A PLAN DEVELOPMENT PROCESS

for

SOLID AND HAZARDOUS WASTE MANAGEMENT

in the

MANAWATU-WANGANUI REGION

A thesis presented in partial fulfilment
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Abstract

This thesis uses elements of the strategic and integrated planning process models to develop a planning process for solid and hazardous waste management for use by a New Zealand regional council.

The desired plan outcomes are that: solid and hazardous waste are managed in such a way and at such a rate that the effects on the environment are mitigated and remedied and detrimental effects on the environment are minimised. This outcome should achieved at a cost which is socially and economically sustainable by the regional community. The scope of the regional plan will also be restricted/ defined by the roles and mechanisms available to regional councils in New Zealand.

The philosophy for solid and hazardous waste management is dynamic. The information and technology are generally available. However, action to prevent and mitigate the effects of bad waste management practices relies primarily on planned and coordinated behavioural change. Political will is therefore very important. The plan process chosen reflects the clear ends desired by the plan and the uncertainty over the means needed to achieve that end.

Another problem discovered in the course of this research was the lack of integration between planning theory and planning practice. This thesis attempts to bridge that gap by using 'everyday' language.

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GLOSSARY

Cleaner production	the conceptual and procedural approach to production that demands that all phases of the life-cycle of a product or of a process should be addressed with the objective of prevention or minimisation of short and long-term risks to humans and to the environment.
Co-disposal	the disposal of appropriate hazardous wastes by mixing them, in an informed and predetermined manner, with municipal refuse, so as to use the attenuation and biochemical processes operating within a landfill, to reduce the environmental impact from the mixed waste to an insignificant level
Dump	an uncontrolled disposal site where no attention is given to safety or environmental factors.
Hazardous waste	any solid, liquid, semi solid, contained gas (or any combination thereof) waste material which because of its quantity, concentration, or chemical characteristics poses a substantial present or potential danger to human or animal life or to the environment. Such wastes may be reactive, flammable, corrosive, toxic, pathogenic, carcinogenic, mutagenic, bio concentrative, radioactive or persistent in nature
Incineration	incineration is an engineered process which uses controlled flame combustion for the thermal degradation of waste materials. The process is applicable to most organic and/or combustible wastes. It is not generally applicable to the

	treatment of metal-containing wastes.
Intractable wastes	those hazardous wastes for which there are no currently available, environmentally acceptable means of disposal.
Land disposal	the practice of depositing waste on a specific site where it may degrade over time.
Leachate	liquid emanating from a land disposal site that contains dissolved, suspended and/or microbial contaminants from the solid waste.
Mixed tipping	the practice of depositing a range of waste materials, which may include hazardous materials, in an unmanaged and uncontrolled manner.
PCB	Polychlorinated biphenyls; widely used as insulating fluid in the electrical industry, and contaminants of concern because they are toxic, bio-accumulative, and do not readily biodegrade.
PCP	pentaclorophenols; widely used in the timber industry as a antisapstain timber treatment.
Resource recovery	usually involves the recovery of the useful elements of the resource e.g garden waste is made into compost, or energy, via incineration of materials to get heat, or electric power through heat.
Reuse	reuse the item in its existing form without reconstitution or change for the same or another purpose e.g. milk bottles get reused a number of times.

Recycle	reconstitute or reprocess the material to make a similar commodity e.g. broken bottle glass is made back into glass containers again and scrap metal made into ingots.
Toxic substance	any substance producing a harmful effect on living organisms by physical contact, ingestion or inhalation.
Tip	see dump
Waste	unavailable materials for which there is currently or no near future economic demand and for which treatment and/or disposal may be required.

ACRONYMS

AEAM	Adaptive Environmental Assessment Management Technique
EIA	Environmental Impact Assessment
HMIP	Her Majesty's Inspectorate of Pollution
MfE	Ministry for the Environment
MWD	Ministry of Works and Development
OECD	Organisation for Economic and Community Development
PHS	Pollution and Hazardous Substances
SoE	State of the Environment
US EPA	United States Environmental Protection Agency

CHAPTER ONE

1.1 INTRODUCTION

1.1.1 Goal

The goal of this thesis is **'to develop a planning process that culminates in the development of a plan for the management of solid and hazardous waste in a New Zealand Region'.**

1.1.2 Objectives

The objective of this thesis is to develop a planning process to enable a regional council in New Zealand to fulfil its responsibilities under the Resource Management Act 1991 (hereafter referred to as the "RM Act") in developing solid and hazardous waste management policy and a regional solid and hazardous waste management plan. The process designed will be tested for an application in the Manawatu-Wanganui Region.

