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THE ALTERNATIVE USES OF DISUSED DAIRY FACTORIES
IN TARANAKI

A thesis presented in partial fulfilment of the
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ABSTRACT

Small local dairy factories have long been a part of New Zealand's dairying heritage. No longer profitable in their original use, subsequent redundancy and abandonment has seen the appearance of the "disused dairy factory" in the rural landscape.

In disuse these buildings find their greatest asset for potential reuse. As existing capital stock, these disused dairy factories manifest potential opportunities for enterprises other than dairying, to establish alternative uses.

As a product of the past, the phenomenon of dairy factory reuse represents a change in use to meet the demands of the present. The extent to which this has been achieved, and how this pattern can be explained, evidences the interaction of past and present forces in effecting a potential future for these buildings.

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INTRODUCTION

Studies which focus on various aspects of dairy factories in the New Zealand dairy industry are not new. The phenomenon in which disused dairy factories are reused, however, is not so well documented. This thesis attempts to bring this phenomenon, the reuse of disused dairy factories, to the research arena by describing, accounting for and working towards an explanation of the reuse of disused dairy factories. This thesis represents the first stage in evaluating the question of reuse.

Three major reasons contribute to the importance of this study. Widespread changes have occurred in the dairy landscape. No longer are rural areas characterised by numerous small dairy factories each serving its own highly localised supply area. With improved technology, both in mechanised methods of manufacture and transportation, the ever-present drive for maximum economic efficiency saw the introduction of tanker collection in the 1950s herald the era of rationalisation and consolidation in the dairy industry. Progressive concentration of dairy manufacture at fewer and fewer centralised locations meant numerous small local dairy factories became obsolete. In the wake of these changes, therefore, the phenomenon of the "disused dairy factory" emerges as a relic of a past dairy landscape. The spatial distribution of dairy factory reuse is, thus, a product of the continuing development of the dairy industry.

Redundancy and subsequent closure has not, however, meant an end to the usefulness of these former dairy factories. As existing capital investment, these buildings represent opportunities of potential reuse for activities other than dairying.

The third reason for this study are the important implications for regional development that arise from the phenomenon of dairy factory reuse. Consideration of these implications on rural depopulation and employment are examined in this study.

In attempting this study of dairy factory reuse, an orthodox but limited approach has been adopted. Given the complex nature of

the phenomenon this approach is considered adequate to achieve the objectives of this thesis. The reuse of disused dairy factories is such a unique and individual phenomenon that the application of more complicated models would not be appropriate. As there is a lack of literature or models pertinent to dairy factory reuse, the adoption of a simple approach to initiate research on this subject is justified.

Some explanation of the terms associated with this study is necessary. A "disused dairy factory" refers to a former dairy factory no longer used for dairying purposes. A "reuse", for the purposes of this study, is defined as being any use other than dairying, including storage and vacancy (these are considered reuses on the basis that they often represent "fill-in" uses). This study is concerned with those dairy factories which have closed since 1950, and are currently being reused in 1982.

The area chosen to study the extent and pattern of dairy factory reuse is the Taranaki region. Taranaki exhibits an historical dependence on intensive dairy production and manufacture, therefore dairy factories are a common feature of the rural landscape. Rationalisation of the dairy industry in Taranaki means the number of disused dairy factories available for potential reuse is substantial, thus enabling an adequate survey population to be obtained. By means of a questionnaire survey, data was gathered from a population of reuse activities currently operating in disused dairy factories which have closed since 1950, the significance of 1950 being referred to in heralding the origin of the disused dairy factory.

Given the complex nature of dairy factory reuse, this study is based on a conceptual framework of locational analysis supported by those aspatial factors considered to influence the spatial pattern of this phenomenon.

A number of spatial and aspatial factors are examined in this analysis. Spatial factors refer to those factors in which location is significant (for example, the reasons for locating in the disused dairy factory, and the nature of service linkages between

reuse activities and urban centres). Aspatial factors refer to those factors in which location is not regarded as being important (for example, how respondents perceive their investment in the disused dairy factory and the structural characteristics of the reuse labour force).

All spatial distributions represent the interaction of both spatial and aspatial factors. The phenomenon of dairy factory reuse is a reflection of the interaction of many interdependent factors operating in a spatial system. The sum of all these factors equates to the pattern of reuse evident in the disused dairy factories of Taranaki.

1.1 THE ORIGIN OF DISUSED DAIRY FACTORIES

Since the beginning of the 19th century the pattern of location of industry in the world's major industrial regions has changed markedly in response to both economic influences and developments in technology. This change is no better illustrated than by developments in the dairy industry of New Zealand, which have brought about the existence of a new phenomenon - the "disused dairy factory". The disused dairy factory is a relic of the past and a product of the present. The availability of these abandoned buildings for potential reuse is very much dependent on how past and present technologies can be reconciled to ensure a future for them.

Through fundamental changes in the conditions required for economic production and associated developments in transportation technology, the once-efficient spatial pattern of dairy factories established earlier this century has been undermined. The interface of rationalisation within the dairy industry and increasing concentration of plant to create economies of scale, has manifested itself in rural landscapes, once characterised with numerous creameries (i.e. butter factories) and cheese factories, to regions consolidating ultimately to one large company operating one centralised unit at an economically efficient location.

It is these continuing processes of consolidation and rationalisation of processing plant, in the progressive development of the dairy industry, that has left many small dairy factories redundant through company amalgamations and subsequent closure. While the former use value of these disused dairy factories may be nil, this by no means destines these buildings to an unprofitable future - be it measured in economic or social terms. As fixed capital stock, the future of these abandoned buildings lies in their ability to generate potential opportunities for reuse activities, in enterprises other than dairying.

In order to understand the process of historical change and to assess the potential of these now redundant dairy factory buildings, it is useful to ask why they are located where they are. Clearly, historical factors are of paramount importance in explaining the present landscape and are no more evident than in the development of the dairy industry in the region of Taranaki.

Dairy company mergers which have already taken place in Taranaki bring the region very close to centralisation at one location. At present the region is consolidated into three substantial companies, leaving only two independent single-product cheese companies. This is a far cry from the pattern existing 30 years ago, when it was not unusual for there to be a small dairy factory or separation unit at every road intersection.

Those factors operative in structuring the spatial landscape of this dairying region, to effect a pattern of numerous small dairy factories scattered throughout Taranaki, are historically based. The following account of the major determinants in producing the pattern of disused dairy factories evident today in Taranaki, however, does not attempt to be an historical overview of the evolution of the New Zealand dairy industry. Rather, it is a presentation of those factors significant in the origin of "disused dairy factories."

During the earliest periods of dairy farming in New Zealand a basic spatial pattern emerged, with the farm manufacture of milk initially for household requirements. Any surplus to these

requirements enabled the sale of butter and cheese to neighbours or to the local store. Thus, in the tradition of "cottage" industry, based on home production, the rural landscape was characterised by the wide dispersal of small dairy farms throughout an area, each operating on an individual basis. The settlement pattern also became a reflection of the prevailing dairy technology and mode of transportation of the time.

Increased immigration around the 1870s meant labour and settlers were available to stimulate development of more farms, and production rose accordingly. Consequently, the second phase of dairy development was the establishment of a co-operatively owned manufacturing dairy factory between neighbouring farmers to enable these farmers to deal with surplus milk, or the erection of a factory by the local storekeeper, (i.e. a proprietary concern). The general principles adopted by these earliest co-operatives were typical of those which have prevailed in the co-operative companies right through to the present day, with each of the suppliers taking up shares based on the amount of milk to be supplied. With government finance and encouragement the co-operative movement began to grow, at the expense of farm or home manufacture where quality was very difficult to control.

At this stage of the dairy industry's development - factory as against farm manufacture - clearly, the chief determinant in the location of processing plants was the distance and time travel the raw material could tolerate without deteriorating in quality. Milk and cream were carried from farm to factory in steel cans which were loaded on to a farm vehicle and emptied at the factory. The cans had to be taken to the factory as soon as possible after milking, or the addition of warmth from the sun to the fresh milk would sour the produce. There was also a limit to the number of farm vehicles that could assemble at a factory at a given moment in the morning, and the man-handling of cans was a long and arduous process. It was therefore necessary to have a network of factories as close as five mile intervals in the more intensive dairying areas. (Rowlands, 1970, 158).

Given these fundamental factors, while the spatial distribution of farms remained dispersed, the manufacture of dairy products, i.e. butter and cheese, took on a pattern of spatial concentration with processing taking place at the most efficient point at the time - the small local co-operative dairy factory usually located within a five-mile radius of each other. The problems of the friction of distance and the mode of transport in the horse and cart, meant each factory had a very localised area of origin from which it drew its milk supply.

These two factors - the nature of the raw material (i.e. bulky and perishable) and the mode of transportation available - were the main reasons for the multiplicity of manufacturing units that characterised the dairy industry at the turn of the 19th century. This pattern of development would ensure a sizeable population of disused dairy factories for the study of reuse, after their subsequent closure.

The development of refrigeration in the early 1880s was to have a profound effect on the dairy industry. The early exports of butter and cheese that refrigeration facilities enabled, only sought to illuminate the need for greater attention to quality. Lack of uniformity in the finished product was the most serious fault in New Zealand butter during this period.

The industry was learning that it could not succeed if each factory functioned as a separate unit. Organisation and association began to emerge as important steps to future growth and herald the era of the "disused dairy factory". Local control centred on the dairy factory was still important, but no longer adequate for the administrative problems arising from export expansion. Combined know-how and imported technical expertise were essential.

The financing of the earliest dairy factories had been on a co-operative basis from the savings of the settlers. In 1894, just under 40 percent of the total 124 dairy factories were co-operatively owned. (Ward, 1975, 8). This percentage was to rise steadily in succeeding decades. In the earlier years the local storekeeper and business interests had provided not only stores for farm and factory, but also a limited amount of loan

capital for manufacturing equipment. A notable example was the Chinese trader Chew Chong in Taranaki, without mention discussion of the dairy industry would not be complete. His work is well described by Philpott, who knew the man personally. Chew Chong is credited with establishing and developing the Jubilee butter factory in Eltham, the second factory in Taranaki, the first having been established in 1885 in Inglewood as a co-operative (Ward, 1975, 8-9). Chew Chong had the foresight even then to know that if export manufacture of dairy products was to grow, then the factory system of manufacture was the only one with a real future.

Inherent in the development of the dairy industry were the differing landscapes in evidence, depending upon whether cheese or butter was produced. Each landscape has a different spatial distribution of its processing units, which would in time effect the spatial distribution of potential reuse activities. The raw material required for cheese making is whole milk. Given the bulk and perishable nature of the raw material and the means of available transport, the spatial pattern of many small cheese factories very densely located was a rational response to the prevailing factors determining dairy factory location. This was very much the case in Taranaki. A network of cheese factories established along the Skeet Road, between Eltham and Opunake is reknowned for the number of now disused dairy factories that were located by the principles described above.

Therefore those factors operating to determine the location of a dairy factory at the scale of factory manufacture saw the interface of the perishable nature of the product, the given state of manufacturing technology, the nature of the product being manufactured - cheese or butter, (the latter factory system having a much larger milkshed given the reduction of bulk in the raw material requirement of cream as opposed to whole milk) together with the prevailing transportation system.

