whether a separate body should be established to administer the disposal of this waste;
- to advise on the best method to gain acceptance by the public; and,
- to liaise with any other organisation which may be investigating this subject (Jordon 1971).

Following the recommendations of the Refuse and Industrial Waste Committee, between May 1972 and December 1977, the South Australian Government initiated a series of waste management reports (Crooks, Michell et al. 1981). The first such initiative came in 1975 in the form of an inquiry undertaken by Dr. D J Wilson, the Chief Inspector in the Department of Public Health. This report, commissioned by the Department of Public Health, was entitled *Waste Management in the Adelaide Metropolitan Planning Area* (the Wilson Report). It was written on the premise that the South Australian Government intended to establish a *Waste Authority* and aimed to 'bring about as quickly as possible improvements in the collection and disposal of wastes, and to eliminate the burning of wastes in the open' (Wilson 1975).

The covering letter of the 30th September 1975, from Dr D J Wilson to the Deputy Director General of Public Health, states that 'In recent years there has been a growing awareness of the problems associated with the collection and disposal of an ever increasing volume of waste produced within the Adelaide Metropolitan Planning Area. There is a need to formulate a plan to enable wastes to be dealt with safely' (Wilson 1975).

The Report identified five methods of waste disposal then being used in Adelaide:-

- landfill;
- composting;
- incineration;
- pyrolysis; and'
- re-use of materials.

Landfill was subdivided into three categories, open dumping, controlled tipping and sanitary landfill. This report noted that the collection and disposal of commercial, industrial and trade wastes was not considered a municipal responsibility and was in the hands of private contractors who delivered wastes to uncontrolled sites where 'burning in the open is frequently permitted or condoned' (Wilson 1975). Overall, industrial urban waste management was in the hands of private contractors and was largely unregulated and as Wilson states, 'a matter of major concern'. Once again the parallels with Sydney and Melbourne are striking.

At this time, despite attempts to reduce air pollution, there was a proliferation of ubiquitous backyard incinerators across Australia that deflected unknown quantities of *yard-waste* from landfill disposal. From personal observation, household incinerators in the 1950s' and 1960s' usually comprised a 44 gallon drum with the top removed, holes punched around the base to give an up-draft, with or without a crude grate. The up-market alternatives, readily available from hardware stores, were build-it-yourself, grey concrete 'Besser' block furnaces.

As discussed in the Introduction to this Chapter, amendments to the South Australian Health Act (1935) in 1963 provided for the appointment of a Clean Air Committee to investigate issues of air pollution. However, it was not until 1969 that any steps were taken to introduce Clean Air Regulations. These took effect on the 1st of January 1972 and prohibited the burning of refuse in any incinerator of more than 0.25 cu metres unless prescribed emission standards were met (LeRoy1971), (Gilpin 1978). The effect of banning backyard burning, as mentioned in Chapter Ten with respect to Melbourne, was to create a new *diversion* in the *waste stream*. Green waste, or backyard waste, now had nowhere to go but to landfills.

The Wilson Report (1975) went on to declare the need, in the Adelaide Metropolitan Planning area, for 'a short term management plan to cover a period of 3-5 years'. The fact

that about thirty local authorities individually handled *council-collected waste* and a large number of private contractors dealt with commercial wastes, was illustrative of the lack of any centralised or coordinated approach. Significantly, Wilson recommended the creation of a centralised waste management authority. Other interim recommendations, pending the creation of a waste management authority, included:-

- that no new disposal sites should be created;
- that *unsatisfactory* sites should be phased out;
- that many of the existing twenty two dumps operating should be closed;
- that burning of waste in the open should be prohibited; and,
- that four waste regions should be created.

A *Code of Practice* for the disposal of solid waste on land within the metropolitan area was included at Appendix 3 of the Report. The classification of wastes, the licencing of disposal sites and transport operators along the lines adopted in Victoria was recommended (Wilson 1975). The Wilson Report led to the creation of the Waste Disposal Committee (WDCSA) by Cabinet on the 16th of August 1976.

That WDCSA committee then produced a further waste management report which was completed in December 1977. In keeping with the recommendations of the Wilson Report the terms of reference of the WDCSA Report stated that it was to advise the Minister for the Environment 'on an organisation, its structure and terms of reference which will be most appropriate and economic to manage waste disposal within the Adelaide Metropolitan Area, and other areas of the state as may be determined' (WDCSA 1977:12).

The key recommendations of the WDCSA Report recognised that 'Waste management practices lag behind operational standards'...'and are not keeping up with community expectations relating to health, well being and quality of life'. And 'without coordinated planning, waste management will never rise above combating problems which should have been foreseen and prevented or at least their effects minimised by the development of appropriate waste management policies and practices' (WDCSA 1977:7).

It was proposed by the WDCSA that a Waste Management Commission (WMCSA) be created and that its membership should be drawn from the government offices of the environment, health, water supply, housing and urban affairs, and local government together with industry representation by health surveyors, engineers and town clerks augmented by two *academic* members drawn from tertiary institutions.

The WMCSA was to 'be located in, or associated with, the Local Government Office and that it should 'promote efficient, safe and appropriate waste management policies and practices throughout the whole State' with an emphasis on waste reduction, environmental protection, and energy and resource conservation. It was to achieve its goals through a system of registration and licencing procedures that would make it financially self-sufficient and facilitate the collection of data, monitoring and evaluation of services. Other related aspects of its operation were community and industry education and setting minimum standards (WDCSA 1977:7-17).

The WDCSA Report in 1977, predicated on landfill as the only practical urban waste disposal option, represents a watershed in attempts to rationally manage waste disposal in South Australia. The need to have a central coordinating authority to manage waste services generally is no better highlighted than by reference to *Table 2* in the Report which lists the seventeen separate legislative instruments⁵, reflecting a corresponding number of agencies and authorities, that impacted on waste management practices at the time. Having power to licence sites the WMCSA would have ultimate control over the siting of landfills in South Australia and at the same time have a means to raise revenue that could be augmented by waste levies.

In 1979 Pak-Poy and Associates prepared the Wingfield Development Study on behalf of the Enfield Council and the Department of Urban and Regional Affairs. This report referred to the practice of uncontrolled dumping in the area and correspondingly the degraded nature of the surrounding environment, the low air quality and the absence of flora and fauna. Yet it was seen as fulfilling 'a very necessary requirement' in providing 'a high proportion of Adelaide's waste disposal sites' (Pak-Poy 1979:ii).

The Pak-Poy Report proposed the preparation of an Action Plan (1979:v) which included a role for the newly formed Waste Management Commission in setting standards for the 'operation of existing waste management sites' in the area; to investigate underground drainage in the area; and to review existing legislation and survey waste disposal locations and methods.

⁵ *Beverage Containers Act 1975-1976, Building Act 1971-1976, Clean Air Regulations 1969-1976, Coast Protection Act 1972-1975, Cremation Act 1891-1964, Fisheries Act 1929-1975, Harbours Act 1936-1974, Health Act 1935-1976, Local Government Act 1934-1977, Mining Act 1971-1976, Noxious Trades Act 1929-1975, Planning and Development Act 1966-1975, Radioactive Substances and Irradiating Apparatus Regulations 1962-1972, Road Traffic Act 1961-1976, Sewage Act 1929-1975, Stock Diseases Act 1934-1976, Water Resources Act 1976.*

The Waste Management Commission 1979

The creation of the South Australian Waste Management Commission (WMCSA) was accomplished by the passing of the *Waste Management Commission Act* in March of 1979⁶. The creation of the WMCSA recognised the work of the two committees that preceded it and the need to pro-actively coordinate and manage waste disposal in South Australia.⁷ At this time, however, the public was complacent and waste remained low on the political agenda. Landfills were little more than 'dumps' and liquid waste was generally simply poured into any convenient hole in the ground or co-dumped with solids. This situation mirrors what was reported to be happening in Sydney (Barton 1970) and Melbourne (SDC 1971 and 1973).

In June 1982 the South Australian Waste Management Commission produced a report entitled, *Total Domestic Waste Collection in Metropolitan Adelaide*. This report heralded the arrival of the 240 litre bin in South Australia and the weekly kerbside collection of *hard* and *soft* waste by local councils. While this report recognised that backyard burning of waste 'is often a nuisance and a source of complaint', and that in the 'four month period from November 1980 to February 1981, 204 fires were attributed to unattended domestic incinerators, the Local Government Association considered the banning of incinerators 'too severe a solution' (WMCSA 1982:5). The WMCSA proposed though, at page five, that that a total domestic waste collection service was preferable to backyard burning⁸.

In December of 1981 the WMCSA had released a preliminary report entitled the *Comprehensive Waste Management Plan for Metropolitan Adelaide, Stage 1* which was prepared by consultants, Crooks Michell Peacock Stewart (the Crooks Report). The report was intended to 'establish and evaluate the short (1-5 years), medium (6-10 years) and long term (11-50 years) options for the collection, transport, treatment, resource recovery and final disposal of the solid and liquid wastes generated within the Adelaide Metropolitan Area' (Crooks, Michell et al. 1981:1).

⁶Act No 49 of 1979.

⁷ The objectives of the Act included promotion of effective waste management practices and policies; reduce generation of waste; promote recycling and reuse; 'minimize impairment to the environment'; encourage local government and private enterprise to address the issues; to provide equitable cost sharing. See section 4.

⁸ It was not until the *Clean Air Act 1984*, that backyard incinerators were banned.

In September 1982 the consultants Crooks Michell Peacock Stewart Pty Ltd released their final report with a series of recommendations the most significant being that:

Waste disposal by landfill is the currently accepted and most economic method of disposal in Adelaide and is expected to remain so in the future (Crooks, Michell et al. 1981:141). (emphasis added).

It is also of interest to note that existing (mal)practices in and around Adelaide with respect to *Liquid and Prescribed Wastes*, (Crooks, Michell et al. 1982:145-163), correspond to the *management* regimes in Sydney and Melbourne:-

At present most of the liquid waste generated in the Adelaide region is collected in road tankers by three transport companies who dispose of the waste at four depots.

These depots are simply open pits in the ground into which the liquid waste is dumped, to be removed by evaporation into the atmosphere and /or percolation into the surrounding soil. Occasionally by accident or design destruction of inflammable wastes occurs by combustion.

Some lubricating and hydraulic oils are being reclaimed for use as furnace fuel or road stabilisation and some solvents are being distilled for recycling but the bulk of the liquid wastes goes into the pits.

This is a graphic insight into liquid waste disposal practices of the relatively recent past. The findings of the Crooks Report (1982) were clearly predicated on cost advantages of continuing to use landfill. The Report did not look beyond Adelaide and hence failed to suggest any concrete proposals for the strategic management of waste on a State-wide basis. It was considered by the WMCSA as a *flawed document*, (M Harvey 1999:pers.comm.), although, it did lead to the formation of the Wingfield Study Steering Committee.

The overall thrust of the Report was not to change existing practices with respect to solid urban or domestic waste, but to better utilise existing waste disposal resources. The report discusses economies of scale in terms of operating costs (Crooks, Michell et al. 1982:vi). As for liquid waste disposal 'the techniques of the operators can only be described as ranging from rudimentary at best to crude at the worst' (Crooks, Michell et al. 1982:155).

The long term solutions for the disposal of liquid wastes recommended the exclusion of acids and alkalis, solvents, oils and sludges, pesticides and chlorinated hydrocarbon residues, organic wastes of a purely biological nature and wastes containing cyanide from landfill.

The obvious, and alarming conclusion, to be drawn from the Crooks Report is that untold quantities of noxious liquids were still going to landfill in 1982. The Report proposed five options to rectify the problems inherent in contemporary liquid waste disposal practices:-

- that waste generators should install their own plants;
- that the WMCSA construct a central treatment plant;
- that a private company or companies be licenced to construct and manage a plant;
- that the Engineering and Water Supply Department accept responsibility for liquid waste;
- that disposal of the more difficult prescribed wastes at available interstate facilities and/or the development of strategies for their disposal on a national basis (Crooks, Michell et al. 1982:161).

The Report recognised, under the heading, *Closing Comments*, that the main purpose of its findings was to provide *base line data* 'so that a better organisation of the existing waste management practices can be more clearly defined' and secondly, 'the identification of those components of the waste management industry were more accurate information is necessary and where standardisation of procedures is necessary' (Crooks, Michell et al. 1982:167).

The *Appendices* to the Report outlined a recommended *Code of Practice for the Selection of Waste Disposal Sites* based on the stated premise that 'land is always required for the final disposal of solid wastes' (Crooks, Michell et al. 1982:A2). There was also, at *Appendix Four*, a report on the management of hazardous wastes by Dr N Y Kirov, the Sydney based *clean air pioneer*, and then national authority on Australian waste disposal practices.

In response to the Crooks Reports recommendations, in July of 1984, the Adelaide City Council commissioned the Wingfield Area Waste Management Study from consulting engineers Fargher Maunsell (the Fargher Maunsell Report) (Fargher and Maunsell 1983). The brief to the consultants, had a narrow localised focus, to 'undertake a study of the continuing use of the ACC Wingfield Landfill Depot for the disposal of solid waste' (Fargher and Maunsell 1983:1-1). The discussion in the report recommended the creation of a Landfill Management Plan 'to define and describe the basic parameters of the proposed landfill operation with sufficient detail to enable decisions to be taken' (Fargher and Maunsell 1983:1-3).

Fargher and Maunsell also proposed that surveys be conducted to ascertain what was actually contained in the landfill site and that the surrounding habitat be analysed to 'allow determination of the significance and mechanisms involved in contamination of the North Arm (estuary) from landfill leachates. This Report clearly recognised that after twenty years of operation the continued use of the Adelaide City Council's landfill site at Wingfield was problematical and that environmentally sound management strategy was necessary.

The Metropolitan Adelaide Solid Waste Management Plan 1984

Of wider significance to the management of Adelaide's overall urban waste stream was the preparation of a ten-year waste management plan for the city. In 1984 the WMCSA published *The Metropolitan Adelaide Solid Waste Management Plan, The First Ten Year Plan 1984–1994*, (the First Ten Year Plan) which was largely written by, and reflective of the views of its chairman, Maddox, who saw recycling and reuse as *emerging issues*; to him, 'non-issues' (M Harvey 1999 pers.comm.). The major limitation of this report was that it was predicated on the tenet that:-

Controlled landfill has been proposed as the principal means of solid waste disposal during the planning period and potential sites available for Adelaide will provide adequate disposal capacity for some considerable time to come and well beyond the planning period. **Studies have shown that landfill is by far the most economical means of waste disposal at the present time** (SAWMC 1984:2). (emphasis added).