1.1.3 Reasons

New Zealand regional councils have been given the mandate for hazardous waste management by the RM Act 1991 in Sections 5 and 30.

Section 5 states;

> "(1) The purpose of this Act is to promote the sustainable management of natural and physical resources.
>
> (2) In this Act, "sustainable management" means managing the use, development, and protection of natural and physical resources in a way or at a rate, which enables people and communities to provide for their social, economic and cultural

wellbeing and for their health and safety while -

(a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and

(b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and

(c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.

Section 30(1) (c) states;

"The control of the use of land for the purpose of -

(v) The prevention or mitigation of any adverse effects of the storage, use, disposal and transportation of hazardous substances"

The proposed planning framework will facilitate the management of wastes in an environmentally acceptable way. 85% of New Zealanders (Gold and Webster 1990) are seen to be concerned with waste management. At present, information on the type, amount, and trends in waste production are lacking and waste disposal practices are unacceptable. At present there is no plan or strategy in place that will change current practice to one that is more environmentally and socially acceptable.

The recent changes in local government structure and legislation have produced a climate in which policy and plans can be coherently developed and implemented. For example, in the area that constitutes the Manawatu-Wanganui Region, in the early 1980's, local government structure meant that management of solid and hazardous waste, was carried out by 39 county, borough and city councils. This has been reduced to part or all of ten territorial local authorities. Prior to 1991 the legislation was spread over 44 Acts. While many of those with a minor focus on pollution and hazardous substances still exist, the RM Act provides a major focus and requirement for action.

The Manawatu-Wanganui Region was chosen as a case study to illustrate the problem, and to test and develop the process because it is an example of a typical provincial region in its management of solid and hazardous substances. Therefore, the way issues are managed by Manawatu-Wanganui Regional Council could have application in other provincial regions. The nature of regional council operation enables them to be cooperative, rather than each council developing and executing plans independently. Hence reliance is placed on cooperation between authorities in sharing expertise and experience. This approach makes available a larger pool of knowledge than any one council could afford to have 'in-house'.

This thesis uses currently available knowledge rather than original research. This is because the problems relating to hazardous waste management are not problems due to a lack of information or technology, rather, it is a matter of bridging the gap between knowledge and applied practice.

1.2 METHODOLOGY

To achieve the objectives, a series of elements which form the stepping stones of plan development require analysis. They are:

1. Problem definition and identification, including highlighting information gaps. Information gaps occur both in knowledge of the scale and seriousness of the problem, and in people's perception of the problem.

2. Definition and evaluation of the institutional and legislative context. These have both changed recently and substantially, particularly in the local government context where the plan will be applied.

3. Assessment of the suitability of various theoretical plan types in comparison to the problem, and its legislative and institutional contexts.

4. Evaluation of other approaches to the problem, particularly in the New Zealand regional context.

5. Development of a suitable planning process to address the problem.

6. Development of a Regional Plan.

These elements provide the basis for the chapters of this thesis and the conclusions in each indicate how each element contributes to the design of a process. The chapter structure is therefore as follows:

Chapter Two identifies the parameters of the problem. It defines the terms and management techniques that will be used. It develops the legislative and institutional context. It then identifies the scope and scale of the management problem. (1,2)

Chapter Three is a literature review of planning theory and New Zealand plans. It considers the planning theorists views on procedural planning. It discusses plan type, the politics of planning and considers some elements of plan content. Substantive issues are also considered. It does this for the problem defined in Chapter One, and in relation to the legislation - the RM Act 1991. Finally it looks at three New Zealand examples of hazardous waste management plans. (3,4)

Chapter Four uses the conclusions reached by chapters two and three to develop a suitable plan process. This incorporates all the legally required elements and the desirable elements from an institutional and pragmatic perspective. Each step of the resulting plan process is explained. (5)