The advantage of transporting cream instead of the more bulky equivalent in milk was important to the farmer and to the butter factory, as it opened up much wider areas of collection. This

meant that one butter factory could serve a wider collection area than a cheese factory. In spatial terms cheese factories are more densely concentrated than those creameries making up a butter landscape. In terms of potential dairy factory reuse, all these factors would subsequently realise a large number of small disused dairy factories in very close proximity to each other. Each would have the same relative location, although the absolute location of some of them (i.e. location on a main highway as opposed to a minor arterial route) may prove influential in the study of their potential reuse.

1.2 TRANSPORT TECHNOLOGY

It was the advantages of areal concentration in the face of increased pressure from the costs of production that pushed dairy companies into amalgamation, firstly with neighbouring companies while future mergers followed in due course. The major advance in technology which made this scale of operation not only advantageous to suppliers but necessary, was the advent of tanker collection.

The introduction of tanker collection of wholemilk on the structure and organisation of the New Zealand dairy industry has had far-reaching effects. Rowlands (1970, 158) claims that tanker collection heralded "...a new era of consolidation and change in the structure and organisation of co-operative dairy companies in New Zealand". These changes were to bring about the existence of the "disused dairy factory".

Refrigerated milk tankers revolutionised the collection of milk and cream, and increased both the range of collection and the quantities that could be off-loaded at the factory each day. The effect was to open up a new range of possibilities for economies of large scale production, and eventually to bring about the closure of some processing units and the enlargement of others, to create a streamlined and modernised industry. (Rowlands, 1970, 158). Closure would bring loss of function to many dairy factories, hence "disused dairy factories" would become apparent in the rural landscape.

The most obvious advantage of tanker collection is the ease of handling. Tipping and pouring have virtually been eliminated and the raw material is now pumped from the farm vat into the tanker and from the tanker into the holding vats at the factory. The capacity of the tanker has reduced the number of times a vehicle must call at the factory to deliver a given quantity of milk and cream, and, with simplified off-loading procedures, a single factory can take in a much larger quantity of raw material each day. This feature, more than any other, seems directly responsible for the enlargement of processing units and the closure of so many small dairy factories.

The effect of transportation improvement is generally to allow more locational choice for any given economic activity. But while space becomes more accessible with improvements in transportation, those materials being transported are able to be transferred longer distances. This means increased use of transportation, which must be acknowledged as an increasing cost factor in the acquisition process. Improved technology therefore has inherent costs in itself. The cost of transporting milk to the dairy factory has changed from the physical distance cost incurred by the farmer to the local factory, to a functional or dollar distance cost to the company incurred within the spatial margins of its tanker collection area. Thus, with the cost of transfer of the raw material becoming the dairy factory's responsibility, rationalisation of uneconomic tanker collection routes would inevitably give rise to a number of dairy factories, whose disuse would make them potentially available for alternative uses.

The rate of adoption of bulk milk collection thus depended largely on individual suppliers within a company. The cost of change over was initially large for the farmer. For the factory, however, the initial capital outlay was even more substantial and proved to be particularly harsh on small single unit companies with tanker units and farm vats being the main items of cost for the company. Until tanker collection schemes were universal the costs were met by the individual farmers, but once the majority of suppliers were on tanker collection, all costs were met by the

company as a whole.

Undoubtedly tanker collection of milk, which became more rapidly adopted during the 1950s and more especially the 1960s, has had the most far-reaching influence on the development and the location of the dairy factory in the post-war era. Tanker collection overcame the distance from farm to factory which had restricted the location of dairy factories since the development of the factory system. With tankers requiring a minimum milkshed it followed that bigger manufacturing units were necessary to handle the increased volume. This could most efficiently be performed by the establishment of larger size manufacturing units than in the past. The expense of more up-to-date equipment required a certain minimum volume of milk daily which could only be obtained by tanker collection, so making the areal concentration of dairy production crucial. Clearly, the larger the prevalent size of plant at the dairy factory, the larger the milkshed it could serve and the fewer factories that were necessary. The path, however, heralding the era of tanker collection was not without consequence. The small dairy factory became redundant and its local community made unviable, economically and socially. The "disused dairy factory" was becoming a reality.

Mechanisation of factory processes enabled an overall efficiency in operations, achieved in a cause and effect relationship to result in the ultimate disuse of many smaller manufacturing units.

"Tankers enabled the efficient working of a very large supply zone to derive the large through put of milk required to gain the greatest return on the capital costs involved in mechanisation. Unless efficiency of factory operation was stepped up, much of the benefit of tanker collection would be lost...: The installation of refrigerated vats on suppliers farms enabled milk to be collected over a much longer period of the day and stored overnight at the factory in large, chilled silos; consolidation and amalgamation attained a supply sufficient for this scheme." (Astbury, 1969, 78)

Thus, with increasing mechanisation of manufacture, collection and long distance transport, it became necessary for these companies, having inherited a large number of small localised factories, to close some of these down and concentrate manufacture in larger units. After 1956 this trend, coinciding with the adoption of tanker collection, was fairly rapid and was a feature of the larger companies with numerous branch companies. This period, therefore, produced the majority of redundant dairy factories potentially available for reuse.

The transformation of the collection systems heralded by the introduction of tanker collection, thus provided the main opportunity for companies to review the extent and rationality of their supply areas. This was to have direct significance for this research, in that only the larger factories or those above a minimum threshold could implement tanker collection, which indicated the need for companies to rationalise their operations. This programme of rationalisation saw numerous small dairy factories lose their original use but at the same time enhance the possibility for the diverse reuse of these buildings. In many cases under-capitalised companies found they were unable to meet the costs of new plant, which made amalgamation inevitable. Amalgamations generally followed the same trend. It was usually found, that while some plants had surplus capacity, other factories were over-supplied and faced heavy capital expenditure in the future. A merger in this situation allowed a rationalisation of the pattern of supply and capacity, with a single company being able to operate a range of plants without unnecessary duplication of facilities.

The idea of amalgamation and its benefits were certainly attractive possibilities to dairy companies with the adoption of tanker collection. Many dairy companies did, however, approach the concept of amalgamation with caution due to the marked local parochialism characteristically surrounding the small dairy factory, and the traditional conservatism of the farming population. Old rivalries and hostilities, and a general unwillingness on the part of directors to relinquish authority seem likely to have been contributing factors.

Amalgamation was, however, essential to meet the challenge of product diversification. For the consolidated companies the advantages were considerable, enabling a more realistic approach to the factors of organisation and cost, as a means of lessening the serious marketing problems affecting the industry. Major savings in company operation costs and overheads were realised in the closure of the small dairy factories. These savings related to all facets of company organisation - plant, equipment, administration, managerial, staff, land and building costs - which do not increase proportionately to increased size. Consolidation was seen as a saving to the industry, as economies of scale are found in the size of the manufacturing unit rather than the size of the company. The inter-company conflict and local parochialism, in addition to the limiting influences of the nature of the product and transport technology (which saw the establishment of numerous dairy factories) were responsible for effecting the number of "disused dairy factories" that rationalisation and subsequent closure were making available for potential reuse. The first factories to close were the small branch factories. Improved processing technology and amalgamation have subsequently been effective in closing all but six of the dairy factories in the chosen study area of Taranaki.

The dairy industry, like all other economic activities is controlled by the strong influence of market forces. With dairy processing technology having made significant advancements the widening difference in payout between that for whole milk and cream, as non-fat solids were utilised more fully, forced many smaller companies into economically unviable positions. For tanker collection to be economic it required a minimum scale of plant for the manufacture of casein and milk powder, which for many small butter factories was unobtainable. Amalgamation of companies improved manufacturing facilities, and led to better payouts. Small disused dairy factories were to become commonplace in the New Zealand rural landscape.

A further effect, therefore, of tanker collection was the diversification and greater flexibility in manufacture it allowed. With a minimum of difficulty and cost, companies were able to move

milk into such products yielding the best returns. Inter-company diversion of milk, especially during the off-peak periods when supply was limited, was now able to be manufactured more efficiently by concentration at one plant. For those companies not manufacturing more than one product, the perceived advantages of being able to do so also influenced amalgamation.

Diversification of product and the ability to broaden the scope of manufacture, especially with changing market and changing market demands, was a tremendous asset afforded by amalgamation to the dairy industry. In this way, production could be diverted with a minimum of disruption to cheese, butter, casein or milk powders depending on that product most likely to produce the best overall returns. In this sense, then, amalgamation yielded the dairy company far more market orientation in its production than had ever before been achieved, which made the dairy companies more viable economic forces with increased bargaining power. Thus, with the unpredictability of market demands making the small one-product processing unit completely outmoded, closure was imminent for all but a few of the larger dairy factories.

The consequences of all these factors then, was the ultimate disuse of former highly localised dairy factories, sacrificed for economic efficiency in the New Zealand dairy industry. With the availability of these dairy factories for potential reuse activities, the origin of the phenomenon - "the reuse of disused dairy factories" - is now evident.

The spatial pattern of dairy factory abandonment saw those small dairy factories located in the more peripheral and isolated areas close first. This was the case for those dairy factories located east of the Hawera-New Plymouth State Highway. For those dairy companies in central Southern Taranaki the spatial pattern of abandonment saw those dairy factories situated around the base of Mt Egmont close first, and gradually concentrate dairy manufacture at one or two central locations, such as Kaponga. Relative isolation around the west coast, saw many of the inland dairy factories close soon after tanker collection was introduced.

However, the strong parochialism of the locals has meant the continuing operation of an independent company in this area.

A number of aspatial consequences were also associated with development of the spatial distribution of dairy factories. These factors, while not accounting for the origin of the disused dairy factory, do indicate the consequences of dairy factory closure, and the important implications that potential reuse of these buildings offer small rural communities.

At the end of World War II, the shortage of labour which had affected the dairy industry continued to be a pressing problem and led to mechanisation. The problem of the shortage of labour was to have much greater long term significance than was immediately thought. During the war period this was directly attributable to large numbers of men serving in the armed forces. The situation did not improve after the war, as throughout New Zealand there was a large demand for labour with higher wages and better opportunities offered in urban industries, as against the more isolated rural dairy factories. The situation was aggravated by the large number of small closely located factories, competing among themselves for labour.

The role of the dairy factory in the community was very much its "raison d'etre". The factory manager's house and staff quarters, in many cases, initiated the first settlements in these rural areas. In an attempt to overcome the problem of labour shortages, one of the schemes implemented was the provision of suitable housing for dairy factory staff. By 1950 many companies were operating housing programmes aimed at obtaining and retraining skilled married assistants. In 1955, for example, the Eltham Dairy Company owned a total of 54 houses located in close proximity to its factories (Astbury, 1969, 64). Thus, the existence of the dairy factory has always had certain social implications. Dairy factory reuse continues these in the form of employment implications.

The importance of the dairy factory to the small rural community can be summed up by the following example.

It is proposed that the Midhurst milk powder unit may be involved in the currently pending Taranaki merger with Kiwi. The manager, however, is determined the factory should stay. He says it is part of the fabric of the community and district, which was the prime reason behind the decision in the mid-1970s to rebuild on the old Midhurst butter and casein site. Presently, it provides employment for 35 staff and 32 live locally.

Midhurst is a small town 7 km north of Stratford on the road to Inglewood. At one time it had 27 shops. Today it has a post office, garage, dairy, hotel, panelbeaters, carrier and hairdresser. If the dairy factory closed, it would take much of the custom that supports these businesses.

This is the situation that faced all the small communities associated with the disused dairy factories of this study. Each community witnessed the closure of its dairy factory, and the local community slowly stagnate. The effect of reuse activities establishing their operations in a disused dairy factory in such a community, has important implications for rural depopulation.