Landfills were classified with reference to *capacity* and *life* with an emphasis on the creation of smaller sites with limited lives. In the contemporary context, small was set at 400m³, and large at 1.2m. m³. The Report challenged existing practices and stated emphatically that burning of waste at landfill sites should not be permitted at any time.

The First Ten Year Plan, and technically the only *ten year plan*, reinforced the view current in 1984, that there was no shortage of landfill sites in the vicinity of Adelaide to meet its waste disposal needs in the *foreseeable future*⁹. Hence there was no urgency for action in looking at alternative means of waste disposal. In 1987 the *Waste Management Act* was passed setting out restrictions on the operation of waste depots, empowering the Waste Management Commission to police licencing of depots and setting guidelines for Waste Management Plans. The South Australian Waste Management Commission also produced a *Hazardous Waste Strategy*.

⁹ Quarries at Highbury and Golden Grove were identified as likely successors to Wingfield.

Regional Solid Waste Landfill Siting Study 1993

The next significant development in urban waste disposal in South Australia occurred in the early 1990s' when the future of the various landfill sites around Wingfield, principally the Adelaide City Council's landfill site, and sites at Garden Island, were thrown into doubt by the Government's decision to proceed with a major industrial development in the area known as the Multi Function Polis, the MFP. To address this possibility, the WMCSA engaged consultants, Sinclair Knight in 1993, to produce the *Regional Solid Waste Landfill Siting Study* (Sinclair Knight 1993). This was, and remains, a significant contribution to ongoing debate on the siting of landfills in South Australia, despite the fact that its principal recommendation, the siting of a *remote*¹⁰ landfill, was not adopted at the time.

The Sinclair Knight Report set about identifying specific locations for potential landfills around the State, and notably, implicitly recognised the possibility of *long-haul* waste disposal options for Adelaide given its recommendations to use specific regional sites. It promoted a forward looking strategy which identified and rated locations, however, when its final recommendations went to the Minister proposing a landfill at a particular site near Pt Augusta, it was summarily rejected.

The reality remains as always, that planning decisions that involve politicians are, (or become), political decisions. It transpired that the site proposed was in a marginal electorate in what was an election year (Harvey 1998 pers.comm.). The government then proposed a site near Pt. Wakefield, however, there was a change of government; the MFP was in doubt, and with it the need for alternative sites to those at Wingfield and Garden Island. Hence nothing further was done at the time.

¹⁰ *Remote* can have many meanings. In the Australian context I suggest it means a distance from source of generation and from urban areas of say 60 + kilometres; a distance such that it requires the use of long-haul vehicles to deliver waste. In the American context waste is carted thousands of miles. (Moy 1999, Pers comm); in Australia I suggest *remote* may mean as little as fifty kilometres from a the outskirts of a city.

The Integrated Waste Management Strategy 1995

The creation of an Environmental Protection Agency in South Australia in May of 1995 saw the demise of the WMCSA¹¹. At that time it had been working on an overall waste management strategy for metropolitan Adelaide, a project that was then taken over by a specialist department within the EPASA. A *Discussion Paper* had been issued in April 1995 entitled, *Options for an Integrated Waste Management Strategy for the Adelaide Metropolitan Area 2015 and beyond*. This Paper was *prefaced* with the comment that 'This initiative comes at a critical time, when issues relating to resource consumption, resource recovery and waste minimisation are being discussed nationally and internationally'.

The April discussion paper led to the release of a revised *Public Discussion Paper* in June 1995 (EPASA 1995), and finally, to the release of the *Integrated Waste Management Strategy for Metropolitan Adelaide, 1996-2015* (the IWMS), in June of 1996 (EPASA 1996). The IWMS took over from the Ten Year Plan discussed earlier, and sought to take account of 'a range of principles at many levels while providing a practical frame work for waste management' (EPASA 1996:1). The IWMS recognised, *inter alia*:-

- that existing landfill sites in the vicinity of Adelaide had a limited life;
- that existing sites would need to be rehabilitated; and,
- hence that costs of waste disposal would have to rise;
- that there was a need for waste minimisation strategies, and;
- effective community consultation was required for the siting of landfills in the future.

The IWS also enshrines into South Australian policy the ANZECC waste reduction targets enunciated in the National Kerbside Recycling Strategy (ANZECC 1992). The onus was placed on the EPA in South Australia to develop guidelines for achieving the 50% waste reduction targets and to draw up Environmental Protection Policies incorporating environment improvement programs and industry waste reduction programs (EPASA 1996:11).

¹¹ The Waste Management Commission ceased to exist as an independent body with the proclamation of the *Environmental Protection Act, 1993*, which became effective on the 1st of May 1995. The Act imposes a general environmental duty, enshrines the principles enunciated in Agenda 21, the Precautionary Principle, a commitment to ESD principles and the Intergovernmental Agreement on the Environment.

The adoption of *cradle-to-grave* responsibility, and waste minimisation and reduction strategies within the *waste management hierarchy* is also promoted. The waste management hierarchy lists the **most preferred** through to the least preferred waste management options to:- **avoid**;

reduce;

reuse;

recycle and

recover (through energy generation)

treat, and, in the last resort to

dispose of wastes.

By the early 1990s', as in the eastern states, such companies as Brambles, CSR, Pacific Waste, Sita-BFI and Boral Industries, all of whom operated national transport or quarrying enterprises, recognised the need for additional landfill capacity in South Australia. The adage *where there's muck there's money* was as true in Adelaide as elsewhere. CSR and Brambles, working through a joint venture company Enviroguard, were the first to *test the water* by putting forward a major suburban landfill siting proposal.

Highbury

In 1994 Enviroguard sought planning approval to convert worked-out sandpits on a twenty-four hectare site at Highbury, 12km northeast of Adelaide in the Hills Face Zone, into a general-purpose landfill. This general area had been recognised by Maddox, in the First Ten Year Plan in 1984, to be a potential successor to the Wingfield landfill sites. The site was a *stones-throw* from an existing putrescible landfill operated by the East Adelaide Destructor Trust, (now East Waste). Being aware of these factors the company appears to have proceeded on the basis that formal approval was simply a formality. In June of 1994 Enviroguard 'letter-dropped' the Highbury area advising residents of its intentions to lodge a Development Application with the local council for planning approval.

On the 14th of July 1994 sixty-five residents attended a public meeting convened by Enviroguard at which the plan to construct a solid general waste landfill with a capacity of 2.43m. m³ with a life of eleven years was put before them (Thomas 1995:8). However, as events indicate, Enviroguard underestimated the response of this hitherto complacent community whom, ironically, they had brought together to discuss the issue.

In August of 1994, following the Enviroguard meeting, local residents formed an oppositional group which they named HEART; (Highbury Environs Residents Against Rubbish Tips). The actions by HEART illustrate the interplay between bureaucracy, politics, policy, power and democracy in the waste disposal context just as Highbury landfill siting dispute is a study in effective public participation in terms of the concepts discussed in Chapter Four.

The public face and vocal force behind HEART was M/s Cheryl Leue. The organisation was incorporated and membership reached six hundred; individuals paying \$10 to join and families, \$20. With the money raised HEART then launched a powerful and effective oppositional campaign to thwart Enviroguard's Development Application (Leue 1999 pers.comm.). As a study in effective participation the actions by Heart meet those criteria discussed in Chapter Four. HEART's responses took many forms. Apart from street rallies and protests, leaflets, news releases and effective use of newspapers and television reporting, they met their opponents on equal ground and 'out consulted' them by engaging a high profile Sydney consultant. This was made possible by their success in raising thousands of dollars for their fighting fund.

In terms of the factors discussed by Creighton (1981) Highbury appears to be virtually a text-book study in effective community participation:-

- there was powerful motivation behind HEART to stop the CSR proposal;
- the residents lived close to the proposed site;
- they knew that the creation of a large landfill would make the suburb less desirable and hence could reduce property values;
- issues of community image and social identity blended with those fears of loss of amenity as Highbury was perceived as an ideal place to live and bring up children;
- damage to the physical environment was seen as inevitable; and,
- finally, there was a desire to keep things as they were, what Creighton calls 'personal values' were at risk.

These factors alone were not enough in themselves. The fact that the members of HEART were focused, well financed, had a belief they could win and were politically astute combined to ensure their success.

Risk considerations, in terms of the discussion in Chapter Three, were a significant part of the oppositional subtext. There were a number of 'risk scenarios' circulating around the Highbury site none of which related directly to the nature of the refuse to be disposed of at the site. The first was possible unknown (yet predicted) damage that might be caused to the integrity of underground water sources by leachates. The arguments that no landfill is leak proof and a reliance upon the precautionary principle, were called in aid.

The second was anecdotal evidence circulated in the Highbury area at the time that the disused sand pits, in the vicinity of the site of the CSR proposal, had been secretly used to dispose of nuclear waste from the Maralinga atomic testing site in the north of the South Australia, and that several young children who lived in a near-by street who played in the sandpits had contracted and died of rare forms of leukemia (Leue 1999 pers.comm.).

Similar health risk arguments were raised by RAGE with respect to Castlereagh and by Enviro West in opposing the Werribee site. Enviro West argued the need for to ten kilometre buffer zones on the basis of case studies that suggested the risk of congenital birth defects, and by implication, cancer inducing effects; 'Studies on many other health impacts, including cancer-inducing effects, have not yet been done by this research team' (Enviro West (1999:6).

In the case of Highbury it was argued that to excavate and work the sandpit sites in the course of dumping operations was to raise the spectre of most 'dreaded' risks that were potentially 'catastrophic', 'unobservable' and possibly fatal. The unknown danger to the water table represented 'uncontrollable' and 'immeasurable' risks that might also be catastrophic. Referring to the Cutter risk characterisation model (1993) all the 'perceived risks' that were circulated lay in the top right hand quadrant of most feared risks. In terms of Fischhoff's analysis (1994) there were no advantages to the local residents in having a landfill over their back fences, but plenty of alternatives (elsewhere). The alleged risks to the water table and the (questionable) anecdotal evidence of serious health dangers raised levels of fear and anxiety in the residents and strengthened their emotive responses, and were illustrative of the fact that the risk is the risk perceived, whatever its existence in reality.

In making its protests HEART went far beyond the formalised engagement in participation offered by the Environmental Impact Assessment procedures. While they were involved in that formal process they also acted 'informally' by taking their case to the streets. As mentioned above, HEART engaged an independent expert, a Sydney environmental

consultant, to counter representations made by Enviroguard in their EIS. On the 'formal front' they organised about 650 submissions opposing CSR's EIS, most of which argued that it failed to address site specific technical social and environmental issues. Issues relating to the unknown, yet possible threats to the water table were highlighted. HEART's strategies worked, and in response to their submissions and their consultant's report, Enviroguard was directed to lodge a supplementary EIS.

CSR complied with all the necessary formal planning requirements and in August of 1996 their consultants, Woodward-Clyde, filed an amended EIS which agreed to increase the buffer zone to 200m 'to comply with EPA guidelines'; the plan to have an on site transfer station was also deleted (Woodward-Clyde 1996). Given what they considered they had complied in every respect with the issues raised by the planning authorities, Enviroguard fully expected the proposal to be approved.

However, the Assessment Report, written in neutral language, indicated that in the opinion of the EPA the proponent's landfill proposal did not comply with the Precautionary Principle as mandated by the *Environmental Protection Act 1993* (section 10 (1) (b) (iv), and 'did not in its essential respects satisfy the general environmental duty' under section 25 of that Act. Both of these issues lie in a grey interpretive zone of the Act. Maintaining this ambivalence, the Assessment Report, did not rule out the prospect of approval, and went on to state 'that if the Governor were to give approval to the proposal the following conditions should apply'; noise barriers, operational limitations, submission of an Environmental Management Plan, access road configuration issues, and the need to liaise with the Department of the Environment and Natural Resources in relation to hydrological issues (Minister of Housing and Urban Development 1997).

The Governor-in-Council, acting directly on the advice of the Government, did not approve the proposal. A seemingly independent decision, yet one that in reality, as CSR and Cheryl Leue attest, was motivated by the party political considerations of maintaining the support of the Highbury voters (Reid, Leue 1999 pers.comms.). Enviroguard claim to have learnt to its dismay that the Government had finally rejected the application from a television news report on the 31st of January 1997 (Maltby 1998 pers. comm.).

It appears that CSR may have assumed from the outset that approval was a *fait accompli* based on the tenor of discussions with the Premier prior to undertaking the project (Maltby 1998 pers. comm.). Yet CSR faced a well resourced and managed oppositional group, with far more political leverage than they had anticipated (Reid 1999: pers.comm.), (Leue

1999:pers.comm.). A combination of complacency and self-assuredness on the part of the proponent, the strength of the community's oppositional response, and a government preferring not to incur the wrath of a volatile electorate, all contributed to the defeat of the proposal after what was an expensive two and a half year campaign on both sides (Leue 1997:6).¹²

It is also clear that the oppositional response by the Highbury residents, much in the same vein as the response by the Werribee resident discussed in the preceding chapter, can be characterised as a NIMBY response. As discussed by Lake in 1993 the communities' attitudes were 'protectionist' in the face of an unwanted development in their neighbourhood; 'selfish parochialism' may have arguably defeated a worthwhile societal goal (Lake 1993). Similar sentiments might be applied in the context of the Werribee decision. Those arguing from a perspective of democratic theory may interpret HEART's success as an excess of democracy, supporting the argument put forward by Walker (1966) that for democracy to work effectively there needs to be a level of apathy within the community.

Developments Post Highbury

Following Highbury, South Australia still had a need for additional landfill capacity to take it into the 21st century. The highly publicised debate surrounding the landfill proposal ensured that waste disposal practice secured a foothold on the State's political agenda. The Highbury EIS *Assessment Report* had emphasised the paucity of government policy; 'the Development Plan provided only limited guidance on the type, intensity, and management of waste disposal where sites are in close proximity to residential areas. There are however, general policies that place emphasis on preserving the amenity of residential zones' (Minister of Housing and Urban Development 1997:46).

The Government, aware of the high level of critical public engagement in these issues set about defining policy on landfill siting. The Government's *pro-active* response came in the form of the creation of the *Waste Management Infrastructure Steering Committee*, convened in December of 1996, just prior to the formal rejection of the Highbury EIS. The Government also released, in July of 1997, the long outstanding *Environment Resources and Development Committee Report* (ERDC Report) on waste management.