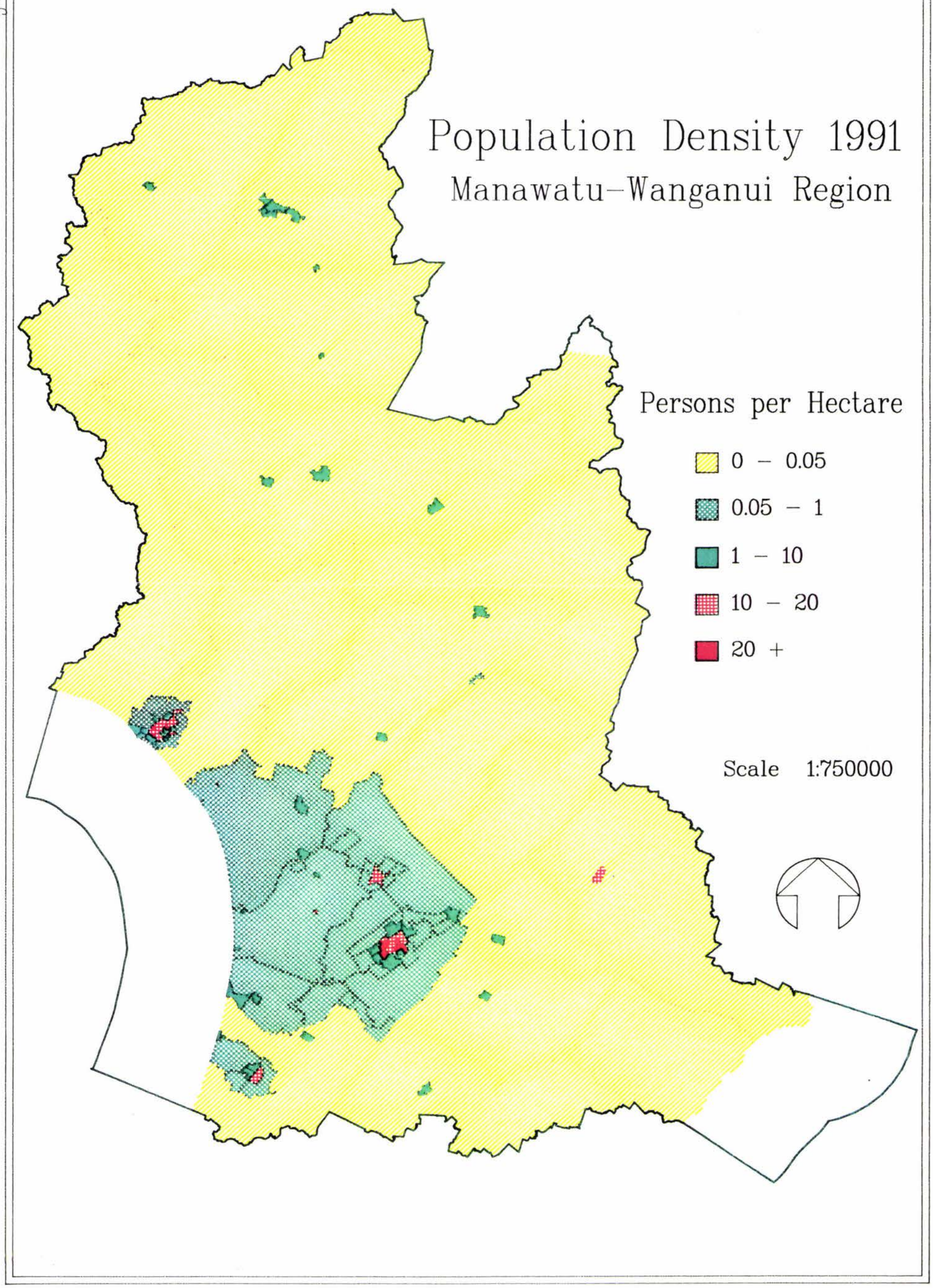
Chapter Five develops the initial stages of the plan and discusses the stages that would follow, depending on the results of the surveys and public participation process. (6)

Chapter Six discusses the conclusions reached in the preceding chapters and

their contribution to planning theory. It also contributes ideas for areas of future research in planning theory.

One conclusion reached by this thesis, is that communication between planning theorists and planning practitioners is not always occurring. To reduce this problem, the use of esoteric and 'jargon' terms in this thesis has been kept to a minimum.

Figure 1


Population Density 1991
Manawatu-Wanganui Region
Persons per Hectare
0 - 0.05
0.05 - 1
1 - 10
10 - 20
20 +
Scale 1:750000