The interaction of all of the factors outlined have been influential in the origin of the disused dairy factory. Obsolete in its former capacity as a dairy factory, the disused dairy factory represents existing capital stock potentially available for alternative uses. As such, an investigation into the value of these buildings as manifest in their potential reuse, and any implications arising from reuse, is the objective of this study.

A CONCEPTUAL AND METHODOLOGICAL FRAMEWORK FOR
STUDYING DAIRY FACTORY REUSE

The processes of rationalisation and increasing concentration of larger dairy processing units at fewer locations, are very significant in the origin of reuse activities in Taranaki. These trends are directly responsible for producing the phenomenon known as the "disused dairy factory", by the amalgamation and closure of many small dairy processing units, in the face of increasing economies of scale and the increasing cost of machinery for the dairy industry. Thus, this study is based on the premise that these "disused dairy factories", scattered over the Taranaki landscape, exist as potential sites for REUSE activities (i.e. alternative uses other than dairying).

The fact that these dairy factory buildings are present in the landscape indicates there is certain potential for reuse of the buildings, because of their availability. The attraction of reuse activities is thought to be related in some way to the situation, site and construction of these abandoned dairy factories. This study is concerned with how and to what extent this potential has been utilised by reuse activities, currently operating in the disused dairy factories of Taranaki.

Three major questions are considered in this study. These are:

- (1) what has happened to the abandoned dairy factory buildings;
- (2) how can the pattern of reuse be accounted for; and
- (3) what are some of the implications of these reuse activities.

While literature specifically relating to the reuse of disused dairy factories is not vast, there is, however, a short article by Nils Lewan (1972, 79-84) entitled "Second-hand Use of Rural Buildings", which deserves some comment, more because of its inadequacies in dealing with the subject than anything very meritorious in its findings. Lewan's article, published in the *Geographic Annaler*, sets forth a rather superficial attempt at

analysing the reuse of rural buildings in two Swedish provinces. Lewan analyses the new functions of these buildings and tries to account for their reuse. He notes the importance of distance from the provincial capital or town, concluding that in his study area, there is a good chance for abandoned buildings to develop new functions if they are in reasonably close proximity to a large centre. A reasonable price and sufficient size, Lewan also finds, to be important in influencing the second-hand use of rural buildings in Sweden.

The prerequisites he employs in his study are, however, far too restrictive for this study. For example, one of Lewan's prerequisites requires the abandoned dairy factories to be "of possible industrial use" (Lewan, 1972, 80). In view of this study, if reuse was only to be defined in terms of "industrial use", there would probably not be an adequate population of disused dairy factories in Taranaki to survey.

Given the inapplicability of Lewan's frame of analysis for this research, it is necessary to establish criteria in order to study the three objectives of the theoretical framework. It is important that the criteria allow a broad spectrum of spatial locations to be covered in the survey population as well as the inclusion of as much variety of reuse as possible.

The following criteria are seen to fulfil this objective:

- (1) That the abandoned dairy factories are located in the region designated as Taranaki by the study.
- (2) That the dairy factory should have been abandoned since 1950.
- (3) That only creameries (i.e. butter factories) and cheese factories are considered as "dairy factories" for the purposes of this study.
- (4) That these abandoned dairy factories are no longer used as dairy processing units, and are therefore available for potential reuse by an alternative activity.

- (5) That the reuse activity operating in the abandoned or disused dairy factory may be any activity or enterprise other than that associated with dairying purposes.
- (6) That the reuse activity referred to, is the current reuse activity located in the disused dairy factory as at September-October 1982.

Having defined the above criteria, this study attempts to address the three major questions within the following frame of analysis.

2.1 FRAME OF ANALYSIS

1 The Pattern of Dairy Factory Reuse

The description of reuse involves answering the following questions:

- (a) To what extent are the disused dairy factories used?
- (b) What are the current reuse activities operating in these disused dairy factories?
- (c) Do these disused dairy factories have a history of reuse?
- (d) How established are the reuse activities currently operating in the disused dairy factory premises?
- (e) Where do the reuse activities originate? Are they representative of "local enterprise" or corporate development?
- (f) What is the magnitude of the reuse activities operating in the disused dairy factories of the region?

Some explanation of the above sub-questions is necessary. Describing the present pattern of reuse places the phenomenon in perspective. While there may well be disused dairy factories scattered over the Taranaki landscape, assessment of how many of these disused dairy factories are being used by reuse activi-

ties and the type of reuse, indicates the extent of the phenomenon.

Some knowledge of past reuse is important, inasmuch as the influence on the potential for reuse of the disused dairy factory, may in part be due to the building's history of reuse. The number of reuses the disused dairy factory has had, the fact that some disused dairy factories may have had more reuses than others, and the type of these reuses are some avenues of investigation aiding in describing the pattern of reuse evident today.

An idea of the length of time the current reuse activity has been operating as an enterprise, and how long the reuse activity has been operating in the disused dairy factory, may aid in indicating the type and nature of the reuse activity. Some may well be firmly established enterprises seeking room for expansion, while others may be more short-term ventures such as the growing of mushrooms.

Reference to the origin of the reuse activity also requires explanation. The origin of the reuse activity refers to the location from which the reuse activity was initiated. For example, a local transport firm bought a disused dairy factory to use it as a bulk store for fertiliser, in which case this reuse activity is local in origin. Whereas Mr N Wheeler and his wife, who established the Pacific Natural Gut Strings Company in the disused factory at Kaupokonui, came from overseas. Given this, the reuse of the Kaupokonui Dairy Factory cannot be attributed to "local" enterprise. Any further reference to "local" or "local enterprise" refers, henceforth, to the origin of the respondents responsible for establishing the reuse activity, having lived in close proximity to the disused dairy factory they now occupy.

How many of the reuse activities have developed from small scale backyard interests may have implications for the establishment of future local enterprises. The relative importance of regional or national companies moving into the Taranaki region, raises the issue of the immediate effects of potential investment in a re-

use activity located in a disused dairy factory, and the positive spin-off effects such enterprises could have for these rural areas. This avenue of research is examined in considering the magnitude of the reuse activity located in the disused dairy factory. The magnitude of the reuse activity refers to the ownership status of the reuse activity operating in the disused dairy factory. The reuse activity could be a family firm or a branch of a nation-wide activity.

Having described the pattern of dairy factory reuse in Taranaki, this study now attempts to account for the pattern of reuse activity which has emerged.

2 Accounting for the Pattern of Reuse Activities in the Abandoned Dairy Factories

In attempting to answer this question it is important to examine carefully both the spatial and aspatial influences on the decision of reuse activities to locate in disused dairy factories in Taranaki. The spatial influences refer to those factors directly attributing to the patterns of reuse activities observed in the Taranaki landscape. For example, the location of the disused dairy factory, its structure and design, its accessibility to markets and service centres may be spatial influences on reuse in some capacity.

The aspatial factors are those social, psychological, cultural, technological and economic factors which may help determine the nature and extent of the reuse activity in the disused dairy factories. As these factors may be spatially differentiated they are therefore indirectly geographic. For example, the reuse activity's source of funds, and the characteristics of the labour supply employed by the reuse activity (i.e. age, sex)

(i) Spatial Factors

These were thought to involve:

- (a) What reasons exist for the potential reuse of the abandoned dairy factories?

- (b) Is there any commonality between the reuse activities choosing to locate in the abandoned dairy factories?
- (c) Do the reuse activities share anything in common with the original use of the disused dairy factories?
- (d) What is the nature of linkage of reuse activities with centres of population concentration? (i.e. service centres).
- (e) Were other locations considered in the reuse activity's location decision?
- (f) What are the disadvantages or limitations experienced by reuse activities in locating in abandoned dairy factories?
- (g) How significant is the location of relative factors of production in the decision of reuse activities to locate in disused dairy factories? (i.e. considerations of raw materials, transport cost, market demand and labour supply.)

The spatial factors will be examined first. The major reasons attributing to the potential reuse of the dairy factory, endeavours to look at two differing scales of reason why the disused dairy factory could be potentially functional for a reuse activity:

- (1) Regional Level - the reasons for the respondent choosing to locate the reuse activity in the Taranaki region?
- (2) Site Location - the special advantages of the particular choice of site by the respondent (i.e. a disused dairy factory)
 - the existence of an established building
 - the size, shape and structure of the building

- particular design features (e.g. solid foundation, concrete floor)

Examining any shared characteristics between the reuse activities located in the disused dairy factories may well indicate some commonality in the location decision of these enterprises. For example, those reuse activities engaged in engineering enterprises may share significant location factors. There may be some indication of a predominance of certain types of reuse activities for particular locations. This leads onto the question of common grounds of assessment with the original use of the building as a dairy factory. In part, this can be answered by comparing the reasons of location for the reuse activity with those factors determining the location of a dairy factory, in addition to looking at the contribution of the reuse activity to the local community, which will be analysed in terms of the employment opportunities it offers by its presence.

The linkage of the reuse activity to centres of population concentration examines how far afield the service spin-off effects of the reuse activity are felt. A local agency of a bank may be able to service any requirement connected with the reuse activity's operations. Some respondents may, however, prefer to direct their reuse activities servicing needs to a major centre of economic activity in Taranaki, i.e. New Plymouth. The kind of postal facilities utilised may also indicate the influence of local or more distant allegiances on the part of the reuse activities. The size and function of those chosen centres could be important in understanding the pattern of reuse activity in the abandoned dairy factories of the region.

Analysing whether or not other locations were considered by the reuse activity, could well indicate some measure of why a disused dairy factory should prove to be the final choice of location for the enterprise.

No further explanation of what is attempted in analysing the disadvantages and limitations experienced by the reuse activities in locating in disused dairy factories is necessary,

except that this analysis is researched at three scales of space: the region, the specific site location, and that of the building itself.

The significance of the location of the factors of production of the current enterprise, operated by the reuse activity from the disused dairy factory, may well account for why certain types of reuse utilise these abandoned buildings as opposed to others, and give some indication of where the beneficial effects of the reuse activities are being directed; both economically and socially socially.

(ii) Aspatial Factors

The following questions are involved in this analysis:

- (a) How did the reuse activity know of the dairy factory's availability for sale? (i.e. what was the nature of the information search?)
- (b) Were there any difficulties in purchase procedures encountered by reuse activities in procuring the disused dairy factories?
- (c) How do the respondents perceive the investment made in the disused dairy factory premises?
- (d) What are the major sources of capital utilised by the respondents in establishing their enterprises in the abandoned dairy factories?
- (e) What are the structural characteristics of the labour supply employed by the reuse activities operating in the disused dairy factories?

The aspatial factors may well contribute to the pattern of reuse activities in disused dairy factories. How the knowledge of the dairy factory's availability for sale was obtained yields some explanatory power as to the search behaviour of the respondent. Knowledge of the dairy factory's availability for sale may have

been a matter of direct local knowledge. In this case, it may purely have been a case of someone driving around the area and looking for a suitable site or building in which to establish an enterprise. The significance of such search behaviour could be in the choice of area where the respondent chose to search. For example, the search area may have been close to the respondent's residence, or potential market opportunities may have been foreseen in the area.

Knowledge of the dairy factory's availability for sale could have simply been a chance phenomenon whereby the reuse activity heard indirectly through a friend or acquaintance. This may indicate an information network of secondary sources having prior knowledge of an activity or enterprise seeking a location or building in which to establish. In so doing these secondary sources enable the reuse activity to overcome the frictional effects of geographical space. This may indicate that some suggestion of potential reuse activities has already been made by people desiring to establish them. The problem of finding a suitable location or building may be the only major obstacle in the way of realising the establishment of such an activity.