¹² It has been suggested to the writer, by an officer of Planning SA who requests anonymity, that had Enviroguard purchased a couple of residential properties in the immediate vicinity of the of the

As will be discussed later in this chapter, a number of alternative waste management proposals were put to the planning authorities. The industry's formal response, to what amounted to a lot of bad publicity generated by the Highbury issue, was to publish a draft *Code of Management for Landfills* in June of 1996. The need for a *Code of Practice* was no doubt seen as a means of promoting an image of community concern and responsibility, 'to provide leadership to the waste industry', and to 'improve the image of the waste industry' (Waste Management Association of Australia S. A. Branch 1996).

In addition to the release of the ERDC Report by the Government, the EPASA took the initiative to publish *Draft Guidelines for Landfill Depots* in October of 1997. Of greater consequence, various recommendations of the Integrated Waste Strategy and the report tabled by the *Waste Management Infrastructure Steering Committee* have now been implemented or are in the process of being implemented. These initiatives have included the release of a discussion paper outlining a proposed Environment Protection Policy, (EPP), on waste management, the promulgation of a Planning Amendment Report (PAR 1999) which incorporates landfill siting guidelines into the Development Act 1993, and the completion and publication of the Waste Audit by the EPASA.

However, in the meantime, landfill sites at Mallala, Inkermann and Medlow Road were approved and are now moving towards operational status. This raises the question of whether the flurry of policy formulation has not only been incremental but also *ex post facto*. These *post-Highbury* policy initiatives and issues relating to the siting of new landfills, to the north of Adelaide, will now be discussed in further detail.

Environment Resources and Development Committee Report 1997

A Standing Committee of the South Australian Parliament, the Environment, Resources and Development Committee (ERDC)¹³, was convened on the 30th of November 1994, at a time when the Medlow Road had been proposed and the Highbury debate was already *warming-up*. The committee was instructed 'to investigate and report on waste management practices in South Australia' (ERDC1997)

proposed site they may have been able to deflect much of the community opposition and gain the approval they sought from Government.

¹³ The committee was created in February 1992 in terms of the *Parliamentary Committees Act 1991*.

The Reference from the Clerk of the Legislative Council directed, in very plain language:-

That the Environment, Resources and Development Committee be instructed to investigate and report on waste management practices in South Australia and that it pay special attention to:-

1. the location of dumps [sic];
2. design, operation and monitoring of dumps;
3. disposal of dangerous substances including toxic and radioactive materials;
4. recycling;
5. container deposit laws;
6. waste generation; and
7. Commonwealth responsibilities for transport, storage and dumping of Commonwealth generated waste.

In July of 1997 the ERDC tabled its report entitled *Waste Management Practices in South Australia*. The Committee observed that 'there is no prescriptive legislation in South Australia regarding the siting of landfills' other than the general provisions of the Development Act 1993. Referring to the EPASA's submission the committee placed on record that:-

Landfill sites are currently being proposed and developed in an ad hoc manner, as cheap land becomes available. These are often not the best sites for rational or environmentally sound landfill development. Suitable sites need to be identified and secured (ERDC 1997:5). (Emphasis added).

The ERDC Report looked at waste reduction targets, landfills, their location, design, operation and monitoring. The alternatives to landfill and disposal of *dangerous substances* were also considered. The Committee's Report incorporated thirty two recommendations which included:-

- that landfill should be considered the last choice after an application of the waste minimisation principles, reduce, reuse and recycle;
- that no landfill be sited in the metropolitan area; site selection should involve full community consultation; and, the EPASA should 'make the final decision regarding landfill siting if there is a dispute';
- that landfills should incorporate liners, leachate monitoring systems and minimum buffer zones of 500 metres; and,
- that the landfill levy be increased;

As for hazardous wastes, the onus was directed to the EPASA to liaise with Councils, educate the community and promote safe practices and the use of reusable containers for agricultural chemicals. Of particular interest was a recommendation (23) for the

establishment of a secure hazardous waste repository 'for waste generated in South Australia' and that 'a decision regarding the need for a national repository for radioactive waste be expedited.' (ERDC 1997:xi-xv). In October of 1997 the EPA in South Australia released for public consultation, *Interim Criteria for Major Landfill Depots in South Australia*. In October of 1998, the draft culminated in the publication of Guidelines for Major Solid Waste Landfill Depots, (EPASA 1998). The stated Objectives were to ensure suitable sites are selected for landfills, minimise the risk of adverse environmental impacts, lay down minimum standards, promote and encourage a focus on waste avoidance rather than landfilling and encourage a rationalisation in the number of solid waste landfills¹⁴.

Waste Management Infrastructure Steering Committee: October 1998

A significant event in relation to waste management practices in South Australia, that can be related to the Highbury issue, was the formation of the Waste Management Infrastructure Steering Committee (WMISC) in December of 1996 (WMISC 1998). This Committee included representatives of the Conservation Council, the Waste Management Association, the EPASA, Recycle 2000, and Cheryl Leue of HEART. The Chair came from Planning SA. The Committee produced an Interim Report for Ministerial briefing in September of 1997 and published its final report in October of 1998. In submitting this report the Committee alluded to the difficulty of working in a *dynamic environment* in attempting to set goals for Government 'as a basis for waste management infrastructure policy' formulation (WMISC 1998). The Executive Summary of the Infrastructure Committee's Report, addresses issues of waste minimisation, securing landfill capacity in the short and long terms, suitable environmental standards for landfills, maintenance of competitive cost standards, and locating landfills in an orderly manner (WMISC 1998:3).

The Terms of Reference to the Committee, which can be related back to the *Integrated Waste Management Strategy for Metropolitan Adelaide 1996-2015*, discussed earlier, direct the Committee to address:-

- the adequacy of the current Waste Management Infrastructure and the anticipated requirements for the next twenty years;
- Adelaide's needs for an efficient and effective waste management system with reference to the principles of ESD;

¹⁴ It was proposed in the submissions, to the ERDC a year earlier, by Path Line Australia Pty Ltd and Resource Development Pty Ltd., that Adelaide required only two landfills; one north and one south (ERDC 1997:8).

- ❑ the preparation of a Strategic Plan to achieve stated waste management objectives;
- ❑ recommend appropriate legislation to facilitate implementation of the plan;
- ❑ mechanisms for monitoring implementation;
- ❑ identify benefits to regional centres within the state in the development of the strategy (WMISC 1998).

The Committee recognised the obvious, namely, that there was a need for landfills in the 'long term', and the fact that, most current landfills predated land use controls and are not in ideal locations. And, even though the Committee avoided what might be seen as the most critical question by indicating that it was not their role to identify actual sites, it did state unequivocally that landfills should not be in the vicinity of housing, (as was the case in the Highbury proposal), and that they needed to be 'located with adequate buffer zones...[and]...within reasonable haulage distance of the metropolitan area'.

It also was recognised that distant landfills would result in larger haulage costs and that this would impact adversely on the economics of resource recovery (WMISC 1998:5). These were significant findings at a time when private contractors had already taken steps to have sites approved to the north of Adelaide. Finally, the WMISC Committee put forward nine recommendations:-

- ❑ The first raises the need to apply a *best practice* approach to a *hierarchy of waste management* model. As an aspect of this the need for a waste management Environmental Protection Policy, (EPP), was called for.
- ❑ The second calls for a 'planning framework to facilitate appropriate infrastructure for recycling and reuse' and a three tiered hierarchy of recovery centres incorporating appropriate zoning, and buffers to sensitive areas.
- ❑ The third proposes an amendment to the Development Plan to address solid waste using a Statewide Plan Amendment Report, (PAR), and an advisory Planning Bulletin on Waste Infrastructure, for the use and guidance of local councils.
- ❑ The fourth calls for the resolution of the Medlow Road and Inkermann landfill applications, or *alternatives to meet the medium term (5to 10 year) need for up to 1m tonnes pa solid waste landfill capacity to ensure the needs of the metropolitan area can be met.*
- ❑ The fifth looks to the next fifteen years and in the possibility that if the IWS Northern Balefill (the Mallala landfill), the Inkermann and Medlow Road landfills, do not become operational, to provide 'for significantly new landfill capacity for the northern metropolitan area'. The proposal calls for a 'diverse range of ownership in order to maintain competitive cost structures for landfills in the community interest.' This recommendation also called for establishing

appropriate buffer zones at Peddlers Creek and the creation of a Registration of Interest process to enable the waste industry and planners to flag future sites for landfills.

□ The sixth, seventh and eighth and ninth recommendations raised the need:-

...to improve institutional arrangements, waste services and costs; for the accurate measurement of waste volumes and completion of the EPASA's Waste Census; regular review of the Strategic Plan; and, to give urgent attention to devise a strategy to secure depots receiving hazardous waste.

New Landfill Sites to the North of Adelaide

The WMISC was convened at a time when landfill siting issues were becoming 'too hot to handle' politically. Once the Highbury proposal was *knocked-out* of contention during the EIS process, the sites at Mallala, Inkerman and Medlow Road became viable options, subject to the closure of the Wingfield and Garden Island sites. The Adelaide City Council though continued its efforts to extend the life of its Wingfield site. An outcome was precipitated, in a somewhat summary fashion, by the passing of the *Wingfield Depot Landfill Closure Act (1999)*. Under the terms of this act the sites at Wingfield and Garden Island must cease to take waste by the end of 2004; a swift and effective expedient giving landfills at remote sites a chance to operate economically (Mc Mullen 1999 pers.comm.).

However, recent events in Adelaide in December 2000 suggest that the closures may be accelerated if the South Australian Land Authority, the owners of the Garden Island site, exercise their right of resumption over the land as suggested in recent press reports (Advertiser not attributed 2000). This would increase the *waste-take* at Wingfield that suggests closure in 2003 rather than 2004. Correspondingly, with Mallala in operation, the Inkerman site may come *on-line* sooner than anticipated (McMullin 2000:pers.comm.).

At the time that the Highbury application was under consideration, private enterprise put forward a wide range of alternative landfill site proposals at locations around the State including Mallala, Inkermann, Smithfield Plains, Kanmantoo, Cambrai, Everard/Lochiel, Stockport, Kalbeeba, Truro and Palmer. EIS's were called for with respect to the Smithfield Quarry site at Medlow Road in 1992, the *Borelli* site at Mallala in 1994, and the *Path Line* site at Inkermann in August of 1995. As will be discussed in detail, later in this chapter, the Mallala site was approved in January 1998, and the Inkerman and Medlow Road sites were approved by the Governor-in-Council on the 29th of January 1999 (Kopli 2000 pers.comm.).

Smithfield Quarry Landfill Facility

In 1988 the Northern Adelaide Waste Management Authority (NAWMA)¹⁵, developed a regional waste management strategy that identified a need for a municipal solid waste landfill in the area by 1993. In 1992 a Draft Environmental Impact Statement was prepared and placed on public display in July of 1992. A Supplementary EIS addressing issues raised in formal submissions, was then prepared on behalf of the proponents and submitted in December 1992. The proposed site, the Smithfield Quarry at Medlow Road, Blakeview, 30km northeast of Adelaide, had an overall capacity of approximately 2m. m³ and an anticipated life of fifteen years. 'It was quite unique in that it went through the planning process unobstructed. There were two objections to the proposal and they were withdrawn;we won over the hearts and the minds of the local people...we recognised the need to take the community into our confidence' (Davids 1998: pers.comm.).

A favourable Assessment Report issued in March 1993 concluded that 'all environmental issues raised were considered to be manageable (Office of Planning and Urban Development 1993:16-17). Conditional planning approvals were obtained on the 24th of August 1993, however, the failure of the proponent to start work at the site and apply for the necessary licence from the EPASA within two years caused the planning approval to lapse (Kopli 1999:pers.comm.).

In 1997 the NAWMA were advised by the Department of Housing and Urban Affairs that their revised proposal for the site was at *sufficient variance* from the original proposal as to justify the preparation of an Amendment to the (original) EIS (Maunsell 1997). The application did not go smoothly. A highly vocal and well organised group of individuals known as the *Dumps Coalition* was formed in September 1997 to oppose landfill proposals to the north of Adelaide. This group drew its membership from five regional oppositional groups drawn from residents at Wingfield, Dublin, Kalbeeba, Medlow Road and Inkerman. The personality behind the organisation, Shirley Humphrey, hosted regular monthly meetings of the Dumps Coalition in the kitchen of her farmhouse at Kalbeeba.

¹⁵ NAWMA is one of the four regional waste management "enterprises" facilitated under the provisions of the *Local Government Act SA 1936*, (since superseded by the *Local Government Act SA 1999*). Given the power to under the *Local Government Act* it was left to the initiative of aggregates of local councils to form strategic waste management alliances. In the south there is the Southern Region Waste Resource Authority, formerly the Southern Region of Councils who operate the Pedler Creek landfill; the Western Region and the Eastern Region, formerly the East Torrens Destructor Trust now East Waste.

Typical of such informal, yet formidable, community opposition groups Shirley Humphrey described the first meeting with the local council with respect to a proposal to site a landfill near her home in 1996:-

The first meeting about the Kalbeeba proposal was run by the Munno Para Council on the 24 September 1996. We were like lambs to the slaughter at the first meeting. We didn't know anything and we believed what they told us. We thought we had lost the battle. Two days later we had our own meeting and appointed a committee of four. They called us *the protesters* and said there were only four when in fact there were a lot more. We learnt as we went along (Humphrey 1998:pers.comm.).

The proposals to site landfills at Mallala and Inkermann were staunchly opposed by the Dumps Coalition, the Action against Underground Water Contamination Committee and the Mid North Waste Management Group, representing the two Councils in the area. The key issue raised with respect to these sites, and the Medlow Road site, has been the risk of contamination of ground water. A theme common to all oppositional groups appears to be a profound distrust of assurances given by both government and waste management companies.

The Medlow Road site was 're-approved', as stated earlier in January 1997, however, it is possible the proposal will not proceed given the high cost of infrastructure and the apparent revaluation of the site by roughly ten times its original sale price (Humphrey and Kopli 2000 pers. comms.). Given the high set up costs it is possible the application will lapse a second time.

IWS Balefill Mallala

In October of 1994 the then Minister for Housing, Local Government, Urban Development and Local Government Relations announced that an Environmental Impact Assessment was required for the solid waste landfill depot proposed by P&M Borrelli and Sons Pty Ltd, (now Integrated Waste Services Pty Ltd., [IWS]), 3km south of Dublin, a town 50km north of Adelaide within the area of the District Council of Mallala. The company responded in April of 1996 by placing the *Solid Waste Balefill Environmental Impact Study at Mallala* on public display.

The proposal outlined the establishment of a waste disposal facility with a capacity of 20m tonnes and an estimated life-span of 60 to 80 years. In May of 1997 the Development Assessment Commission gave Provisional Development Plan consent for company to construct a resource recovery, shredding and bailing facility at its site at Wingfield. The EPASA approved the proposal subject to various conditions upon which licensing was dependent. The Assessment Report was published, for what was then known as the IWS

Northern Balefill, in November of 1997 (Minister for Transport and Urban Planning 1997). The licencing of the Mallala site has now progressed to the point that it is anticipated that it will begin to take waste in mid-2001. In a headline appearing in the Adelaide Advertiser, *Putting the Squeeze on Rubbish Tips*, on December 18th 2000, Joe Borelli, the co-operator of the Mallala site with IWS, proclaimed a new era in waste management for Adelaide with the opening of the baling plant and transfer station at Wingfield (Brady Harran 2000).

Inkermann Landfill Depot

On the 4th of August 1995 the Minister directed that an EIS be prepared for Inkermann Landfill Proposal. The developer of the project, Path Line Pty Ltd, proposed an above ground landfill with a capacity of 21m m³ in an area 85km north-west of Adelaide in the Council District of Wakefield Plains. The area was zoned an 'Enterprise Zone' in terms of the Development Plan (Minister for Transport and Urban Planning 1997). After considerable negotiation with Planning SA, the local council and the oppositional groups over a period exceeding three years, the proponent was given provisional approval, to take inert building waste and putrescible waste at the site (subject to licencing). With the approval of this site Adelaide gained additional landfill capacity to take it well into, if not beyond, the 21st century. Until recently it was suggested that the site would not seek to operate until 2004 and to this end has been granted an extension to its approval conditions to relieve it of the obligation to commence site work and to complete licencing procedures within two years. The reasonable conclusion is that until the final resolution of the Wingfield and Garden Island sites was absolutely clear, the company may not wish to commit the money and resources to an earlier start-up date (Kopli 2000:per.comm.), (McMullin 2000:pers.comm.).

Apart from these proposals, and an ill fated proposal by *Remove-All-Rubbish* at Inkermann which be discussed shortly, the non-interventionist policy of allowing *market forces* to act as final arbiter of whether a proposal becomes operational, appears to reflect a lack of strategic planning and the political will power to take difficult decisions in the face of strong oppositional responses.

Need or justification, a primary determinative in New South Wales, does not appear to apply in South Australia. The possible approval of multiple sites injects uncertainty into the already finely balanced financial calculations upon which new landfill applications are predicated. The approval of a site that is closer to source of waste, cheaper to acquire or

easier to operate could destroy a multi-million dollar investment by an existing operator. This is highlighted by the recent suggestion by Pacific Waste that it will seek approval to operate sites at either Kalbeeba 45 kms from Adelaide or Stonefield about 85kms from the city. If for example a site at Kalbeeba were to be approved it might make Inkermann and certainly Medlow Road, economically untenable (Humphrey 2000 pers. comm), (Kopli pers. comm. 2000), (McMullin 2000 pers.comm).

Following the rejection of the Highbury site three reports, purportedly formulating future waste disposal policies for Adelaide, were prepared and released. The *Integrated Waste Management Strategy for Metropolitan Adelaide 1996-2015* (1996), the *ERDC Waste Management Practices in South Australia Report* (1997); and the *Waste Management Infrastructure Steering Committee Report* (1998) were prepared by various agencies of Government, virtually in parallel with the new landfill proposals to the north of Adelaide. The formulation of landfill siting policies appear to be lagging behind events 'on the ground'.

Integrated Waste Strategy for Metropolitan Adelaide 1996-2015

In January of 1999, the EPASA published a Progress Report on the implementation of the *Integrated Waste Strategy for Metropolitan Adelaide 1996-2015 (June 1996)*. This document updates the state of waste management in the Adelaide and details existing infrastructure including six landfills and 14 waste transfer stations. Reference is made to the anticipated *squeeze* in landfill capacity on the northern side of the city with the closure of the Wingfield and Garden Island sites. The landfills at Wingfield and Garden Island were taking 500,000 and 180,000 tonnes per annum respectively, pending their closure. On the southern side of the city, Lucas Earthmovers Southern Waste Depot at Maslin Beach and the Southern Region Waste Resource Authority at Pedler Creek, take a combined total of 250,000 tonnes per annum and have an anticipated future life of greater than fifty years (McMullin 2000:pers.comm.).

Waste Disposal (Landfill) Plan Amendment Report 1999 (PAR 1999)

In January of 1999 and outcome of the *Waste Management Infrastructure Steering Committee Report* was the publication of the *Waste Disposal (Landfill) Plan Amendment Report*, (PAR 1999), as an amendment to the Development Act (1993) and 'intended to facilitate the orderly and proper development of landfill facilities' (PAR 1999). The aim of the PAR was to 'provide guidelines relating to the most appropriate siting and design criteria of [sic] establishment of landfill facilities, ensuring that proponents, planning

authorities and the community are aware in advance of the level or standard of development to be applied to new landfill operations' (PAR 1999:ii).

As a guide for the planning assessment of future sites the PAR defined a 'major landfill' as 'one taking more than 20,000 tonnes per annum' and declared all *major landfills* as *non-complying* developments which, as a consequence, require approval by the Development Assessment Commission which in turn may lead to an EIA procedure being directed. The rush to publication of the PAR, reflecting the urgency to put formal guidelines in place, caused a minor problem of its own. A rubbish contractor Remove-All-Rubbish, using four shelf companies, seized on the definition of a *major landfill* and put in applications for four adjoining sites taking 19,999 tpa at a location adjoining the Inkermann site where refuse disposal is a *complying use*. The proponent, after discussion with Planning SA, has not proceeded with the proposals (Kopli 2000 pers.comm.). The PAR was amended to close this *technical* loophole.

Landfill Audit

In February 2000 the EPASA published the Landfill Audit prepared in response to the recommendations of the *Integrated Waste Strategy for Metropolitan Adelaide 1996-2015* which highlighted the need to 'gather reliable data to provide a clear picture of the type and amount of waste in our waste stream'(C R Hudson and Associates 2000:1). The Landfill Audit, based on the premise that for Government 'to improve waste management for the benefit of all South Australians, it is necessary to have a clear understanding of the nature and quality of waste that is being produced and disposed to landfill' (C R Hudson and Associates 2000:1).

Environmental Protection (Waste) Policy

In September and October 2000 the Department of Environment and Heritage issued two related papers, entitled Waste Management in South Australia. The first was a *Discussion Paper* (DEH.2000a) and the second a *Background Paper* (DEH 2000b) intended to lead to the formulation and release of an Environmental Protection Policy on waste management. They were issued by the Department for Environment and Heritage in South Australia, to 'encourage public discussion on options for waste management', yet somewhat curiously they 'do not necessarily reflect the views of the Environment Protection Authority or of the South Australian Government' (DEH 2000a).

While these documents provide an updated summation of the then current state of waste management in South Australia they were published at a time when planning approvals were already well advanced with respect to the sites at Mallala, Inkerman and Medlow Road.

Concluding Comments

As the narrative discloses the overall pattern of developments in waste disposal practice in Adelaide was not dissimilar to that in Sydney and Melbourne. Adelaide due to its smaller population, and the foresight of the Adelaide City Council to secure a large site at Wingfield on the outskirts of the city in the 1950s', had fewer logistical difficulties to address, in the period up until the 1990s', than either Sydney or Melbourne. The closure of the incinerator in Halifax Street and the redirection of the city's waste to the site at Wingfield was a relatively seamless transition.

Following the opening of Wingfield a series of inquiries and reports began in the 1970s' to examine the administration and efficiency of waste disposal practice. Sanitary landfill was confirmed as the most practical means of waste disposal as it had been in Sydney and Melbourne. Attention turned to the disposal of industrial solid and liquid waste, the closure of small 'unsatisfactory' municipal landfills in the suburbs, and such practices as back yard burning of waste.

During the 1980s' it was considered that Adelaide had ample available sand pit and quarry space in close proximity to the city to ensure that sites would be available for the foreseeable future. A situation not dissimilar to that which existed in Melbourne. The rejection of the Highbury site however, exploded this complacency. Highbury, and other quarry sites in its vicinity, once on the outskirts of the city, but now in the heart of suburbia, became unacceptable. These changes in urban sprawl, levels of environmental concern and social attitudes, which were not fully anticipated at the beginning of this Epoch, led to the development of 'long-haul' strategies and the approval of landfills at Inkermann and Malalla.

In the period beginning with the Wilson Report in 1975 the Government's landfill and waste disposal policy formulation appears to have been iterative, industry driven and *ex post facto*. Arguably the South Australian Government lost the policy initiative on waste disposal when it failed to implement the specific siting recommendations of the Sinclair Knight Report in 1993.

What then followed were a series of politically motivated events, not dissimilar to those in Sydney and Melbourne that led to the Wright Reports in Sydney and the HWCC Reports in Melbourne. In South Australia, the Government, seeking to distance itself from what was a highly charged and politically 'dangerous' situation appointed the Waste Management Infrastructure Steering Committee. By this time though, the approval processes for the sites at Inkermann and Malalla were well advanced. Ironically, South Australia would enter the 21st century with a workable set of landfill siting guidelines but no need or justification for new landfills.

Assuming the sites now approved become operational there appears to be sufficient landfill capacity to take the city's waste for at least fifty, if not the next one hundred years. This potential over-supply of capacity may dissuade others from seeking to open alternative sites given the financial, social, environmental and planning approval hurdles to be cleared in attempting to enter this competitive market.

In Adelaide, the responses to the 'Who', 'How' and 'Why' questions that form the subtext to this narrative are not dissimilar to Sydney and Melbourne. Complacency and public apathy allowed waste disposal practices in Adelaide to drift into the 1970s' with little expression of public concern. The reports of the seventies that predicted no shortage of waste disposal sites created a sense of complacency. Waste disposal management decisions, through to the late 1980s', were taken by Councillors and bureaucrats. Once Wingfield was in operation, waste disposal policies were formulated and applied in an iterative manner to meet the short-term waste disposal needs of the city.

The single event that shook the world of waste disposal practice in Adelaide during this epoch was the rejection of the Highbury site. This decision was in effect taken by the Government of the day despite compliance with the elaborate processes of Environmental Impact Assessment. It was an executive decision, and it was a political decision. As discussed in the narrative, the events leading to the Government's back-down on Highbury is a case study in itself. The direct outcomes of Highbury included the industry driven approvals for the *long-haul* sites to the north of the City and the convening of various committees to formulate appropriate landfill siting and management policies. Adelaide thus enters the 21st century with ample urban waste landfill capacity, albeit remote from its source of generation.

**Issues Relating to the Disposal of Urban Waste in Sydney
Melbourne and Adelaide**

An Environmental History

PART FOUR

Chapter Twelve

**Integration, Summation and
Conclusions**

Chapter Twelve

Integration and Summation and Conclusions

Introduction

This chapter will focus on the linkages between the Aims of this research project, the Research Questions and the Theoretical Themes as they relate to the historical narrative.

The First Aim, as outlined in Chapter One, was to identify the events that have occurred in the management of urban waste in Sydney, Melbourne and Adelaide and, by reference to them, to identify the factors behind those events. The Second Aim, a derivative of the First, was to narrate the environmental history of urban waste disposal in the cities under review with reference to those factors and events. It then remains, in terms of the Third Aim, to take a considered overview of the entire historical discourse.

As discussed in Chapter Two the canvas upon which this work is set is very broad. The span of the work, in geographical and temporal terms, covers half the Australian continent and more than two centuries. Yet the 'ambitious' breadth of this thesis is posited as its primary strength. It is suggested that without outlining the entire history of waste disposal in these cities from their respective foundations, a task never before attempted, no meaningful overview or synthesis could be achieved. And, likewise, without tracing the course of historical events in several of Australia's cities there could be no useful basis for comparison or contrast of those factors that have influenced waste disposal outcomes.

In his book *Out of Sight....Sydney's Environmental History 1851-1981*, Coward describes his work as 'a story of human behaviour either in the mass as waste-makers and polluters, or as individuals initiating, modifying, or resisting changes in environmental policy' (1988:Preface). In the same vein this thesis is *a story of human behaviour*, referenced to a single facet of Australia's environmental history, that relies on the wider historical discourse, as narrated by others, to contextualise the waste disposal events that lie at its core. As the narrative attests, the European colonists were polluters with a *laissez-faire* attitude to waste disposal and, that initially at least, waste disposal practices were driven by administrative expediency. Reform was only implemented out of sheer necessity. Certainly until the end of the 19th century, as observed by Butlin, waste was not disposed of but merely moved from one part of the environment to another (1976:258). Yet over time, passive indifference to maintaining a clean environment was overtaken by pro-active intervention.

Recording the succession of factual details, the reports, inquiries, governmental initiatives and community responses, the ruptures and discontinuities that make up this narrative, was neither intended to create an *integrated continuity* nor seek to collude in history's desire to *create order out of chaos* (Carter 1987). However, on analysis, certain patterns emerge and from these a model has been formulated which may have application to other Australian cities and states. As Chapters Five to Eleven illustrate, the environmental history of urban waste disposal in Sydney, Melbourne and Adelaide, since Europeans first settled permanently on Australia's shores, has been one of significant and progressive iterative change.

The Research Questions outlined in Chapter One, the *Who, How and Why* of urban waste disposal, which inform this entire narrative, can be directly related to, and form a nexus between, the issues of risk, democracy, bureaucracy, politics, policy, power, and formal and informal public participation, which in turn comprise the Major Theoretical Themes outlined in Chapters Three and Four. The Research Questions not only give structure to the historical narrative but also underpin and distinguish what have been proposed as the four Epochs of Urban Waste Disposal.

Revisiting the Major Theoretical Themes

In terms of the theoretical themes, waste management can be characterised as risk management. If a waste disposal related risk is badly managed, or as was often the case, not managed at all, a range of consequences may be triggered at both community and governmental levels. At this point issues of policy and public participation, both formal and informal, become relevant. If politics enter the fray a power struggle ensues. As already discussed, political, or politicised issues, engage communities in conflict as politics is about power that manifests itself in the struggle and resolution of disagreement within society (Arendt 1970). The distribution of power between parties becomes determinative of outcomes that are generally mediated as 'new' policy. Policy in this context is invariably an iteration, upgrade or amendment of an existing policy; as 'policy succession' or an extension of existing policy in the 'the policy cycle'. During times of political turmoil the Bureaucracy is often a stabilising force, fundamental to the formulation and implementation of the *policy-as-compromise* solutions, the outcome of political foment.