An information search can also be thought of in terms of capitalising on an opportunity when it presents itself. This is likely to be the case, if the owner of the reuse activity lived within the proximity of the abandoned dairy factory premises. How influential the recognised channels of information are becomes apparent in analysing the use made of real estate agents in the purchase of the disused dairy factories.

The nature of any difficulties (if any) in arranging the purchase of the abandoned dairy factory may relate to how and from whom the building was purchased. Where purchase from the Dairy Company directly is concerned, any difficulty in purchasing the building could pertain to the price set by the Dairy Company.

Whether the disused dairy factory was acquired from a private individual, through a lease agreement or by other means, the kinds of difficulty associated with the purchase could include:

- (a) Planning Zone Restrictions (the nature of the reuse activity may not be allowed under the planning zonation of the site, for example, rural as opposed to industrial).
- (b) County Council regulations (i.e., refuse, pollution).
- (c) Objections by residents.
- (d) The price set by the dairy company.
- (e) The raising of finance.

A buyer's perceived idea of how "good a deal" he managed to get on the purchase of the disused dairy factory is important as a subjective assessment of the reuse activity. A buyer who obviously feels he obtained a "good deal" could indicate a certain level of satisfaction with the building and its site location, notwithstanding the fact that this "good deal" in itself, may have been a deciding factor in the location decision. The idea of perception on behalf of the purchaser presupposes some wider knowledge of the nature of the prevailing economic conditions, and the potential of the disused dairy factory in view of the reuse activity proposed for it.

This could also be indicative of the level of satisfaction in the investment made, and the return envisaged or perhaps already realised, by the operation of the reuse activity. Researching the motivation behind the establishment of the reuse activity, that is, the prime objective of the enterprise, may aid in understanding the purpose of the investment made in purchasing a disused dairy factory.

The objective may be to make a profit. If so, this may indicate interest in obtaining quick returns on the investment made in the purchase of the disused dairy factory and the costs incurred in establishing the reuse activity. Growth and profit in the longer term are other possibilities. Maintaining the enterprise at a survival level could be a consequence of the prevailing economic climate rather than the objective of the owner of the reuse activity. The extent to which social aims or personal goals,

as opposed to profit, are objectives of the owners of reuse activities may prove significant. Given these differing objectives the perceived viability of the reuse activity in the dairy factory premises will presumably vary.

Another significant indicator which aids analysis of the current economic viability of the reuse activity is consideration of the future stability of the enterprise. Few enterprises can afford not to consider the economics of operating an activity. How the respondent perceives the future of the enterprise (i.e. unstable, stable, very stable) may signify the period of economic life left of the current reuse activity in the disused dairy factory. Whether the reuse activity initially considered its operation in the disused dairy to be a short-term or long-term venture could indicate a measure of how critical the initial investment decision has been. The real test of how the owner of a disused dairy factory perceives his investment in a disused dairy factory, may be seen in researching whether possible future expansion or the setting up of a similar operation elsewhere, could involve consideration of taking over a disused dairy factory again. This may be indicative of how worthwhile operating a reuse activity in a disused dairy factory has been.

Critical to any research investigating on a perception basis is the acknowledgment that what is perceived by one reuse as being worthwhile and a good investment, is very likely not about to satisfy the goals of another reuse locating in a disused dairy factory. The significance of this may be accounted for in the variety and pattern of reuse activities that emerge from analysis of the first major objective.

The important locational effects of fixed capital reflected in the immobility of the dairy factory building has already been discussed in the introduction. The next section deals with the aspatial influence of money capital.

Money capital is a commodity which, like any other commodity, has to be bought. The quantity available for any particular use depends, other things being equal, on the price offered. There are normally many possible outlets for investment capital and any

proposed use must compete for it at around the prevailing price (i.e. the rate of interest), having regard to the security of the investment and the certainty of returns. It is a fact that the attitudes and competence of the lending institution varies (Estall and Buchanan, 1973, 100) and therefore the availability of capital for any given enterprise may, in consequence, vary. Thus, the source of fund capital used to purchase and establish the reuse in the disused dairy factory is significant, as a means of analysing whether a common source of funding for reuse activities exists. This may vary with the size of the reuse activity. Large more established reuse activities may be able to call upon internal sources, but have the necessary influence to procure assistance capital for location in the disused dairy factories. A small enterprise is more likely to have to depend upon private sources. The availability of capital for a reuse enterprise could vary with the location of the disused dairy factory.

Another major source of funding for the establishment of reuse activities in the disused dairy factory premises could be Regional Development Finance. Qualification for regional development funds does not necessarily mean a reuse activity would obtain these funds. The significance of this line of research becomes evident in analysing how critical regional development finance was in the decision of the reuse activity to locate in the dairy factory premises. As Taranaki (Hawera, Eltham, Waimate West, Egmont, Stratford, Inglewood, Taranaki and Clifton Counties) is one of the 11 Regional Development Priority Regions and on a regional basis is entitled to a 15 percent (Department of Trade and Industry, 1982, 11) regional investment allowance, to what extent the reuse activities make use of the regional development funding may have implications for other potential reuse activities (i.e. it may be that reuse activities do not know what assistance they are entitled to through their decision to locate in a disused dairy factory).

Labour supply considerations include much more than just the physical existence of labour, which is covered in the spatial implications of labour. The type of labour employed in the reuse activity is also important; its age and sex structure, and

its level of skills. While large existing concentrations of population are often very attractive to industry, by the same token small rural populations can also prove attractive. Labour attitudes may be more favourable and a lower rate of labour turnover (there being fewer alternative jobs available) could be attractive forces. Thus, the inducement to locate in a disused dairy factory in the Taranaki region may manifest itself in an important way, quite apart from simple wage payments. While rural locations such as Auroa, or Manaia, may mean that a smaller range of labour is available, analysis of the age and sex structure of those employed by dairy factory reuse activities will show which sector of the labour pool these reuses are utilising: young people; male or female. The extent of reuse employment, the sort of skills these reuse activities require, and whether it was necessary to bring anyone from afield in the establishment of the reuse activity are all very important avenues of investigation, in aiding to account for the pattern of reuse activity in the disused dairy factories of the Taranaki region.

Having described the pattern of reuse activity of the disused dairy factories in Taranaki, and endeavoured to account for the pattern which has emerged by examining some of the important spatial and aspatial factors involved, the third major theme explored in this thesis is that of considering some of the implications arising out of the research findings. One of the most important implications, and one which would be most readily felt by the residents of the area, is what the reuse activity's presence has meant in terms of local employment. The types of reuse activities locating in abandoned dairy factories may be one-man operations or have local communities which could benefit through the opportunity for a small number of local people to gain employment. It is possible some types of reuse activities should be given more support to set up similar enterprises in other abandoned dairy factories, because of the employment opportunities they offer and the kind of labour they employ.

Another topical avenue of some concern arising out of this study could well be the implications of dairy factory reuse in the face of rural depopulation. At a time when many rural areas are

stagnating and losing population, the establishment of a new enterprise in the local community could have wider ranging impacts than first imagined. The implications of a dairy factory reuse requiring four employees may illustrate this point. If these employees were males, they may well have families. Each family would require housing and services of various kinds. A location decision by a reuse activity such as this, could do much to rejuvenate the population base required to support a dairy, garage or keep a small rural school open. Paradoxically, if this is the case, the reuse activities choosing to locate in the disused dairy factory may indeed aid in resurrecting the community, of which the dairy factory was once its "raison d'etre".

On the other hand, the implications of a dairy factory reuse activity being a hay-barn or implement shed are also worthwhile considering. While the implications for alleviating the problems associated with rural depopulation may not be so good, utilising the disused factory as a hay-barn or implement shed (or perhaps both) may evidence something of the "opportunity cost" capitalised on by the owner, in order to save future expenditure on similar capital improvements.

The role of the regional development programme in aiding enterprises, such as those reuse activities wanting to locate in abandoned dairy factories (or similar rural buildings) is also worth some thought. The number of the respondents knowing they qualified for assistance or knowing the existence of regional development moneys for the likes of their enterprises, could prove significant. It may be necessary to disseminate more knowledge of what assistance funds are available to enterprises should they decide to embark on a venture such as re-using a disused dairy factory. The implications, such as those outlined above, and any others arising from the data analysis will be interwoven into the study, for more benefit is gained from studying data and their implications concurrently than as two disaggregated parts.

As a means of summarising these three major objectives: the description of reuse activities in the abandoned dairy factories, the possible factors attributing to the pattern of

reuse and some of their associated implications, a case study of one particular dairy factory reuse is examined. This case study, however, could not be considered typical, in that, if analysed as separate identities, each reuse activity deciding to locate in an abandoned dairy factory has its own story to tell, and is therefore atypical.

The value of this case study is its ability to draw together in one example the major objectives of this study.

Having developed the criteria by which this thesis attempts to study the reuse activity in the abandoned dairy factories of Taranaki, and presented the major objectives this study will address in this undertaking, some elaboration of the methodology involved in the research design is required.

2.2 METHODOLOGY

Amalgamation and closure of dairy factories yielding potential opportunities for the location of reuse activities in abandoned dairy factory premises is a New Zealand-wide trend, but there are some areas that have been characterised by more small and medium size dairy factories than other areas. Hence, these are the areas with the greatest potential for reuse of these buildings. It is for this reason that the area of Taranaki was chosen, as sheer numbers of small to medium size dairy factory plants in this area has meant the number of closures of these factories has been substantial, therefore the number of potential abandoned dairy factories available for reuse, is also substantial. In 1950 the number of creameries and cheese factories alone totalled approximately 110 in Taranaki, in comparison with a total of 25 in Manawatu and only 20 in the entire Hawkes' Bay/Gisborne Provinces (Dept of Agric., 1950).

By 1965 these totals were roughly 78, 14, and 10 in Taranaki, Manawatu and the Hawkes' Bay/Gisborne Provinces respectively (Dept of Agric., 1965)

The practicalities involved in undertaking the field work, which forms the basis for this research study, was also a consideration in choosing Taranaki as the study area.

2.3 THE STUDY REGION

Taranaki is defined to be that area encompassing the area north of Hawera bounded by the coast to the west, Mokau in the north and the area east to the ranges from Stratford and Eltham (Figure I).