Risk

In the context of the 'waste debate' risks have been constant, but ever changing. The enigma of risk is that it is often antithetical to well being, yet, essential to progress in

relation to wastes and their management. The narrative illustrates that waste related risks have always existed, yet not always perceived, but once perceived, have been a powerful catalyst for change.

As has been discussed, risk was initially perceived in the waste narrative as 'personal risk', that is, health related risk. Early regulators appear to have been oblivious to all but the most patent risks inherent to wastes, and particularly to those that were 'miasmatic' in nature, until well into the 20th century. What may be termed the secondary risks posed by waste, as host to vermin, or vectors for disease for example only emerged as scientific breakthroughs were made in germ theory and pathology. The work of such scientists as Ashburton Thompson in relation to bubonic plague opened regulators' eyes to a new range of risks. As a consequence, by the early 20th century risk knowledge, went beyond what were perceived as 'miasmatic' risks and led to the adoption of 'sanitary' practices, but little more. Incineration was successfully introduced as a broad-axe solution that got rid of the waste, its stench and other miasmatic associations. It was effective, but also polluting.

It was not until the 1950s' and 1960s' that waste related risk was seen as referable to both human and non-human wellbeing. Waste management then moved beyond a health centred focus to encompass the wider catchall of environmental risks that were later related to such matters as the national economy and to industrial and technological change. Risks were seen as 'calculable' and the assessment of risk became integral to the processes of Environmental Impact Assessment in the planning context and, hence, directly relevant to the siting of landfills. As discussed, EIA may not determine a siting outcome, yet it certainly provides the formalised mechanisms that promote transparency, accountability and public participation. Risk assessment and waste disposal became inextricably linked.

Changes in the levels of knowledge, and the means and modes of communication within the community, have familiarised some risks thus making them less feared, but at the same time, highlighted many hitherto unrecognised risks. This can be directly related to the way various substances, many once considered benign, have been disposed of. The passive indifference once displayed by communities towards landfills, and what went into them, has been replaced by active inquiry, and often, vociferous opposition.

Nader (1965) discussed 'imposed risk' in the context of the automobile industry and highlighted society's acceptance of dangerous but known risks. It was generally recognised that there was no such thing as 'zero risk' (Beck 1986), and that every aspect of life is risky, however, individuals and society appear to arrive at balances between risks

and benefits (Starr 1969). Heimann (1997) highlighted that risky technologies are engines for economic growth and hence risk is an unavoidable aspect of progress and of capitalist regimes. The subjectivity of risk has been analysed by Beck (1986), Cutter (1993) and Adams (1995) and has been tied into the innate perception of risk, the fluid 'rules of thumb' that we apply in our daily lives, *heuristics*, as discussed by Johnson (1999). The worst categories of risks are those that are beyond human control, not knowable and hence dreaded. Many of the risks associated with wastes and landfill siting fall squarely into this dreaded category.

Regulators have recognised that the calculation of risk is at best uncertain and imprecise, a conclusion reflected in the derivation of the Precautionary Principle. If a risk is certain, but not calculable, it should not be discounted or ignored because of that fact. This 'uncertainty principle' has been most successfully invoked by the opponents of landfill siting applications particularly with respect to the unknowable risks of groundwater pollution and plant pathogens as discussed with respect to Werribee, Highbury, and Hunter Valley landfill proposals. The need to maintain a safe environment and 'clean' production have also been strategically linked to the strength of the export market, and the national economy, by opponents to landfill siting applications.

As the preceding discussions indicate, 'risk' is now a key to understanding 'waste', its nature, and its disposal. Every major landfill siting contest in Australia, since the Castlereagh debacle in the late 1970s, has been fought on 'risk issues'. Risks to people, the environment, and particularly to agriculture and the economy, have been successfully argued by oppositional groups ranging from the Hunter Valley and Murrumbidgee Irrigation Area in New South Wales, to Werribee, Tullamarine, Niddrie and Lyndhurst in Victoria, and also in South Australia, leading to the rejection of Highbury, the closure of Wingfield, and the 'remote' siting of landfills at Inkermann and Mallala.

Democracy

In the context of this thesis democracy is about the polarities in the governance of waste and the extent to which those with power have been able to dictate outcomes and, correspondingly, the extent to which 'the governed' have been able to 'have a say' in those outcomes. At a practical level, in the late 20th century, democratic institutions have enabled adjustments to be mediated between individuals and communities in deciding who is to carry the burden of living next door to that pre-eminent of all locally unwanted land uses, the waste disposal facility.

In early Australia, until the introduction of representative government, the democratic regime was elitist in the extreme; top down and autocratic. The narrative illustrates, that in the climate of autocratic rule that prevailed into the middle of the 19th century, issues of waste disposal were virtually a matter of 'executive' discretion. Government 'by decree' was commonplace and, as water supplies were treated as sacrosanct, draconian sanctions were applied for fouling waterways with waste. Apart from this stricture, and the rules preventing Nuisances, including smoke, dust, and litter, the waste disposal regimes in each of the cities under review, were largely driven by expediency and opportunism. A factor that led to Sydney Harbour, the Yarra, the Torrens and city parks and vacant allotments, to become Australia's first waste dumps.

The latter part of the 19th century saw the gradual introduction of democratic institutions that were tempered by 'pluralist' influences that gave citizens the right to be involved in their government. Legislative interventions gave the right to vote, rights of appeal against administrative decisions, and formalised participation in the processes of planning, all of which eroded the dominance of the governing elite. Participation in aspects of public administration, once established, mediated the ordered management of city wastes with reference to the collective good of communities. The *course of least resistance* ceased to be the sole determinant of waste disposal policies and practices, yet the poor and the non-empowered in Australia, as in the United States of America, continued to *host* landfills until well into the 20th century (Bullard 1994).

Halligan and Power's segmentation of governance in Australia into five phases can be related to the 'epochal' changes observed with respect to urban waste management practices. (1992:19 et seq.). The 'colonial gubernatorial' phase, ending around 1850, was the period where elitism in the form of autocracy flourished in place of democracy. This 'phase' in Australia's governance corresponds to what has been discussed as the First Epoch of Urban Waste Disposal in Chapter Five.

During the second half of the 19th century 'responsible government and democratic patronage' heralded the gradual emergence of pluralism and the concomitant involvement of the community in numerous reports and inquiries examining the management of noxious trades and other waste related issues. This period has been characterised in Chapter Six as the Second Epoch of Urban Waste Disposal.

The late 19th and early 20th centuries saw 'innovation and reform' due to scientific and technological breakthroughs that changed the face of urban waste disposal in each of the cities under review, principally the introduction of destructors. The period from the 1920s'

until the 1960s' has been described by Halligan and Power (1992) as a phase of 'consolidation and centralization'; a time of little change during which the *status-quo* was preserved.

This stasis was reflected in waste disposal practice as, apart from the debate in Sydney in regard to sea dumping, incineration continued in each of the cities under review until after the Second World War. At that point the transition back to 'controlled tipping' began. By the mid 1950s' incineration was being phased out and on-land disposal was centralised and rationalised, of necessity, as landfills became more difficult to site. These two phases of governance, outlined by Halligan and Power (1992) as periods of 'innovation and reform' and 'consolidation and rationalisation', collectively reside within what has been discussed as the Third Epoch of Urban Waste disposal in Chapter Seven.

Halligan and Power describe the period from the early 1970s' as one of 'ferment' (1992:23). As the discussions in Chapters Eight to Eleven indicate, the 1960s' signalled a period of radical, community driven, changes in waste disposal practices. By the 1970s' environmental concerns, which captured the siting of landfills, had been politicised. This led to far-reaching policy based regulatory changes which resulted in the tighter regulation of wastes through their categorisation, and goal setting with respect to both the reduction of urban pollution and urban waste.

In whatever way the historical narrative is segmented, it can be seen on an overview of the whole, that as the democratic institutions of government came into being the disposal of waste became more inclusive, representative, and hence responsive, to community concerns which facilitated a climate for ongoing and further change. Change can be seen to have been both iterative and cumulative.

Bureaucracy

Bureaucracies in Australia have grown silently, inexorably and virtually unnoticed, as government has progressively become a more pervasive part of the life of the average citizen (Peters 1995). As the party system crystallised out of the factionalised disorder of the late Victorian era, and matured up until the mid 1940s', it led to a 'peculiar homogeneity' in Australian society (Jaensch 1992). This climate of relatively passive political stability enabled the Bureaucracy and the related administrative institutions of State and Local Governments to grow. As discussed by Blau and Meyer, once established, bureaucracy is difficult to destroy as it becomes in their words, 'entrenched or self-entrenching'; its conservatism seeks to preserve the *status quo* and it is 'ambivalent towards democracy' (1987:24-26). These characteristics of the Bureaucracy have

ensured that waste disposal practices have evolved relatively 'smoothly' and in unison with changing social standards.

Bureaucracies are inherently formal and structured and provide cohesion and continuity to governments that are so often transient, and have policy horizons of four or five, or at best ten years. Against this background waste disposal needs are predictable and persistent; timeless and not beholden to any political time-horizon. In this sense, the lack of endurance of government, reflected in the fact that Ministers change frequently (Considine 1998), is partially offset by the 'endurance' of the bureaucracy. However, despite stable bureaucracies, long term planning in relation to urban waste disposal has been deficient.

Bureaucrats, attempted from the early 20th century to be free from politicisation and to have a degree of independence protected by public service commissions (Halligan and Power 1992:29), yet politics has never been totally excluded from the workings of the public service, as the narrative attests. Historically, the public face of power of bureaucrats and politicians, in terms discussed by Lukes (1991), has ebbed and flowed. This was exemplified in the open struggle between Ashburton Thompson, the bureaucrat, and Premier Lyn in 1900. In that instance the bureaucrat won the day and set the policy agenda that successfully addressed the outbreak of bubonic plague.

At another level the hidden, or third face of power, often nurtured by bureaucrats, has, on what Hindess (1996) has referred to as a 'mechanism-of-government' centred analysis, grown as the bureaucracy has grown. The argument put forward by Foucault, and adopted by other theorists discussed in Chapter Four, that the structures of government predetermine outcomes, interprets power as a mercurial resource within the bureaucracy of government. Power in this context underlies the hierarchical structure of the bureaucracy itself and is unconsciously invoked. Yet paradoxically, as the mechanisms of government have grown in the Fourth Epoch of waste disposal, the Planning Tribunals, Council Committees and the Courts, which routinely handle issues that impact on waste disposal practices, have become more transparent as their power is exercised publicly.

In contrast, during the period up until the beginning of the Fourth Epoch in 1960, 'routine' decisions were taken with respect to waste disposal 'in the ordinary course of business' and by officials with very little public debate or discussion. Street cleaning and waste collection, accepted as 'normal' functions of local government bureaucracies, continued unquestioned and in relative 'silence' well into the 1960s'. In the absence of public concern and precise regulatory provisions, the discretions of bureaucrats appear to have maintained the continuities of waste disposal practices. Only when faced with a crisis did

government become pro-active as the events of the early 1970's illustrate. The Barton Report (1970), the SDC Reports (1971 and 1973) and the Wilson Report (1975) saw the beginning of the end of unspoken and unseen waste disposal practices in Sydney, Melbourne and Adelaide respectively.

Successive inquiries and legislative interventions followed which influenced the management of urban waste through planning laws, waste categorisation and the general protection of the environment. The role and responsibilities of local government bureaucracies also gradually changed as the collection and disposal of waste was 'corporatised' and often handed over to private contractors. At the same time the responsibilities for planning and approving the siting of landfills, their licensing and policing, became shared between local and state governments. The actions of bureaucrats, once broad and unfettered in relation to waste disposal issues, have progressively become less discretionary, as rules and regulations scripted by politicians, have delineated their range of power.

Politics and Policy Formulation

Policy formulation has been seen to be important in the resolution of waste disposal issues, many of which have been highly contentious. As discussed in the preceding chapters, policy directs the everyday issues that shape society and its future. Ideally, policies capture such an issue as the siting of a landfill, and place its resolution in the wider context of the overall governance of a city or state. In this sense landfill siting policies need to be 'global', 'strategic', and forward looking.

The increasingly political nature of the 'waste debate' since the beginning of the 20th century can be related to the growth of political parties, and the formulation of public political agendas, as discussed by Jaensch (1992). Politics and policy formulation are linked to power. The political party with the majority of members gets to hold office and can then set the rules that become the policies empowering it to resolve conflicts on its terms. On this scenario, a minority, the elite, have power, and the majority within the community, the ruled, do not. Yet as the landfill siting issues of the Fourth Epoch have illustrated, this *elitist* polarity may be reversed, or at least neutralised, through effective public participation. The events surrounding such landfill siting issues as both the opening and the closure of Castlereagh, and the rejections of the Werribee and Highbury proposals, demonstrate this.

The highly political nature of the issues surrounding the siting, or non-siting, of landfills, has often been driven by policies that produce illogical and inappropriate outcomes. Castlereagh was opened as a result of 'policy on the run' following the Barton Report (1970). It was a short-term solution to what was, and remains, a long-term problem. Both Highbury and Werribee became highly politicised and illustrate that the objectivity of landfill siting determinations can be seriously compromised where policy formulation becomes entangled with party politics. The short time horizons of party political aspirations are generally at odds with the need to have waste disposal policies that incorporate a long-term view, and encapsulate an element of perpetuity.

It is also evident that policies, in relation to waste disposal facilities, can often 'lock-in' decisions for decades at a time. As discussed in Chapter Seven, policy decisions taken with respect to incineration, at the beginning of the 20th century, effectively directed waste disposal practices for the next forty or fifty years in each of the cities discussed. The irreversibility of major waste facility decisions adds a unique and critical dimension to the related policy making processes. Similarly, the adoption of recent policies that make 'long-haul' waste disposal outcomes inevitable also have this 'lock-in' effect. The recent landfill siting decisions in New South Wales and South Australia, driven by policy considerations, are effectively one hundred-year decisions. Policies in Victoria that set extensive 'buffer zones' will have the same effect in time.

Power

Power has never been evenly distributed in the 'waste debate' as reflected in the 'elitist' reality that the 'burdens' of landfills, and other locally unwanted land uses, are not equitably spread across communities. In terms of the analysis of power in Chapter Four, power has a 'public face' in circumstances where there is open conflict publicly resolved. It may be 'private' or non-observable where there is no apparent (public) conflict or it may be hidden in circumstances where an issue is kept off public agendas and hence is resolved without public awareness of conflict. Yet during the Fourth Epoch of Urban Waste Disposal, despite attempts by certain proponents to 'do deals' in the backrooms of government, the public face of power was everywhere to be seen as 'transparency' became progressively more institutionalised and formalised.

As discussed in the preceding paragraphs, the administrative structures of government are often *instrumental* in the exercise of power. Power may reside within the mechanisms of government as illustrated by the fact that in the period leading up to the 1950's most issues in relation to the disposal of urban waste, and the siting of landfills, were not the

subject of public conflict, and hence were not publicly debated, and did not get onto public agendas. This situation changed dramatically though during the Fourth Epoch of Urban Waste Disposal.

'Power' within a community may *see-saw* between the political party with the majority in the Parliament, the opposition parties, and the electorate. As the very public landfill siting disputes of the 1990s' illustrate, at times, segments of the electorate gained sufficient power to dictate, or at least redirect, policy outcomes. This will be discussed further in this chapter under the heading of Public Participation.

The 'public', or first face of power, discussed by Lukes (1991) and Hindess (1996), has dominated the waste debate in the last three or decades of the 20th century. Power has moved around the waste debate arena reflected in the fact that, at different times, different 'players', and not just the Government in power, have been effective in actually dictating siting outcomes.

As discussed by Bachrach and Baratz (1962) power is 'relational'. Factors as transient as the marginality of an electorate can empower a community, as the closure of the Woollahra incinerator and the Castlereagh landfill illustrate. It is also apparent that the power residing within a community may become determinative of a landfill siting outcome, whether or not that outcome is objectively sustainable. This was arguably the case with the rejection of the proposed siting of the prescribed waste landfill at Werribee where the recommendation of the site by an independent panel of experts was deferred in the face of a strong, persistent, community driven, oppositional response. The community effectively exercised power in this instance.

In the First and Second Epochs the power that resided in government was overt autocratic power. The power of money was also overt, known, respected, and largely unchallenged. It is reasonable to surmise that the private or hidden faces of power were ever present, yet probably not a cause of concern. Wealth was a particularly strong source of power in the Second Epoch when pastoralists and industrialists, those who owned boiling down works, slaughter houses, tanneries, brickworks, and other noxious industries, had a free hand to carry on their trades, discarding their waste and polluting at will, with little intervention until the Royal Commissions and Inquiries that took place in the third quarter of the 19th century.

It appears that the 'blind-eye' of the bureaucracy, as much as anything else, allowed dirty industries and haphazard waste disposal practices to flourish until the end of the Third

Epoch. However, as public concerns grew and as noxious wastes began to be regulated, available waste disposal sites became harder to find towards the end of the 19th and the beginning of the 20th century. Conveniently situated landfills were sought by local governments and were a critical adjunct to industry. The social and political climate of the day recognised, and tacitly accepted, this reality. This was facilitated by the fact that local governments not only had responsibility and power over rubbish removal, but also regulated land use and planning issues. In this climate waste disposal decisions often avoided close scrutiny.

However, by the late 1970s' the political climate that promoted and excited corporate expansion and entrepreneurship met head-on with the emergent environmental movement. At about the same time, incidental to 'environmental' changes, local government lost its monopoly on land-use regulation as major planning decisions were centralised. This was the time when local government, particularly in Sydney, began to rationalise and centralise waste disposal as the search for 'environmentally acceptable' sites became a matter of city-wide concern.

The private and hidden faces of power came into focus in the waste debate in the 1980s' and 1990s' as private corporations, who were taking over waste disposal from local governments, sought to gain water-tight approvals from governments to site landfills, ahead of the completion of time consuming, costly, community obstructed, administrative procedures. However, due to the 'power' that resided in communities, linked to the greater transparency of government, these attempts failed. The public face of power prevailed; public conflict in landfill siting disputes prevailed.

As has already been discussed, two examples that stand out both involve CSR, and relate to the proposed Werribee and Highbury sites. In both these instances, CSR approached the respective governments of Victoria and South Australia with a view to gaining tacit, approval-in-principle, to the establishment of landfills at Werribee and Highbury respectively. Despite gaining what the company interpreted as a 'green light' to precede the ultimate decisions, which could have been taken by the respective Governments on the basis of reports they had received, were deferred in the face of fierce oppositional responses by local communities. Both applications were ultimately rejected.

While Werribee and Highbury may be used to illustrate both the power of the public, and hence the transparency of government and the planning process, the outcomes are also reflective of shortcomings in the formalised environmental impact assessment procedures. The high costs of preparing and presenting a siting proposal in the form of an EIS or EES,

the delay factors that could be orchestrated or amplified by opponents, and hence the uncertainties and delays in getting an approval, were antithetical to corporate realities. In the final analysis it may be argued that the processes are flawed in so far as final decisions, in any event, are effectively political decisions, even if made through a gubernatorial mouthpiece. The processes in the landfill siting 'wars' have been seen to be 'political' power-plays between proponents and oppositional community groups, mediated by 'government'.

In the heat of these battles governments in Victoria and South Australia have 'run for cover' by appointing 'committees' and 'task forces' to play an advisory, but not a determinative role, in settling very public landfill siting disputes. New South Wales has similar mechanisms through the Commissioners of Inquiry. This approach seeks to promote the pluralist democratic model where power is ostensibly shared across the community, reinforcing the impression that decisions are inclusive of all interests, and not imposed from on high.

As discussed, the intervention of courts, tribunals and other bodies, which exercise power in the planning context, have made decision making more transparent. Key waste disposal issues in the late 20th century have been on the 'public agenda, and the 'public face of power' has been able to exclude the 'private' and 'hidden' faces of power.

Formal and Informal Public Participation

Formal and informal public participation, which are integral to power sharing, democracy, and hence policy formulation, have been an aspect of the resolution of waste disposal issues, particularly during the Fourth Epoch of Urban Waste Disposal. As discussed above, all forms of public participation tend to reverse the traditional elitist/pluralist polarity of democracy. While formal participation, managed within the context of rules and regulations, reinforces the elitist model of democracy, informal participation challenges it. Through informal participation a minority, from within the ruled majority, challenge the elitist, 'top down' model that characterises a working democracy and in its place promotes a 'bottom up', interventionist form of pluralism.

The relevance of public participation to the siting of waste management facilities was no better captured than in the works of the then Minister of the Environment (Cwth), Hon Ros Kelly MP, in her letter of the 6th of November 1992, to the Chair of the Independent Panel on Intractable Waste after the collapse of the Corowa High Temperature Incinerator proposal.

Repeating, in part, the words of the Minister appearing in Chapter Eight:-

.....it is virtually impossible in modern democratic societies to impose solutions to difficult social problems on communities which feel excluded from the decision making. It seems to us that the community must be centrally and meaningfully involved (IPIW 1992).

As discussed in Chapter Four, with reference to the work of Creighton (1980), ordinarily people become involved when they feel strongly about an issue and genuinely believe they can do something about it. If individuals do not feel they can be effective they tend to 'back-off', a response that dove-tails into Merelman's (1968) concept of 'anticipated reactions' in the exercise of power, also discussed in Chapter Four.

It appears however, that the traditional analyses of participation fail to focus on the most important element of participation, the participants. In researching landfill siting events the oppositional groups, and in particular their spokespersons stand out as powerful motivators of community involvement without whom 'participation' on the scales witnessed would not have occurred. WRATD, a team led by Harry van Moorst mobilised thousands of residents to attend meetings, exemplified by the fact as reported in *The Australian* that on the 4th of May 1998, 15000 people attended a single meeting at Werribee Race Course. It is safe to conclude that thousands, and cumulatively, hundreds of thousands of individual participants, have been involved in opposing landfill siting issues in Australia over the past decade.

The key to effective participation, in the context of the waste disposal issues discussed in this thesis, is effective leadership that promotes and reinforces motivation within communities. The linchpins to effective participation have clearly been such individuals as Hillary Oliver, Carol Russell and Judith Anderson (the Hunter Valley), the Van den Bergs (Niddrie), van Moorst (Werribee), Shirley Humphrey, Jack Webb and Helen Fitzgerald (Kalbeeba, Inkermann and Mallala) and Cheryl Leue (Highbury), to name but a few. In passing, it is interesting to note that women predominate.

Taking an overview, effective participation with respect to all the major landfill sites discussed in Chapters Nine, Ten and Eleven, has involved individuals who are highly skilled communicators, capable fund raisers, disciplined, focussed, organised and organising, and thereby able to infiltrate the passive complacency of the otherwise *silent majority*. My discussions with oppositional groups, represented by the individuals named

above, suggest that they have wielded far more 'power' in directing political responses, and have been more effective in directing siting outcomes, than they ever appear to have appreciated. This has often been due to the marginality of electorates and the fragility of governments' hold on power. Participation by oppositional groups has been the *stone in the shoes* of politicians and proponents alike, and has been genuinely feared by them (Reid and Maltby 1999 pers. comms).

Revisiting the Aims of this Research Project

The First Aim

To reiterate, the First Aim of this research project was to identify the decisive events pivotal to change in the narrative of urban waste disposal in Sydney, Melbourne and Adelaide and, from those events, to distil out the factors that have influenced waste disposal outcomes. The narrative supports the conclusion that the factors that have influenced change in urban waste disposal practices are both manifold and complex and are, for the most part, interconnected. Not all have these factors been constant across the entire historical discourse, yet each has some relevance to one or more of the Epochs identified, on the overview of the whole narrative. Without imposing a hierarchy of importance on these factors, they emerge from the text as:-

- ❑ The emergence of responsible and responsive governments;
- ❑ The evolution of bureaucratic structures and administrative procedures;
- ❑ Population growth and the generation of increasing volumes of waste;
- ❑ Proximity of settlements to absorptive locations, waterways and voids;
- ❑ Ongoing technological change;
- ❑ The role of the media;
- ❑ Changing perceptions of risk;
- ❑ The changing nature and classification of waste;
- ❑ The centralisation and rationalisation of disposal of urban waste;
- ❑ The emergence of a (politicised) communal 'environmental conscience';
- ❑ The introduction of planning and development controls;
- ❑ Cost considerations.

Looking at each of these factors briefly in the order in which they are listed:-

The emergence of responsible and responsive governments

Reform of urban waste disposal practices can be directly related to the ongoing administrative and bureaucratic transitions that have been outlined in the preceding narrative. The evolution of representative government, which began early in the 19th century, occurred in tandem with the complex of social and political changes which underlie changes in waste management.

The introduction of responsive and accountable governments, particularly at municipal level, placed garbage collection and disposal high on localised municipal management agendas. As has been discussed, this third tier of government was initially reliant upon colonial legislatures for funding. Without representative government it is suggested the disorderly *status quo* of waste disposal, evident in early colonial times, would have remained. While the autocratic colonial managers were 'efficient' they were non-accountable and non-representative and driven by expediency and the constraints of very limited funding. In this climate interventions only occurred out of necessity. Once in place, the mechanisms of representative government led to the implementation of efficient urban waste disposal regimes in each of the cities under review.

This process of *democratisation* of the Australian colonies, an outcome of the introduction of responsible government, can be linked to power-shifts within communities. It is evident from the narrative that from the days of autocratic gubernatorial governments in the First Epoch, through the step-wise transitions to more representative and inclusive governments in the Fourth Epoch, these power-shifts have been integral to change in urban waste disposal practices.

From the early days of Sydney the power of the 'landed gentry', who controlled the Legislature and thereby the purse strings, attempted to dictate to the municipal corporations how to run the city. This reflected the major limitation on early municipal governments, not only in Sydney, but also in Melbourne and Adelaide, up until the middle of the 19th century; their lack of funding to carry out essential public works. As discussed in Chapter Six, these cash crises forced each municipal council under discussion into caretaker mode in the early days of their existences. The Adelaide Corporation literally went broke, and went into receivership, as a consequence of spending beyond its means in attempting to clean up the city (Morton 1996).

Power, as discussed in Chapter Four, and in the preceding paragraphs in this chapter, gradually shifted away from the 'elites' and to the community as more democratically inclusive forms of pluralistic governance evolved. An aspect of this power-shift can be traced to the changes in the mechanisms of government, and the bureaucracy, which became more open and transparent.

The evolution of bureaucratic structures and administrative procedures

In parallel with the emergence of responsible government, and the power-shifts integral to it, there has been an inter-linked, gradual evolution of the administrative and bureaucratic structures of government over the past two hundred years. Waste disposal issues, initially characterised purely as personal health management issues, emerged in the late 20th century as focal to 'environmental issues'. As discussed above, bureaucracies across Australia managed 'health issues' with very little interference or involvement of the community for the first three Epochs outlined in this narrative.

Whether characterised as a 'health' or 'environmental' issue waste disposal was subject to the iterative processes of policy formulation. Once environmental issues emerged in the mid to late 20th century and became politicised and inclusive of health issues, the role of the bureaucracy in waste disposal was forever changed. It is also clear that many aspects of waste disposal ceased to be controlled by local government bureaucracies as new government agencies, departments, boards and committees emerged to take charge of such matters as landfill siting initiatives. Courts and tribunals, the EPA's, and waste disposal authorities, became the new bureaucracies that directed urban waste disposal outcomes.

Population growth and increased volumes of waste.

As discussed in Chapter One the *sine qua non* of waste disposal is population. Australia's population growth has tended to be concentrated in its major cities located on the continent's coastal fringe. The larger the population within a given area, the greater the level of overall consumption and, hence, more the waste is generated and the less space to dispose of it. Impacts on the environment can be linked to population, affluence and changes in technology.

During the 19th century the rate of growth of population was well ahead of the (financial) ability of the infrastructures of government to cope. Yet the poverty of the early days of colonisation meant that many people lived in densely packed inner city areas and the

waste they generated was simply 'dumped' as conveniently as possible. Any piece of vacant urban land was a potential, if not a *de facto* dump. One significant advantage of Destructor, introduced in the late 19th and early 20th century, was the fact that they could be built and maintained on relatively small areas of land close to sources of generation of waste. They became a 'neat', yet unsatisfactory, inner-city solution to an overwhelming waste disposal problem.

Proximity of settlements to absorptive locations, waterways and voids

This was a transitory factor, interconnected with the population factors discussed above and the demographics of the cities under review, during the First and Second Epochs of Urban Waste Disposal.

Initially, as Mundy (1852) observed, Sydney was considered fortunate to have the Harbour as a repository for waste; a natural drainage basin, a self flushing sewer. By the middle of the 19th century the use of the Harbour, and the parklands of Melbourne and Adelaide, initially quite acceptable, was rejected by local residents. The convenience of 'proximity' also meant that people settled close to water sources. 'Waste' was and remains antithetical to clean water supplies. In the days of the early Governors draconian laws were applied to preserve water sources; for example the Tank Stream, that ran through central Sydney. In the 20th century there have been similar, yet more technologically informed responses to the preservation of water sources relative to the disposal of waste generally.