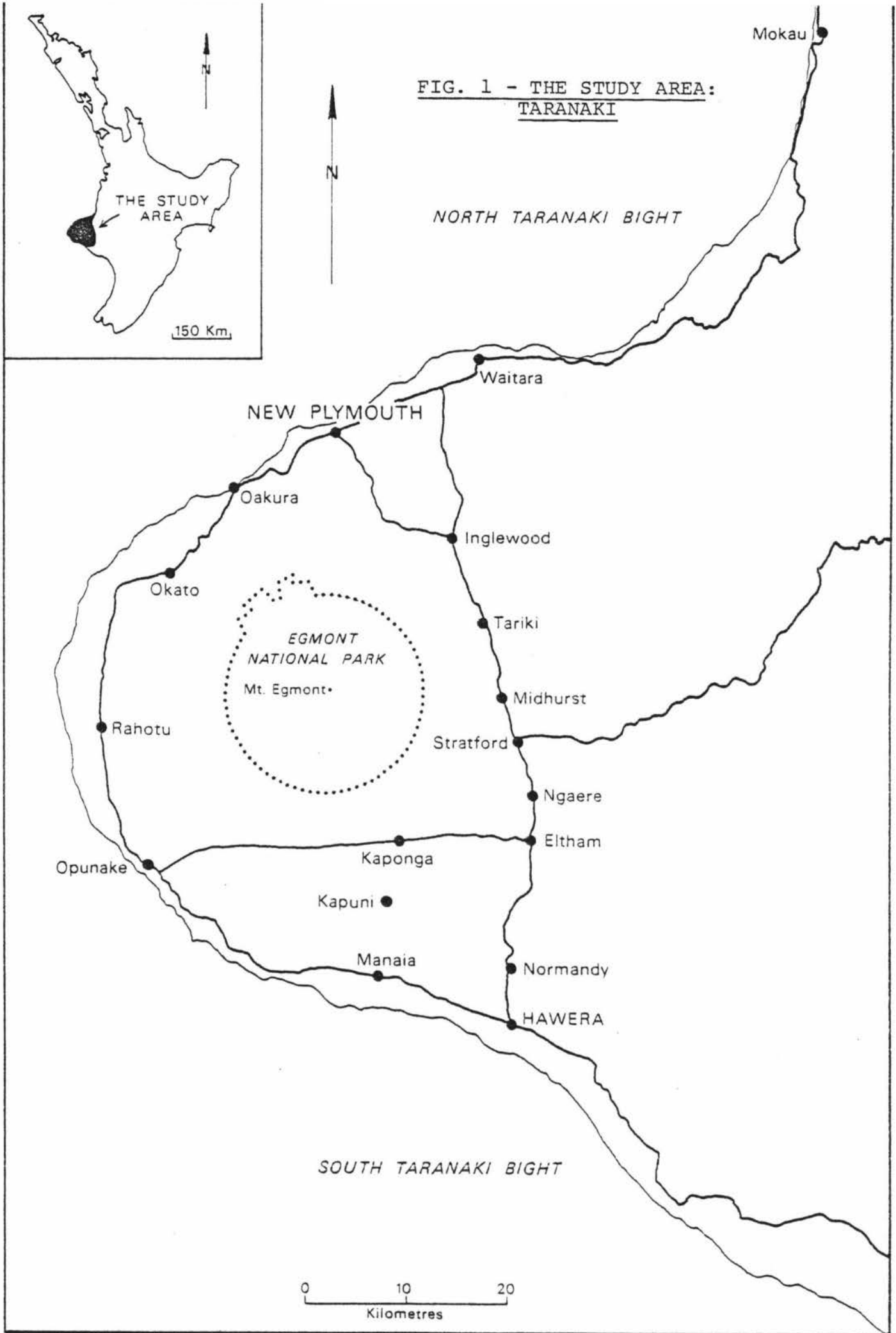
It is within this immediate area that the abandoned dairy factories forming the survey population for reuse activities are located. The county divisions defined as being the Taranaki region by the Department of Statistics, includes such counties as Patea, which is not included in the study area through a lack of resources, both financial and temporal. The Taranaki area (as defined above, and henceforth) is thought to give adequate apatial representation of disused dairy factories. It includes disused dairy factories located along a spatial concentration continuum, from those factories located on main highways, those in close proximity to towns as well as those disused dairy factories located in the more isolated parts of the region. In so doing as much variation in the location of the disused dairy factories as possible is included in the survey population which therefore, does not reflect any subsequent bias in the study of the reuse activities locating in these premises.

The study area is served by State Highway 3, which extends north through Hawera, Eltham, Stratford, Inglewood and New Plymouth, the latter being situated on the coast of the North Taranaki Bight.

Coastal Taranaki is served by State Highway 45, extending west from Hawera and following the South Taranaki Bight through Opunake to reach New Plymouth. The Eltham-Opunake Road links the inland service centre of Eltham with the coastal town of Opunake.

The rail service for the region aligns the main state highway north through the region, and as such has no coastal affiliations. Given that State Highway 1 from Wellington to Auckland and the main trunk railway share basically the same route north through the centre of the North Island, Taranaki may be seen as a somewhat isolated region, in that it is located on a western

FIG. 1 - THE STUDY AREA:
TARANAKI



extremity of the North Island, off the main servicing route. The region is also served by a port at New Plymouth. By this token, Taranaki may be considered a less than optimal location for certain types of industry. For example, market-orientated industries such as car assembly plants or fashion clothing, where access to the major markets is necessary but is somewhat limited if the enterprise is located in Taranaki. Other industrial enterprises may capitalise on the natural raw materials of the region as indeed Kapuni Gas, Shell Oil and the synthetic fuels energy development project at Motunui have done. The effect of transportation cost of both raw materials and final products on the location of reuse activities in the disused dairy factories of Taranaki should give some indication of the relative attractiveness of the region as a whole for reuse activities.

The region of Taranaki is one of the most densely settled rural districts of New Zealand, and it is still an essentially simple economy based upon production of dairy products, with the towns processing these products and providing the service industries for the farming community. Consequently Taranaki has been an area of out-migration for a considerable period of its history, since the early 20's when the dairying industry was finally established. The rural population reached a peak about the beginning of the post-war era. Rates of natural increase have always been high but the economy has never expanded sufficiently to absorb all of that growth. A vigorous and healthy dairy industry Franklin (1978, 260) claims has provided the basis for a vigorous and able migrant population. Very little of this population has ever been retained in the region as a basis for the development of manufacturing (Franklin, 1978, 260). A principal reason for this is that apart from farming Taranaki has had no major resources upon which to build a manufacturing sector.

The manifest bill for the port of New Plymouth reveals the essential simplicity of the regional economy. The goods moving out consist of butter and cheese and other milk products, frozen meat, some timber and now oil from the Kapuni gas condensate. Those coming in consist of fertilisers, motor spirits, oils, cement and grain.

The employment figures of the towns of Taranaki reflect the essentially simple structure of the regional economy. Waitara and Eltham, and once Patea, have very high percentages of their factory workers employed in the freezing works and the milk processing plants; they are largely one industry towns. The other towns also have pastoral processing industries but three-quarters of the employment they offer is in the tertiary sector. Hawera, for instance, has more people employed in community and personal services, 640, and retail trade, 621, than in the whole of manufacturing, 520 (Dept of Stat, 1976 Census) and this is true of Stratford also. Expansion of employment in these sectors is directly related to the population serviced and its levels of demand.

TABLE 2.1: POPULATION TARANAKI 1976, 1981

	<u>1976</u>	<u>1981</u>
New Plymouth City	37 711	36 048
Waitara	6 036	6 012
Inglewood	2 595	2 839
Stratford	5 444	5 518
Eltham	2 334	2 411
Hawera	8 506	8 400
Opunake	1 463	1 637

Source: Dept of Stat. Oct 1982
Monthly Abstract of Statistics

At New Plymouth, however, the region's economy is undergoing a diversification which is in no way related to the resource basis of the region. It is more closely related to developments within the whole national economy. New Plymouth, the regional centre, is experiencing growth in the metal products and engineering and electrical equipment sectors.

This short illustration of the structure of the regional economy of Taranaki shows how the towns of Taranaki may be able to provide the necessary markets, service and employment pool for any

reuse activity exhibiting entrepreneurial talent and deciding to locate in a disused dairy factory in the area. At present according to Franklin (1978, 261) the industrial diversification taking place in Taranaki is a consequence of "corporate policy-making external to the region". The findings of this study could well show that with reuse activities (for example, the manufacture of wooden toys, games and puzzles at Eltham) being established in the disused dairy factories, local entrepreneurial talent is not absent and able to contribute to the diversification of the regional economy.

2.4 THE RESEARCH DESIGN

Having defined the study area of Taranaki, and giving some consideration to the structure of the region in which the reuse activities locating in the disused dairy factories are a part of, it is now appropriate to detail the mechanics of the study.

While the area of Taranaki designated by the map (fig. 1) forms the specific study area, for data purposes the Taranaki Province, as it appears in the Annual List of Creameries published by the Department of Agriculture, was used in conjunction with the spatial limitations imposed by the designated study area. The creamery list established the base point for the data, stating the maximum number of dairy factories which could be part of the survey population. Having those dairy factories (i.e. creameries and cheese factories only) registered as at March 1950 as the maximum number of dairy factories that could potentially be available for reuse, it was a matter of tracing these same dairy factories through the subsequent creamery lists, which are published annually, to such time as the factories were no longer registered as operating dairy processing units. Hence for the purposes of this research the survey population is as stated: dairy factories in Taranaki, registered as at March 1980, which are no longer used for dairying purposes and are potentially available for reuse.

Through this procedure three groups of dairy factories emerged.

Firstly, those dairy factories still operating as dairy processing units; secondly, those dairy factories which are no longer used for dairying purposes and are completely abandoned or dismantled, and thirdly, those dairy factories which are no longer used for dairying purposes and are therefore available for potential reuse. It is this latter group which is the focus of this study.

The significance of choosing 1950 as the base year for the study is based on its importance in the introduction of the tanker collection of wholemilk, which heralded the era of rationalisation and consequent centralisation of the New Zealand Dairy Industry, as outlined in the introduction. Refrigerated milk tankers effectively opened up a new range of possibilities of large scale production and eventually brought about the concentration of dairy processing at a few selected locations, and in so doing the closure of the smaller procession units was inevitable. In 1950 the first tanker was introduced in Waitoa (Rowlands, 1970, 158) while the use of tankers snowballed in the 1960s, and in June 1970 almost all of the dairy companies in New Zealand had adopted tanker collection of milk. 1950, then, was a date preceding the widespread adoption of tanker collection in Taranaki, as elsewhere in New Zealand, and as such was important in yielding the number of dairy factories registered at that time, so as to effectively establish a population of dairy factories that could be disused and be available for reuse.

Having established the population of dairy factories which had been subsequently abandoned by dairy operations, the method chosen to study this population was a survey questionnaire, which was to be administered in person. This was seen to be the best method of gathering data of high quality on a wide range of variables, over a very dispersed population. The feasibility of a postal questionnaire was considered, but decided against on the basis of the poor response rate which surveys of this kind more often than not return. The questionnaire was formulated on the basis of the three major objectives which concern the study, i.e.: description of what has happened to the disused dairy factories, accounting for the pattern of reuse which emerged out

of this and considering some of the implications arising out of the findings. The majority of the questions were closed (i.e. the respondent was asked to make a choice between a number of stated options) in order that some degree of comparability could be obtained in the subsequent analysis. This does, however, presuppose some knowledge on the part of the researcher as to the type of answers that may be given. In order to test the nature of these questions, a pilot study was undertaken.

A pilot study was conducted in the Manawatu in order to test the applicability of the questionnaire to those reuse activities occupying disused dairy factories in this area. This exercise proved useful in that some modifications to the first questionnaire resulted in the survey questionnaire which was used in surveying the disused dairy factories of Taranaki (Appendix A). The pilot study also gave an opportunity to note the time each interview would take approximately, and more importantly to appreciate the interest that those interviewed in conjunction with the reuse activity located in the disused dairy factory surveyed, would have in a study of this kind.

2.5 FIELD PROCEDURE

The field work entailed in this study comprised four weeks research conducted through September and October. The respective owners, or the person in charge of the reuse activity located in the disused dairy factory, was questioned as to the nature of their operations in the premises. This was done on a personal basis which yielded the added advantage of having first-hand knowledge of the reuse activity and it often meant guided tours of the old dairy factory premises in the light of the reuse activity's use of the building, for example, a personal guided tour of the Tawhiti Dairy Factory, just outside Hawera, now preserving an integral part of Southern Taranaki history within its buildings and grounds in its reuse activity as a museum, was one of the highlights of the field work.