The siting (and non-siting) of landfills in recent years has been dependent on comprehensive environmental studies, whether or not EIA has been applied. As incineration ceased to be an acceptable waste disposal option for environmental reasons, the cheapest option then available, namely, the haulage of garbage to sites relatively distant from source, became attractive. Dry, arid, and/or remote, and hence cheap land, met all the necessary criteria. 'Proximity' then ceased to be a primary factor in urban waste disposal practices.

Ongoing scientific and technological change.

The nature of waste, the ways in which it has been classified, and the means available to transport, dispose of, or treat it, can be related closely both to technological change, and to changing perceptions of 'risk'.

Science can be described as the *Jeckyll and Hyde* of waste management. The science that created many of the new generation of dangerous wastes, subsequently recognised their harmful impacts, and then set about neutralising them, or finding acceptable means for their disposal or management. Science and technology gave Victorian England a range of new products and materials as well as the forced-draft Destructors that prefigured changes in waste disposal practices at the end of the Second Epoch. 'Science' then went on during the 20th century to pioneer the creation of a vast range of new products, and hence, wastes.

Science has defined the wastes it has created, and has played a role central to the physical analysis and classification of those substances that enter the waste stream in terms of the risk they pose to human beings and the environment generally. More recently, transport technology of all forms, and such matters as the design and ongoing monitoring of 'state-of-the-art' sanitary landfills, integral to waste disposal, can be related to the outcomes of scientific research leading to technological change. During the 20th century, invention, innovation and implementation of change have been relentless. As discussed, where the data are scarce or deficient, or science does not have a clear answer in areas relevant to waste disposal, the Precautionary Principle has been called in aid. The technologies of road building and mechanised transport also developed and became more efficient from the mid 20th century which opened another door to waste disposal. Coincidentally, health fears relating to garbage disposal on land receded, as the cost of building and maintaining clean incinerators increased, thus making alternative waste disposal options more attractive. Dumping was reinvented as *controlled tipping* which then became gentrified as sanitary landfill.

Changing perceptions of risk

Linked to virtually every aspect of this discourse, and in particular to technological and scientific advances, changes in the perception of risk emerge as the single most important factor influencing the management of urban waste disposal. Risk recognition has been critical to safe waste disposal practices from the earliest days of settlement to the present. As the narrative, particularly with respect to the Fourth Epoch has outlined, the recognition that certain substances, and some accepted practices were inherently harmful, led them to be outlawed and disposal practices to be modified.

The changing perceptions of 'risk' in relation to quality of air issues, which triggered miasmatic responses in the 19th century, and led the pollution driven environmental debate in the 20th, exemplifies this factor. The 'bad air' of rotting garbage drove the adherents of

the miasmatic theory to promote incineration and then sixty years later, the 'bad air' of toxic fume producing incinerators led to their closure with the realisation that they posed a greater threat to good health than the garbage they disposed off.

The changing nature and classification of waste

This factor is closely linked to changing perceptions of risk, and to technological change. Wastes once classified for purposes of disposal by reference to their physical characteristics are now classified in terms of their chemical composition and tractability. As more risks were both created and recognised, classification of waste, underpinned by the law and judicial sanctions, has grown in significance to the point that by the late 20th century classification is determinative of the (legal) mode of disposal of all wastes.

As has been discussed in Chapter Three, 'bad air' was not the only indicator of risk. During the mid 20th century a new breed of non-combustible, or at least combustible but toxic materials, was coming onto the market, as what I term the 'du Pont' effect began to be felt in the post World War Two boom years. Some substances, for example asbestos, once considered benign, were declared harmful. Many new substances were recognised as harmful *ab-initio*, but their use sanctioned by 'necessity'. Technology, having created the risks, has continued to calibrate the limits of safety thus providing the bases for classification.

The centralisation and rationalisation of disposal of urban waste

In the 19th century reformers, such as Dr Edwin Chadwick, recognised that the fragmented and uncoordinated provision of sanitary services within cities was the greatest threat to their overall health. The relevance of Chadwick's conclusions were seen as applicable to Australian cities by such reformers as Pell, Gresswell, Allen and Rees, in the cities under review. Yet it was not until the mid 20th century, the end of the Third Epoch, that the need to find alternatives to incineration encouraged the coordination of city-wide waste disposal practices. The Cumberland County Council in 1959, and later Barton in 1970, reported on the shortcomings of Sydney's waste disposal practices and emphasised the need for rationalisation. Sydney, which had the largest population, led the way and Melbourne and Adelaide followed. Waste boards and committees were established to centralise and coordinate waste collection and disposal services in each of these cities. The collection of waste is now coordinated and highly regulated in Sydney, Melbourne and Adelaide. The multiplicity of local 'dumps', which characterised these cities in the 19th and early 20th century, have now given way to relatively few large 'waste management facilities'.

Public participation and the emergence of a communal environmental conscience

Public participation in the context of the waste disposal issues has been discussed at length in Chapter Four and summarised earlier in this Chapter. The primary factor that has driven public participation in the waste debate has been growing awareness of environmental concerns, the 'environmental revolution', since the beginning of the Fourth Epoch. These concerns, while not necessarily concerns for personal safety, are never the less closely linked to perceptions of risk.

From the middle of the 20th century there was a growing recognition of the 'interconnectedness' of the environment. Environmental consciousness though, while not absent in the 19th century, was more akin to 'health consciousness' and did not extend to the non-human environment. In the 20th century 'green politics', and related oppositional groups, made effective use of protest through public participation, striking fear into the hearts of wavering politicians and prompting Governments to take action. The Commonwealth Government took the lead and 'woke-up' the rest of Australia to environmental concerns. It has been seen from relatively recent events, for example Castlereagh, Werribee and Highbury, that politics is at the core of major planning decisions, and correspondingly, landfill siting protagonists have only had to politicise their causes to become exponentially more effective in their oppositional responses.

The role of the media

Linked to other technological changes, improvements in the mechanics of communication, has been reflected in the influential role of the media in disseminating information, whether factual or otherwise, which has directly influenced waste disposal outcomes. If knowledge is power, the community has been empowered in large part by the role played by the media in disseminating information in relation to all aspects of environmental safety and waste disposal.

The narrative confirms that the communication of data through the press has been a most significant factor in waste disposal debate since the mid 19th century. It is not simply a modern phenomenon. In the mid 19th century Sydney *Punch Magazine*, and its counterpart in Melbourne, howled down the City Fathers for failing to address the *putrid* state of the urban environment and championed waste disposal reform. The media throughout the 20th century have also played a pivotal role in dramatising the dangers of wastes, and have often, for their own purposes amplified environmental disasters. Love Canal, Castlereagh, the Tory Canyon, Bhopal, Chernobyl, Highbury and Werribee all helped sell

newspapers in the course of raising environmental awareness at the global and local levels. The spectre of the 'toxic dumps' and the 'fugitive leachate' have been given notoriety by the media and, in the process, community awareness of potential environmental hazards has been raised, governments have cowered, and communities have rejoiced.

The introduction of planning and development controls

The introduction of planning and development controls through legislation has been a relatively recent phenomenon and is an aspect of the rationalisation and centralisation of waste disposal practices. In a sense, planning legislation in the Fourth Epoch has taken over where health regulation in the Second and Third Epochs left off. The 'environmental revolution' and the growth of administrative procedures, that meet the desire of the community to be given a voice in decision-making, have driven change.

Linked to the above, the politicisation of environmental issues has led to governmental responses to environmental issues generally, and to waste disposal and landfill siting issues in particular. Many of these policy responses are now enshrined in legislative instruments. The environmental history of waste disposal in Australia can be traced through the Statute Books from the earliest laws on 'nuisance' and 'health' through to contemporary environmental legislation. From the mid 20th century environmental protection, planning and development Acts, and related rules and regulations, have applied to all aspects of waste disposal. Environmental Impact Assessment guidelines, and rules relating to the disposal of waste and the siting of landfills, are now contained in formal legislative instruments ranging from planning amendment reports, state environmental protection policies and other, legislatively backed directives. The late 20th century was an era of environmental legislative intervention.

Cost considerations

An overarching and ever-present factor that has influenced the way in which waste has been disposed of has been the economic cost considerations. The cost of technology, the cost of land and infrastructure, and the cost of transport have all been factors that have backgrounded many of the critical decisions made by governments and private enterprise in relation to the mode and place of disposal of waste as discussed in the preceding chapters.

The Second Aim of this Research Project

The Second Aim of this research project was to collate information relative to the environmental history of urban waste disposal in Sydney, Melbourne and Adelaide. The narrative speaks for itself. It *tells the story*, and creates a record of that historical continuum from European settlement to the year 2000.

The Third Aim of this Research Project

The Third Aim was to summarise and integrate data with respect to urban waste disposal in the cities under review. Paradoxically, the *ruptures* and *discontinuities* that constitute the 'events' of urban waste disposal in Sydney, Melbourne and Adelaide have imposed an order of their own. This 'order' leads to the proposition, by way of a conclusion, that there are four distinct Epochs of urban waste disposal in the cities under review between the years 1788 and 2000. Incidental to this is the proposition is the conclusion that the traditional historical reference-points that serve as markers on Australia's historical timeline from European settlement in 1788 to the year 2000 have not necessarily been determinative of changing urban waste disposal practices in the cities reviewed. The segmented phases, eras and periods identified by other writers discussed in the narrative, Aplin (1988), Halligan and Power (1992), Jaensch (1992) and Christoff (1999), do not correspond directly to the four Epochs proposed but rather form part of the historical background to the waste disposal narrative. Representations of the Four Epochs, pictorially in terms of the Waste Stream appear at page 23, and graphically in chart form at Appendix One, providing an overview of the entire historical discourse. A brief resume, of the four Epochs follows:-

1 The First Epoch of Urban Waste Disposal in Australia 1788-1850

The period discussed in Chapter Five, which has been termed the First Epoch of Urban Waste Disposal, extended from the time of the European settlement of each of the Australian colonies under discussion through until the middle of the 19th century. It overlies the period during which Australia progressed from *unruly infant* to *precocious toddler* (Aplin 1988). The years 1788 to 1850 in Sydney, 1834 to 1850 in the Melbourne, and from 1836 to 1850 in Adelaide, witnessed the permanent settlement of Europeans and the early growth of what were to become the respective capital cities of New South Wales, Victoria and South Australia. Governance of these colonial outposts was initially gubernatorial; autocratic and non-representative. The successive autocratic governors of New South Wales, (which included Port Phillip District until 1851), virtually ruled by decree during the first thirty years of settlement. As Marion Phillips (1909) has discussed, Governor Macquarie was the last of the autocrats, yet even after his departure,

representative government took another twenty years to become a reality in New South Wales and what is now Victoria. In South Australia autocratic authority was shared (unhappily) between the Governor and the officials of the South Australian Company during its early years. This Epoch emerges as a time of *ad-hoc*, and generally unregulated, disposal of waste predicated on expediency and the belief that the receiving environments would render it innocuous. Each of the new settlements had *natural* waste 'receptors'. Mundy's (1846) comments on filthy state of early Sydney have been recounted. Melbourne had the Yarra and various near city swamps, the largest being the West Melbourne Swamp. Adelaide had the River Torrens and surrounding *park lands*. As Kendall observed in 1902; 'Another most unclean and dangerous practice is the turning of the sewage of a city or town into the adjoining river, with the vain hope that during the progress of a long length of stream purification would take place by means of sedimentation' (Kendall AMJ 1902:441). The ability of the environment to 'absorb' waste was one of the dominant philosophies underpinning waste disposal during the first three Epochs. During the First and Second Epochs waste related risks were often recognised, but passively accepted, by most citizens. Given the *elitist* nature of government, which formed part of the hierarchical nature of Victorian society, few people spoke out against social ills affecting their amenity. Public participation in public affairs was neither accommodated nor expected. It remained a 'pastime' of the wealthy who were usually the better educated *elites* of the day. The poor were generally ill-educated, subservient, and accepting of 'fate'. Commentators, including Whittington (1970), Martin (1971), Butlin (1976), and Coward (1988), in discussing pollution in Australia, have referred to the general complacency towards environmental degradation as arising from a combination of factors including, the size of the continent, the relatively small population and the abundance of natural resources.

It appears that the absence of representative government in the early years of colonisation, and a primary emphasis on *survival* and administrative efficiency, coupled with limited resources, meant that the *luxuries* of waste collection and drainage were low priorities. However, as noted in Chapter Five, the colonists increasingly began to resent the filth that surrounded them. The observations of reformers such as Dr Edwin Chadwick, although directed to sanitary reform in England, did not go unnoticed in the colonies. The principal bureaucrats of the day were after all, by the standards of the day, well-read Englishmen. As observed by W C Wentworth, in many respects colonial Australia at the time was a social microcosm of the England that many of these early settlers had not quite left behind. The end of autocracy, the introduction of representative forms of government at colonial and municipal levels, and with it taxation, and an emergent bureaucracy, saw the end of what is proposed as the First Epoch of Urban

Waste Disposal. The legacy of this First Epoch was one of environmental degradation that in turn led to the Second Epoch being one of report and inquiry and clean-up.

2 The Second Epoch of Urban Waste Disposal in Australia 1850-1900

As outlined in Chapter Six, this was the era when the big *clean-up* began. In Sydney the Inquiry into the state of the Harbour in 1866 initiated this process. By this time Melbourne had already convened the Select Committee on Water and Sewerage (1852) following the *Sanatory Committee Report* of 1847/48. By 1860 each of the cities had reliable water supplies, yet each remained filthy and polluted as the reports in the local press of the time indicate. The media, as early as the 1850's, was beginning to wield real power in highlighting what were seen as risks to health and amenity. Civic pride was also emerging as a driver for change.

As the narrative indicates, given the muddy streets, the lack of drainage, the proliferation of cesspits, the lack of effective refrigeration and the unregulated growth of noxious industries, there were a lot of 'environmental' shortcomings to be addressed. However, it was not until the respective reports of Pell, Gresswell, Allen and Rees in Sydney, Melbourne and Adelaide, discussed in detail in Chapter Six, that the genuine reform began and permanent regulatory structures and institutions were established.

The nature of *the waste stream* was also changing during this time. Significantly, human excrement, euphemistically termed 'night soil', which formed a major component of 'surface' urban waste streams, ceased to be carted through the streets to near city locations for disposal. Adelaide, then Sydney, and later Melbourne, installed deep drainage. This effectively 'split' the waste stream and reduced it significantly. The prevalence of typhoid and other epidemics diseases remained as a catalyst for change and was a factor that promoted the introduction of the newly invented Destructor.

Progressively, by the end of the Second Epoch urban waste in each of the cities under review ceased to be dumped in the nearest crevice, pug hole or waterway. However, sea dumping remained in Sydney and the introduction of incineration continued to be resisted in each of the cities under review.

3 The Third Epoch of Urban Waste Disposal in Australia 1900-1960

The transition to the *Third Epoch of Urban Waste Disposal* was swift and decisive. As outlined in Chapter Seven, this Epoch was heralded by a calamity that, in terms of 'risk perception, had *dread-full* proportions. The *visitation* of bubonic plague was seen by some as beneficial and in the words of the then Sydney Town Clerk in January 1901, the plague was 'the greatest blessing that ever came to Sydney viewed from the standpoint of the future welfare of our City' (Annual Report SCC 1901:3). The Third Epoch saw waste disposal become an issue of urban governance, in its own right.

As discussed by Jaensch (1992), political parties did not emerge until late in the 19th century hence, what Halligan and Power (1992) have termed the 'patterning of authority', did not really begin to be felt until this Epoch was well under way. However, the existence of powerful and efficient bureaucratic and administrative structures by the beginning of the 20th century facilitated the management of the plague crisis. The bureaucrats ensured that the risks posed by bubonic plague were dealt with efficiently and effectively and so began the Era of Incineration.

The policy choices, made at the beginning of the twentieth century, resulted in incineration becoming entrenched, virtually for the whole of the Third Epoch, as the initial capital expenditure, and the longevity of the equipment, meant that the use of any alternative technology could not be justified. This policy 'lock-in' effect has since repeated itself a century later, given the high start-up costs now associated with establishing economically viable 'mega' sanitary landfills.

The beginning of the end of incineration coincided with the end of the Second World War, in the mid 1940's. A combination of factors including, the cost of replacing existing worn-out incinerators, the emergence of intractable, non-burnable, and potentially toxic materials, and the sheer volumes of waste generated by the burgeoning *throw-away-society*, combined to hasten their obsolescence. Ironically, the once 'sanitationally' acceptable incinerator was no longer environmentally tolerable. Perceptions of risk had changed and, as decision-makers were becoming sensitised to a wide range of environmental issues, the processes of balancing risks against benefits came down in favour of on-land disposal. Incineration technology simply could not provide a solution that was cleaner, cheaper, or less risky, than on-land disposal. As the narrative discloses, incineration was eventually overtaken by 'controlled tipping' that became 'sanitary landfill', thus marking the end of the Third Epoch of Urban Waste Disposal.

Describing the events of the *Fourth Epoch of Urban Waste Disposal* succinctly is a somewhat more difficult task than summarising any one of the three Epochs that preceded it. This was an epoch of unprecedented change. Virtually all of the factors outlined above were instrumental in catalysing changes in the generation, collection and disposal of urban waste.

The *Fourth Epoch* was an era that saw the return to on-land waste disposal as municipal incineration became obsolete. Key factors driving change during this *Epoch* included a combination of social and political *paradigm shifts*; technological change, growing public empowerment and concern for the environment linked to changing perceptions of risk and demands for social equity. It was also an era of increasing prosperity in Australia, as in America and Western Europe. It marks the beginning of what has been termed the 'throwaway society', and of 'conspicuous consumption'.

Globally, environmental awareness of *risk* was promoted by the writings of such individuals as Rachel Carson, Ralph Nader, and a number of apocalyptic prophets of doom during an era that corresponded to the Cold War and the fear of nuclear annihilation. It was also a time of political upheaval, activism and protest.

The social *paradigm shifts* of the late 1960's can be broadly related to social justice issues relative to human and environmental rights. Feminism and the anti-war movement generated social foment, and in the process, activated wider environmental concerns. All aspects of waste generation and disposal were promoted onto political agendas nationally. Power moved from the minority powerful elite, to the *activated*, and now better informed, environmentally concerned, and numerically dominant wider community. The media, always vocal, became more vocal, and the popular press took sides in disputes in a climate where sensationalism was profitable.

The beginning of the Fourth Epoch corresponds to the time when the Commonwealth Government began to be actively involved in environmental matters, as detailed in Chapter Eight. Influenced by global *clean air* 'events' in England and America, and aware of the environmental rumblings that eventually led to the Stockholm Conference in 1972, the Commonwealth began to impose, and coordinate, its *environmental* agenda across Australia. Using reports of bi-partisan Senate Select Committees in 1969 and 1970, the Federal Government began to promote a cleaner environment. It was also involved in the intractable waste debacle, and oversaw the creation of ANZECC.

ANZECC continued to play an important role in the overall national context of waste disposal, yet it remains a purely advisory body. In consultation with the States the Commonwealth Government has led the way in *redefining* the waste stream with particular reference to intractable, agricultural, and industrial wastes. Dangerous and intractable wastes have been effectively 'defined out' of the general waste stream by regulation. ANZECC has also been instrumental in setting waste reduction target deadlines that have driven initiatives within the states of Australia but are yet to be achieved. More recently the Commonwealth Government has also overseen the creation of the National Environmental Protection Council which continues to promote national strategies with respect to the management of dangerous wastes.

As Chapters Nine, Ten and Eleven set out in detail, there was an unprecedented level of report, inquiry and regulation during this Epoch that resulted in the regionalisation and rationalisation of waste disposal in Sydney, Melbourne and Adelaide. Reports recognised the good sense of incineration yet the practical and more economically acceptable advantages of landfill. The urban waste disposal debate during this Epoch has been dominated by the need to find politically, and hence, socially and environmentally, acceptable waste disposal sites for urban waste.

In a climate where waste disposal has been politicised, policy formulation in relation to waste management, and the siting of landfills, has become a major issue on all governmental agendas. The imposition of interventionist, bureaucratic, regulatory controls, particularly in urban planning, has impacted directly on urban waste disposal. More recently, Governments at State and Municipal levels have out-sourced and corporatised waste collection and disposal, yet have maintained firm control through licensing, planning approvals and other means.

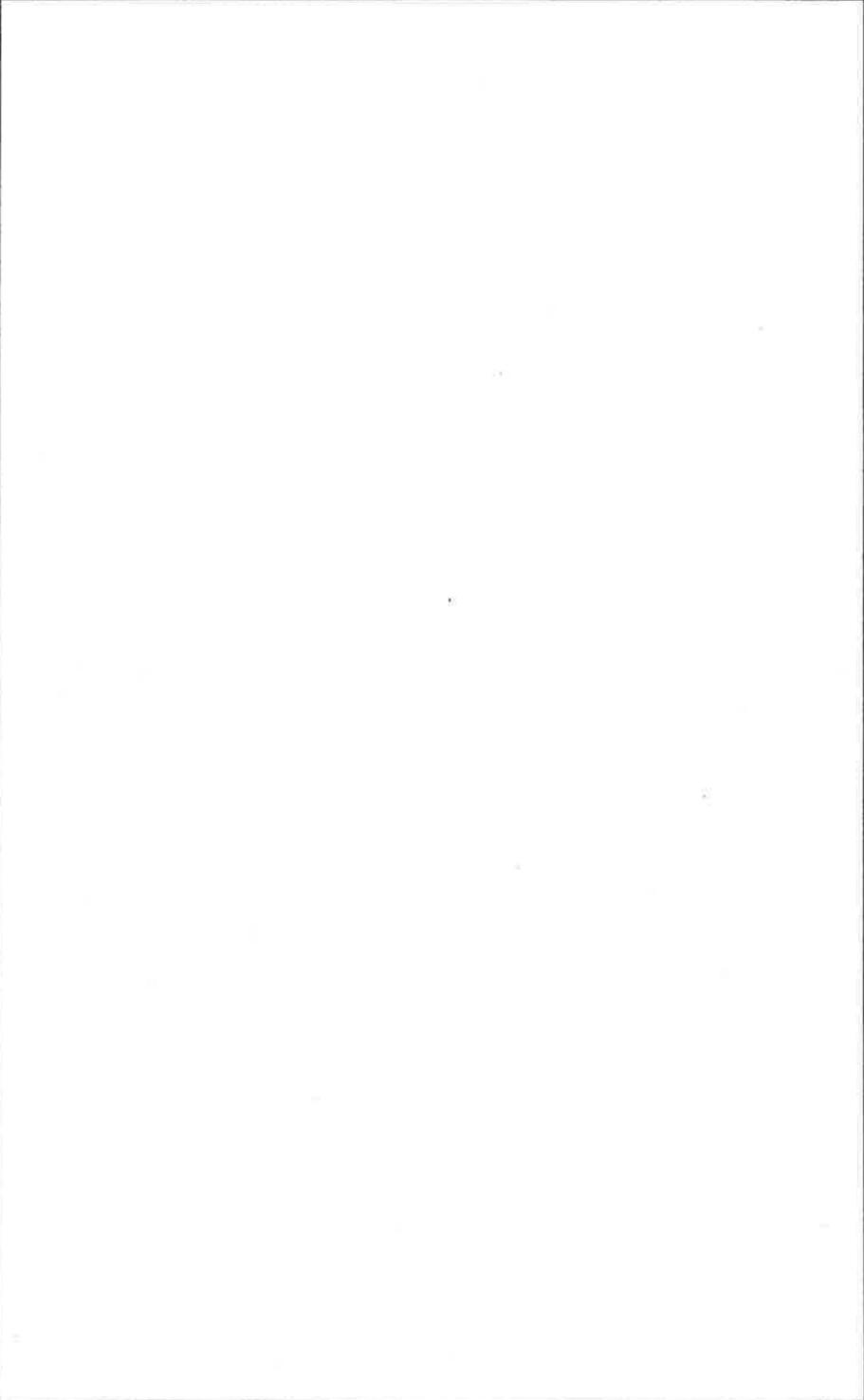
Waste disposal is now a significant industry and is *Big Business* involving trans-national and international corporations. Both urban and industrial waste disposal has been corporatised and, paradoxically, in an era espousing waste reduction, waste volumes have become the indicia for profit in this industry. Waste disposal practices are now on political agendas and openly discussed across Australia, yet the optimal prospect of reducing, reusing and recycling *would-be-waste* totally out of existence appears to be receding in our consumption oriented society.

The future direction of urban waste disposal in Sydney has been foreshadowed in the Wright Reports. The approval of the Bioreactor at Woodlawn is possibly the first of several remote-from-source 21st century 'landfills' for Sydney. In Melbourne the HWCC's

findings herald tighter regulation of prescribed waste disposal and may lead eventually to the exclusion of all waste disposal facilities from the greater Melbourne area. In Adelaide the policy vacuum relative to waste disposal, evident from the 1960's, has been addressed and, arguably, all the critical decisions that will define the disposal of Adelaide's urban waste in the 21st century, are in train. Adelaide, like Sydney, has adopted the remote-from-source landfill solution and this trend will inevitably be reflected in the disposal of Melbourne's waste within the next couple of decades.

Having addressed the Aims of this Research Project it now appears appropriate to close this discussion. And so it is, on the eve of the 21st century, that we enter what might now be termed *the Fifth Epoch of Urban Waste Disposal* in Australia.

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URBAN WASTE DISPOSAL 1788-2000

FOUR EPOCHS OF URBAN WASTE MANAGEMENT IN AUSTRALIA

| Year | Event / Report / Act | Year | Event / Report / Act | Year | Event / Report / Act |
|------|--|---------|--|------|---|
| 1780 | White Settlement | 1788 | NEW SOUTH WALES | | |
| 1790 | | 1795 | General Orders - Bank Stream | | |
| 1800 | | | | | |
| 1810 | | 1813 | Crossing of Blue Mountains | | |
| 1820 | | 1821 | Departure of Governor Macquarie | | |
| 1830 | 1 ST RANDOM UNREGULATED WASTE DISPOSAL | | | | |
| 1840 | Introduction of Municipal Government | 1842 | Sydney Corporation Act | 1842 | Melbourne Incorporation Act |
| 1850 | | 1848 | Sanitary Committee Report | 1848 | Sanitary Committee Report |
| 1860 | | 1851 | City Council dismissed | 1851 | Victoria Independent Colony Select Committee |
| 1870 | | 1852 | City Council reinstated | 1852 | Water & Sewerage |
| 1880 | 2 ND ERA OF INQUIRY AND REGULATION | 1857 | Inquiry into Port Jackson | 1857 | Van Shean Reservoir on Line |
| 1890 | | 1861 | Municipalities Act | 1861 | Report on Sanitary Condition of Melbourne |
| 1900 | Subonic Plague | 1870 | Royal Commission Noxious Trades | 1870 | Royal Commission Noxious Trades |
| 1910 | Federation of Colonies. 1901 Introduction of Destructors, Incinerators | 1875/76 | Pell Report | 1885 | Allen Report |
| 1920 | FIRST WORLD WAR 1914-1918 | 1882 | Royal Commission Noxious Trades | 1890 | Gresswell Report |
| 1930 | 3 RD INCINERATION | 1902 | Moore Park Incinerator | | |
| 1940 | SECOND WORLD WAR 1939-1945 | 1909 | Spencer Street Destructor | 1909 | Halifax Street Destructor |
| 1950 | Banning of Backyard Incinerators | 1925 | Sandringham, Box Hill, Essendon, St. Kilda } Destructors | | |
| 1960 | 4 TH ON LAND DISPOSAL AND WASTE MINIMALISATION | 1932 | Cessation of Sea Dumping | | |
| 1970 | SSC Air Pollution 1969 SSC Water Pollution 1970 Australian Env. Council 1971 | 1954/55 | Fraser Report | 1954 | Closure of Halifax Street Wingfield Controlled Tipping |
| 1980 | | 1961 | Clean Air Act | 1962 | Metropolitan Development Plan |
| 1990 | Joint Task force on Intractable Waste 1998 | 1970 | Barton Report | 1963 | Health Act - Clean Air Amendment |
| 2000 | ANZECC Initiation Waste Reduction 1992 Approval of Remote-from-Source Landfills Adelaide and Sydney | 1979 | Environmental Planning and Ass. Act | 1975 | Wilson Report |
| | | 1978 | Environmental Effects Act | 1978 | Waste Management Commission |
| | | 1992 | Joint Select Committee Report Waste Management Act | 1982 | Crooks Report |
| | | 1999 | Wright Report | 1993 | Sinclair Knight Report |
| | | 2000 | Wood Lawn Approval | 1995 | Integrated Waste Management Steering Comm. Report |
| | | | | 1997 | Malaga Inkerman Approval |
| | | | | 1998 | Waste Management Infrastructure Steering Committee Report |
| | | | | 1999 | Waste Disposal (Landfill) Report |

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