Self administration of the questionnaire was to prove highly successful in terms of the response rate attained. In cases where positive evidence of some kind of reuse activity was carried out in the disused dairy factory, but contact was unable to be made with the owner, a questionnaire was left at an appropriate place to be returned by mail. Of nine such instances, seven of the questionnaires were returned, yielding a 77 percent response rate.

2.6 PROBLEMS ASSOCIATED WITH THE RESEARCH DESIGN

The problems encountered in the gathering of the data associated with the field procedure were of two basic kinds. The simple logistics of the exercise meant that much geographical space was covered, in an attempt to gauge the reuse activities of disused dairy factories in Taranaki over the best possible extremes of location, i.e. coastal and inland locations as well as near urban and isolated rural locations. In all, in excess of 2200 miles were travelled. Having located the disused dairy factory, often the person able to answer the questionnaire was not in residence nearby, so there was some breakdown in continuity at times. The aid of topographical maps (courtesy of the Geography Department Map Library, Massey University) made this aspect of the field work much less formidable.

One very important limiting feature of the research design is that information was only obtained for those reuse activities currently located in the disused dairy factory. Former reuse activities and those reuse activities which failed in attempting to locate in a disused dairy factory are ignored. This means that the data refers only to those reuse activities successful in attempting to locate in a disused dairy factory. As such, some of the questions become rather self-fulfilling and meaningless. For example, if the disadvantages had been so limiting then the reuse activity would not be currently operating in the disused dairy factory.

The other kind of problems faced were those arising from the survey questionnaire itself. Some respondents were not willing to respond to what they considered "personal" questions, such as the

gross income earned from the reuse activity in the disused dairy factory. Some categories of reuse activities (for example, the reuse of the disused dairy factory as a hay-barn or implement shed), left many of the questions superfluous to the reuse activity's operations in the building. Valuable information, however, about the disused dairy factory building and its history of reuses was able to be gleaned by generating some rapport with the interviewee, and some very interesting and invaluable dialogues ensued on many occasions.

Any confusion as to the nature of the survey questions was easily dispelled with some explanation, as were any fears as to the confidentiality of the information given by the interviewee.

At the conclusion of four weeks work in the field, the reuse activities of 76 disused dairy factories located in Taranaki had been surveyed, out of the possible 90 dairy factories registered as at March 1950, potentially available for reuse activities. The survey population thus represents 84 percent of the total population.

The survey questionnaires were coded to enable the transferral of the information onto the computer, the use of which would afford greater flexibility in the analysis of the gathered data, as well as saving temporal resources. With the major objectives to be studied in this thesis detailed, they will provide the framework for examining the phenomenon of dairy factory reuse.

CHAPTER III
THE PATTERN OF DAIRY FACTORY REUSE

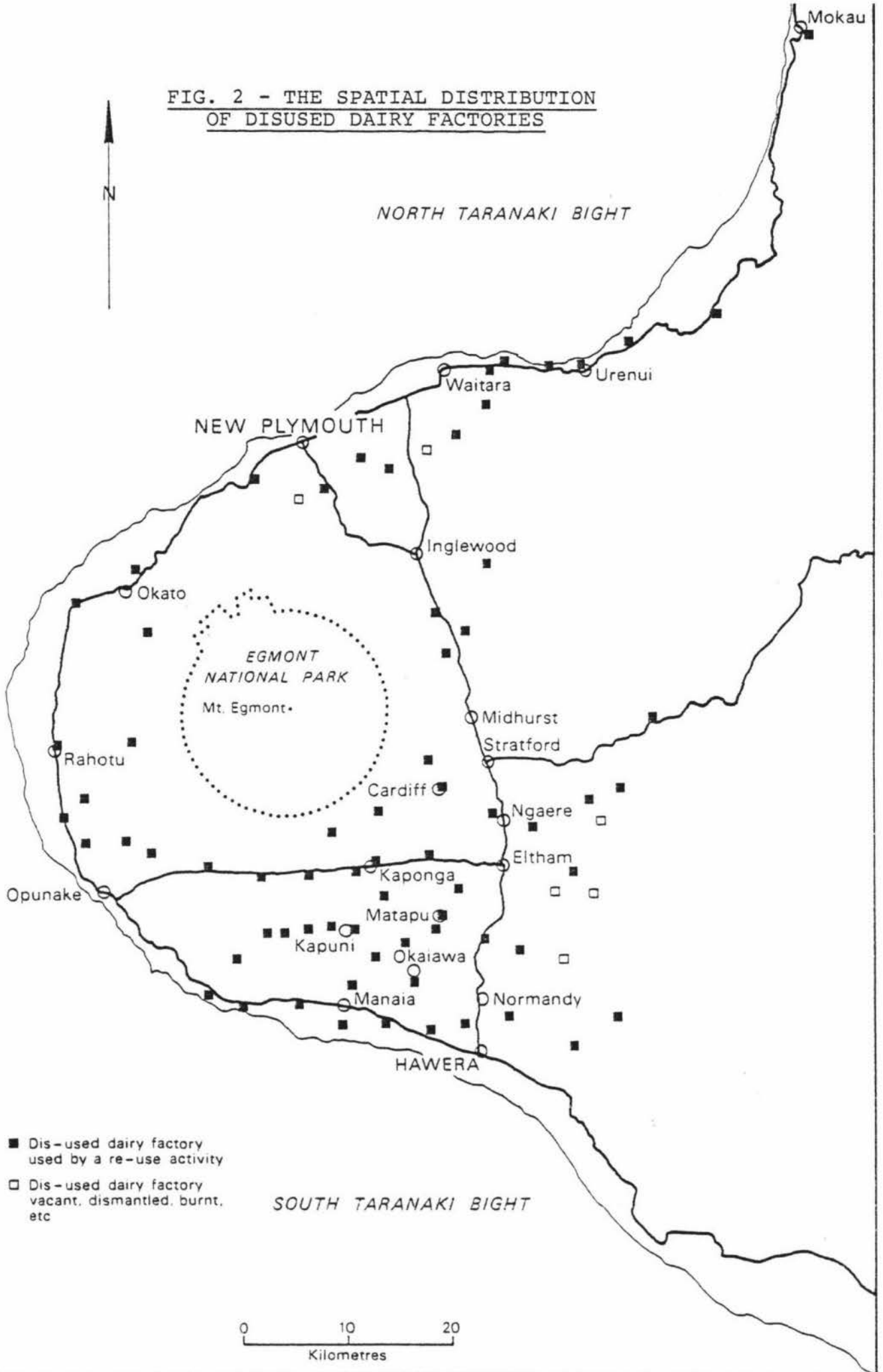
This chapter aims to describe the pattern of dairy factory reuse that has emerged in the study area. As can be seen in Figure 2 the spatial distribution of dairy factory reuse is widespread throughout the region. The most concentrated area of dairy factory reuse is found in central South Taranaki, where the distribution of disused dairy factories verifies the network of small local dairy factories which existed prior to 1950. This spatial distribution of reuse is the result of the geographical inertia of these abandoned dairy factory buildings. These disused dairy factory buildings are generally located on the main highways throughout the study area, or strategically located on road junctions or along arterial routes. The spatial distribution of those dairy factories currently occupied by a reuse activity reflects the multiplicity of disused dairy factory units and the extent to which the phenomenon of reuse exists throughout Taranaki.

TABLE 3.1: STATUS OF DAIRY FACTORIES ABANDONED SINCE 1950
 (Sept-Oct 1982)

Burnt or Pulled Down	6
New Functions	<u>70</u>
Total:	76

Table 3.1 shows the degree to which the abandoned dairy factories have been re-utilised. Out of a total survey population of 76 disused dairy factories, 70 or 92 percent of these abandoned buildings have some kind of reuse activity currently operating or making use of the premises. Given the population of dairy factories registered as at March 1950 in the Annual Creamery List was 90, then of this population those disused dairy factories in current reuse by activities other than dairying represent 77.7 percent. The aforementioned 92 percent is a very high rate of re-usage of these abandoned buildings. This indicates the "usefulness" of these buildings for activities of some kind and near maximum reuse of the existing capital stock manifest in

FIG. 2 - THE SPATIAL DISTRIBUTION
OF DISUSED DAIRY FACTORIES



these disused dairy factories. The fact that out of a possible 76 only six disused dairy factories of the survey population had been burnt or pulled down is a positive comment on the structural soundness of these buildings.

TABLE 3.2: REUSE ACTIVITIES CURRENTLY OPERATING IN DISUSED DAIRY FACTORIES OF TARANAKI

<u>ReUse Activity (1982)</u>	<u>Total</u>	<u>%</u>
Transport services	1	1.4
Engineering (structural, maintenance)	9	12.9
Light manufacturing	7	10.0
Storage	31	44.3
Livestock processing	4	5.7
Retail outlet (frozen goods, crafts)	3	4.3
Concrete type products	1	1.4
Vacant	3	4.3
Other	<u>11</u>	<u>15.7</u>
Total:	70	100.0

All indications so far are that these disused dairy factories could hardly be termed abandoned. Those reuse activities currently operating in the disused dairy factories of Taranaki are shown in Table 3.2. Nine categories of reuse have been identified, and of these it is evident that the majority of the disused dairy factories surveyed had their reuse in storage of some kind. A total of 31 out of the 70 respondents stated storage to be the current use of the premises (i.e. nearly half of the total, 44.3 percent).

The nature of storage ranged from the storage of hay (reuse of the dairy factory as a hay-barn is included in this category), general implement storage, bulk storage of fertiliser through to the use of the disused dairy factory as a bulk-store for local retail outlets. This reuse represents the purchase of the space provided by the disused dairy factory premises. This suggests something about the nature of what is being stored and the cost of space at other locations. In terms of what is being stored in the disused dairy factories, research indicates that these goods

are bulky, space-consuming articles such as hay implements, and fertiliser which require large amounts of space at low cost and in rural locations. Thus, reuse of the disused dairy factories in storage of this kind appears a rational and logical response to the existence of a large established building in the immediate vicinity for the reuse activity's requirements.

In terms of the relative cost of space, rural locations may well be lower in cost than the comparable amount of storage space rented or leased in an urban location. This represents a rational response to the economics of business. The attractiveness of the disused dairy factory for use as storage may well be the logical outcome of the increasing price of space, especially urban space.

The frequency with which the disused dairy factories are used as hay barns, implement sheds, for storing fertiliser or other rural products, evidences a continuing of service to the agricultural sector, which was responsible for existence of the building.

The second most common reuse activity cited is that of "Other". This category includes such reuses as clubrooms, auto-wreckers yards, workshop, venue for art exhibitions, gallery and studio, community centre and a museum. From Table 3.2 it is seen that these various kinds of reuse activities account for 11 out of the 70 disused dairy factories (15.7 percent). In many ways this group of reuse activities is significant. There is particular evidence of community orientated reuse activities choosing to utilise the abandoned dairy factory premises. For example, the reuse of the Kahui Dairy Factory as a community centre and the Hillsborough Dairy factory as the clubrooms for the Taranaki Car Club. Each of these reuse activities appears to carry on something of the community spirit once generated by the former dairy factory, in its heyday the focus of the local community. The disused dairy factory's central location within the immediate local community would be advantageous to this type of reuse, as would be the need for very little up-keep on concrete buildings.

The other reuse activities included in the category of "Other" suggest some degree of ingenuity. Being able to categorise the reuse activities operating in the disused dairy factories is significant in respect of there being a number of decision-makers who have perceived much the same advantages from utilising a disused dairy factory. This may suggest something in the nature of the building's site, construction or design that attracts a particular reuse activity. Those non-categorisable reuse activities are often instances of people "doing their own thing" or realising a dream. The transformation of the Tawhiti Dairy factory, near Hawera, into a museum took its owner two years. It stands today as a monument to this man. By the same token, the owner of the Melrose Dairy factory uses his disused dairy factory and its surrounds to realise his desire for rural living.

Engineering of some kind (i.e. structural, maintenance or the like) is the third most common reuse indicated. This reuse activity is significant, however, as being the highest ranking specific reuse activity for the abandoned dairy factories surveyed. The importance of this may be evident more so in discussion of the advantages of disused dairy factories for this particular reuse activity (i.e. site location, construction and design features of the old dairy factory may prove advantageous to engineering). Nine out of 70 respondents (12.9 percent) stated that the nature of their reuse activity could be classed as engineering enterprises. These engineering operations, more often than not, service the local rural community. The nature of these enterprises could well be a part of the indirect effects of mechanisation on the agricultural sector; part of one of the very same trends that aided to effect the closure of the original dairy factory. With the mechanisation of many farming operations (for example the tractor taking over from the horse and the development of various tractor-drawn implements) the need arises for not only construction but maintenance engineering. In fact the reuse of disused dairy factories as engineering premises could well be an indirect outcome of the need for economic efficiency in the wider agricultural sector. This means that a once primary processing plant is now in use as an agent for maintaining

that which aided its closure. Hence, these disused dairy factories are continuing to service basically the agricultural sector which was responsible for their initial establishment. This reuse activity can be seen as a mark of progress in rural technology.

Light manufacturing is the only other reuse activity of sufficient magnitude to warrant comment. This reuse and engineering reuses account for nearly a quarter of the reuse activities. The 10 percent of disused dairy factories engaged in manufacturing activities included the manufacture of tennis racquet strings from animal gut, the manufacture of meal, fertiliser, clothing, soap, wooden toys and honey. In a number of instances the reuse activity is again serving the agricultural sector from a location and building traditionally rural in its orientation. To manufacture implies changing the state of the raw material used; a function that the former dairy factory facilitated also. Thus, those reuse activities engaged in light manufacturing activities in the disused dairy factories of Taranaki are continuing in a functional role not unlike that of the former use, except each reuse is in itself producing a unique product, be it wooden toys or honey. This aids in diversifying the range of manufactured goods available in the area, even if this influence is only felt within the immediate environs of the manufacturing unit, i.e. the disused dairy factory.

3.1 THE HISTORY OF REUSE

The history of reuse activities which have operated in the disused dairy factories is shown in Table 3.3.

TABLE 3.3: REUSE ACTIVITIES OF DISUSED DAIRY FACTORY PRIOR TO CURRENT REUSE

	<u>Total</u>	<u>%</u>
Light manufacturing	3	4.3
Engineering (structural, maintenance)	1	1.4
Storage	13	18.6
Retail Outlet	1	1.4
*Vacant	21	30.0
Other	6	8.6
Don't know	10	14.3
Not applicable (i.e. dairy factory)	<u>15</u>	<u>21.4</u>
	70	100.0

* For the purposes of this study a dairy factory being vacant constitutes a reuse on the grounds that it usually represents a period of transition between other reuses, and as such is significant.

TABLE 3.4: NUMBER OF REUSES OF BUILDING SINCE USE AS DAIRY FACTORY (D/F)

<u>Number of Reuses</u>	<u>Number of D/F</u>	<u>%</u>
1	14	20.0
2	43	61.4
3	6	8.6
4	1	1.4
Don't know	<u>6</u>	<u>8.6</u>
TOTAL:	70	100.0

As indicated by Table 3.3, the majority of those disused dairy factories surveyed (30 percent) spent a period of time being vacant prior to their current reuse activity. This period was usually between six months and two years in duration, and was often the time between the dairy factory closure and the first reuse operating in the building.

The 15 disused dairy factories (21.4 percent) which had been

in operation as dairy factories prior to their current reuse are significant in that these are probably the most recent of the dairy factories to close. Included in this category, also, are those disused dairy factories where the period between closure and the reuse activity was not significant in the respondent's opinion. In most cases this period was less than six months.

Table 3.3 indicates 24 of the 70 surveyed disused dairy factories (34.3 percent) had some specific reuse prior to its current reuse activity that was significant enough for the respondent to remember. These 24 activities are made up of three light manufacturing prior reuses, one engineering, 13 storage, one retail outlet, and six other prior reuse activities. If the 15 dairy factory prior reuses are included in this, a total of 39 of the disused dairy factories (55.8 percent) had an identifiable reuse activity prior to its current reuse.

These figures become more significant when analysed in conjunction with Table 3.4: Number of Reuses of Building since Use as Dairy Factory. Table 3.4 indicates that 61.4 percent of the surveyed disused dairy factories have had two uses since operating as a dairy factory. One of these reuse activities is more than likely to be a period of time being vacant at some stage. Those dairy factories having had two reuses total three times those dairy factories in the other categories. These buildings have obviously been utilised in the past, with 71.4 percent (50 out of 70) having had two or more reuses since the dairy factory closure. Presuming that the more reuses the building has had the shorter the term of tenure that each reuse activity had, this could possibly indicate something of the nature of these past reuse activities. Some indications are that the growing of mushrooms was among these past activities, which is indicative of an attempt at a relatively new enterprise that may well have become uneconomic.

TABLE 3.5: NUMBER OF REUSES OF THE DAIRY FACTORY

	<u>Number of Reuses</u>					Total
	One	Two	Three	Four	Don't Know	
Transport Services	-	1	-	-	-	1
Engineering	-	6	2	1	-	9
Light manufacturing	-	7	-	-	-	7
Storage	10	17	1	-	3	31
Livestock processing	1	2	1	-	-	4
Retail outlet	-	1	1	-	1	3
Concrete type products	-	1	-	-	-	1
Vacant	1	2	-	-	-	3
Other	2	6	1	-	2	11
Total:	14	43	6	1	6	70

A picture of how many reuses have been located in the dairy factory premises by the current reuse occupying the building is illustrated in Table 3.5. The most striking feature is that all nine engineering reuse activities occupy a dairy factory which has been used by at least two prior reuses activities. This may well indicate a certain hierarchical pattern of reuse of these buildings, with the engineering reuse occupying the dairy factory after it has been used by one or two other reuses (i.e. possibly a period of time vacant, then being used for storage of some kind).

The probability of the disused dairy factory's first or second reuse being storage is supported by Table 3.5, with 10 of 14 first reuses of the dairy factory being storage. Storage also predominates as the highest reuse of those dairy factories having had two reuses. The concept of a hierarchy of reuses in terms of the number of reuses the dairy factory has had (e.g. engineering reuses are more likely to be the second reuse activity to establish in the dairy factory rather than the first) does seem to be supported by this data. By all accounts the disused dairy factories of Taranaki have not been idle since the original dairy factory's closure. This feature indicates that the positive potential and value of these buildings has been recognised in the

past establishment of reuse activities, and is presently recognised in their current reuse.

3.2 THE CURRENT REUSE ACTIVITY

Some idea of the history of the current reuse activities located in the disused dairy factories is summarised in Tables 3.6 and 3.7. Table 3.6 examines when the reuse activity currently operating in the disused dairy factory began operations as an enterprise initially. This table shows that 15 of the 70 current reuse activities (21.4 percent) actually began activities prior to 1950. This means the enterprise was in operation prior to the closure of the dairy factory occupied presently. Nearly a quarter of the current reuse activities have therefore been in business in excess of 30 years. These enterprises must be considered to be established enterprises. If those reuse activities that have been operating for at least 12 years are included, then approximately 50 percent of the survey population fall into this category. If the total is taken to exclude those no responses this figure becomes 56.6 percent, which indicates that on the whole, the reuse activities currently operating in the disused dairy factories of Taranaki could be termed "established" and by no means "fly by night" or "get rich quickly" schemes. The highest percentage of reuse activities were initiated between 1970-1979 with 17 reuses established during this period (24.3 percent). This is understandable given the climate of optimism in the New Zealand economy in the early 70s.

The last 12 years have not been without enterprise as regards reuse activity. In the period between 1970-1982 inclusive, 37.2 percent of those reuse activities currently operating in the disused dairy factories started their activity. Given that 12.9 percent of these reuse activities only started within the last three years (1980-1982), the indications are that the decade of the 80s could produce just as many, if not more, reuse activities than the preceding decades.

TABLE 3.6: YEAR CURRENT REUSE BEGAN OPERATING INITIALLY

<u>Year</u>	<u>Total</u>	<u>%</u>
Pre 1950	15	21.4
1950-1959	7	10.0
1960-1969	12	17.1
1970-1979	17	24.3
1980-1982	9	12.9
No Response	<u>10</u>	<u>14.3</u>
Total:	70	100.0

TABLE 3.7: YEAR CURRENT REUSE BEGAN OPERATING IN DAIRY FACTORY PREMISES

<u>Year</u>	<u>Total</u>	<u>%</u>
Pre 1950	1	1.4
1950-1959	3	4.3
1960-1969	16	22.9
1970-1979	25	35.7
1980-1982	17	24.3
No Response	<u>8</u>	<u>11.4</u>
Total:	70	100.0

From Table 3.7 it is evident that since 1960, 82.9 percent of the reuse activities began operating in the dairy factory premises. In the last 12 years 60 percent of those reuse activities surveyed have occupied the disused dairy factory premises. The magnitude of this is more evident when the period 1960-1979 inclusive is examined also. This points out that 41 of the survey population (58.6 percent) began operations in the disused dairy factory premises during this span of 20 years. Within the last three years 17 reuse activities (24.3 percent) were established in their current premises, which would include some reuse activities which began their initial operations in the disused dairy factory, as well as those reuse activities that had relocated their enterprise.

By breaking Table 3.7 into reuse activities Table 3.8 is produced. A diagrammatic representation of this data is shown in Figure 3. It is evident that the establishment of engineering reuse activities began at the beginning of the 1970s. Light manufacturing activities, however, were established a decade earlier. It is clear from Figure 3 that storage reuses have been in operation since 1950 and have continued to be the major utiliser of disused dairy factories since this time.

The reuse of disused dairy factories by livestock processing enterprises initially appeared in the 1960s, and the 1980s has seen a resurgence in the potential for this type of reuse activity. Retail outlets also began utilising disused dairy factories between 1960-1969, while the configuration of reuse types classified as "other" have been using old dairy factory premises since the 1950s.

The significance of 1960 on the potential reuse of disused dairy factories is illustrated in Figure 3. This was the time of rapid adoption of tanker collection by dairy companies and more frequent dairy factory amalgamations and closures. Thus more dairy factories became available for potential reuse activity after this date.

It is possible to conclude that in the main, those reuse activities occupying disused dairy factory premises are reasonably firmly established enterprises with only a few (e.g. engineering light manufacturing activities) of the reuse activities establishing within the last three years being of a "less established" kind. In this latter group of reuse activities are the likes of rabbit-farming enterprises, which are relatively new enterprises in the economic sphere of New Zealand, let alone as a reuse activity deciding to locate in a disused dairy factory.

FIG. 3 - YEAR REUSE ESTABLISHED
IN THE DAIRY FACTORY

RE - USE	Pre 1950	1950 - 1959	1960 - 1969	1970 - 1979	1980 - 1982
Transport Services				█	
Engineering				█	█
Light Manufacturing			█	█	
Storage	█	█	█	█	
Livestock Processing			█	█	█
Retail Outlet			█	█	█
Concrete Type Products			█		
Other		█	█	█	█

TABLE 3.8: YEAR REUSE ESTABLISHED IN DAIRY FACTORY

	<u>Year</u>						Total
	Pre 1950	1950 -59	1960 -69	1970 -79	1980 -82	No Response	
Transport Services	-	-	-	1	-	-	1
Engineering	-	-	-	5	4	-	9
Light manufacturing	-	-	3	3	1	-	7
Storage	1	2	7	12	5	4	31
Livestock process- ing	-	-	2	-	2	-	4
Retail outlet	-	-	1	1	1	-	3
Concrete type products	-	-	1	-	-	-	1
Vacant	-	-	-	-	1	2	3
Other	-	1	2	3	3	2	11
Total:	1	3	16	25	17	8	70

3.3 THE ORIGIN OF REUSE ACTIVITIES

As was defined in the previous chapter, the origin of the reuse activity refers to the location from which the reuse activity was initiated. The question directly concerning the origin of reuse activities in the survey questionnaire asked of the survey population: "At what location did your firm begin operating initially?" Table 3.9 represents the responses to this question.

The high "Not applicable" response is the first category which deserves comment. This category includes all those reuse activities that were not involved in an enterprise operating exclusively from the disused dairy factories, such as a haybarn, implement shed and general storage reuses. The community orientated reuse activities such as the reuse of the Kahui Dairy Factory as a community centre, and the Tarurutangi Dairy Factory as clubrooms for the Taranaki Car Club are also included in this category.

TABLE 3.9: LOCATION AT WHICH REUSE BEGAN OPERATING INITIALLY

	<u>Total</u>	<u>%</u>
The current premises (i.e. the dairy factory)	8	11.4
The local community (i.e. in the same area as at present but different premises)	10	14.3
A nearby town	7	10.0
Within the Taranaki Region	3	4.3
Outside the Taranaki Region	6	8.6
Not applicable	<u>36</u>	<u>51.4</u>
Total:	70	100.0

Only eight reuse activities began their initial operations in the current disused dairy factory which they occupy. The category to register the highest response was that of the reuse activity beginning its operations within the "local community", that is, within the same immediate area as the present location in the disused factory, but in different premises. For the purposes of this study "local" will be taken to mean within a 5 kilometre radius of the disused dairy factory. Some of these reuse activities may well have been started initially as "backyard" enterprises. For example, a local farmer who enjoyed doing a bit of engineering in the back shed, found his business growing, and thinking the abandoned dairy factory on the corner opposite would be ideal as an engineering workshop, he set about purchasing the building. Today "Riverlea Engineering" operates (very successfully) from what was once the Riverlea Dairy Factory.

A further example of how backyard enterprises can expand to the extent that "a home away from home" is required for them is that of a panelbeating enterprise, operating as one of the two reuse activities in the Maketawa Dairy Factory. This was a case of reuse activity starting at the family home and growing to the extent that its operation from this initial location was no longer feasible. In the case of instances such as these, the reuse activity is local in origin. These local entrepreneurs

are "on the spot" as it were, to knowledge of the disused dairy factory's availability for reuse.

Reuse activities originating from nearby towns accounted for only seven or 10 percent of the survey population. The significance of local entrepreneurial talent can, however, be more fully appreciated when 25 reusers (35.7 percent) can be classed as being local. This percentage includes those reuse activities starting initially in the disused dairy factory, in addition to those originating in the local community and a nearby town.

TABLE 3.10: INITIAL LOCATION OF REUSE ACTIVITIES

	<u>Initial Location</u>						Total
	Current Premises	Local Commun- ity	A near- by Town	Within Taranaki Region	Outside Taranaki Region	Not Applic- able	
Transport services	-	-	1	-	-	-	1
Engineering	1	1	2	1	2	2	9
Light manu- facturing	1	2	-	-	1	3	7
Storage	3	3	3	-	1	21	31
Livestock processing	1	2	-	-	-	1	4
Retail out- let	-	1	-	1	1	-	3
Concrete type products	-	-	-	-	1	-	1
Vacant	-	-	-	-	-	3	3
Other	2	1	1	1	-	6	11
Total:	8	10	7	3	6	36	70

Reuse activities originating within the Taranaki region appear to have relatively little impact on those enterprises deciding to locate in a disused dairy factory. Those reuses originating

outside the Taranaki region make slightly more of an impression in Table 3.9, but neither of these categories can be thought of as any way significant.

In examining the initial location by reuse types, Table 3.10 shows the composition of those reuse activities located initially in the local community to be more varied than the other location categories. Engineering, light manufacturing, storage, livestock processing, a retail outlet and "other" figure as reuse types beginning their enterprise in the same area as at present but in different premises. In comparison with the other initial location variables the fact that the reuse come from within the local community tends to favour varied reuse rather than stifling local entrepreneurial talent.

Nearly half of the engineering and light manufacturing enterprises started either in a nearby town, locally or in the current dairy factory premises which tends to indicate that most of the potential enterprises that may possibly locate in an available building are local in origin. As innovators of potential reuse activities regional forces do not appear important with extra-regional influences responsible for twice as many reuse activities in comparison. Local entrepreneurial talent is, however, accountable for producing nearly three times as many reuse activities as extra-regional influences.

It is therefore possible to conclude that the majority of the reuse activities currently operating in the disused dairy factories of Taranaki, had their origins within relatively close proximity to the disused dairy factory that each occupies today. From this it is feasible to assume that the majority of reuse activities operating from the disused dairy factories in Taranaki are the result of local entrepreneurial talent, with there being little or no evidence of corporate development in the emergent pattern of dairy factory reuse. The reuse of the Kaupokonui Dairy Factory by the Pacific Natural Gut Strings Company, which had its origins overseas, must therefore, be considered atypical in respect of the data discussed above.

3.4 THE MAGNITUDE OF THE REUSE ACTIVITIES

Given that the reuse activities operating in the disused dairy factories of Taranaki exhibit a predominance of local flavour in origin, analysis of the magnitude of these reuse activities may be significant, both on a regional scale, but more especially on the local community scale.

TABLE 3.11: OWNERSHIP STATUS OF REUSE ACTIVITIES OPERATING IN DISUSED DAIRY FACTORIES

	<u>Total</u>	<u>%</u>
Family firm/company	19	27.1
Other locally owned firm/company	11	15.7
Farm/rural Living	21	30.0
*None of the above	9	12.9
No response	<u>10</u>	<u>14.3</u>
Total:	70	100.0

Those respondents who reported "None of the above" in Table 3.11 were asked if their enterprise is part of a Taranaki chain or a national chain (Table 3.12). Of the nine respondents asked this question, six answered that their enterprise is part of a New Zealand wide operation, with three "Not Applicable" responses registered. Some of those reuse activities in this latter group may be explained as being only North Island based companies. This is the case in the reuse of the Ngaere Dairy Factory as a grocery warehouse for a North Island grocery outlet, based in Auckland.

*TABLE 3.12: BRANCH REUSE OPERATIONS

	<u>Total</u>
Taranaki Regional Chain	0
National Chain	6
Not Applicable	<u>3</u>
Total:	9

These same nine reuse activities were then asked the location of their head office. Table 3.12 indicates the responses.

TABLE: 3.13: HEAD OFFICE LOCATIONS OF REUSES

	<u>Total</u>
New Plymouth	1
Other Taranaki Centre	2
Other in the North Island	5
South Island	<u>1</u>
Total:	9

Table 3.11 shows there are 21 disused dairy factories that are operated in conjunction with farming or rural living activities, and 19 reuses are local firms or companies. Those reuse activities utilising the disused dairy factory in association with their farming operations indicate the magnitude of the majority of reuse activities to be local in orientation. This suggests that local investment capital is being reinvested in the local community as opposed to outside investment by national enterprises. Farming enterprises are one of the major bases of the Taranaki regional economy. Farming today has become an economic enterprise rather than a "way of life". It cannot be said, therefore, that because these dairy factory reuses are associated with farming enterprises, that the magnitude of the reuse activity is any lesser than that of a pre-stressing concrete plant, such as operates at the old Pembroke Dairy Factory. In relative terms the importance of a disused dairy factory being reused as a hay-barn in the Taranaki region is as important to sustaining the basis of the regional economy (and perhaps more significantly the national economy) as another factory manufacturing electrical goods in Auckland. It is crucial to a study such as this to appreciate the context of the information and acknowledgment of regional differentiation is an important element in recognising the significance of the findings.

The 19 family firms or companies operating their enterprises in disused dairy factories (Table 3.11) are also indicative of strong local commitment by potential investors in the Taranaki.

It seems likely that these reuse activities are established to service a desired aim or purpose, which may not have any further ramifications than that of servicing the immediate community.

Other locally owned firms or companies register 11 responses as is shown in Table 3.11. The influence of local investment and reinvestment in the local community is significant in sustaining the continuing viability of these small rural centres.

From Table 3.11 it is evident that reuse activities of a local nature are predominant, with family firm/company, other locally owned firm/company and farming/rural living totalling 51 out of 70 reuse activities (72.9 percent). This could well imply that the organisational structure of such enterprises may not be as complex as that of a corporate development venture. Considering the magnitude of the regional economic structure of the Taranaki region, however, these findings are very much in keeping with the regional economic pattern of development. The relative simplicity of the regional economy was briefly discussed in the preceding chapter. Any manufacturing development that is taking place within the region is occurring at New Plymouth. Franklin (1978, 261) states, however, that "firms of local origin are unimportant in this development and any inter-industrial linkages between the corporations and local manufacturing firms, of which there are few, are minimal." Thus, with farming being the major resource base of the region, it is highly probable that the majority of reuse activities operating in the disused dairy factories would be in some way be highly localised and of a relatively small magnitude, given the structure of the regional economy.

TABLE 3.14: NATURE OF LOCAL REUSE ACTIVITIES

		<u>Nature</u>		
		Family firm/ company	Other locally owned firm/ company	Total
	Transport services	-	1	1
	Engineering	5	2	7
	Light manufacturing	1	4	5
	Storage	4	3	7
<u>ReUse</u>	Livestock processing	4	-	4
	Retail outlet	3	-	3
	Concrete type products	-	-	-
	Vacant	-	-	-
	Other	2	1	3
	Total:	19	11	30

Table 3.13 shows that the family firm/company tends to dominate over all reuse types, with the exception of light manufacturing.

The engineering reuse activities of a family firm nature figure twice as many times as locally owned engineering enterprises in the data. Together, this local component of engineering reuse activities account for 7 of the total 9 engineering enterprises. The same trend can be discerned in the light manufacturing reuses: 5 of the 7 light manufacturing enterprises can be termed local. This points to a local pool of entrepreneurial talent that possibly was unable to manifest itself in a physical existence, until a building such as the disused dairy factory became available for use.

Table 3.12 indicates that there are six reuse activities operating in disused dairy factories which are part of a nationwide chain, with no reuse activities being part of a Taranaki regional chain. This is not unpredictable given any industrial diversification that is taking place in Taranaki is,

according to Franklin (1978,261) ..."a consequence of corporate policy-making external to the region, in which consideration of land and labour availability and transport provisions have had some little bearing, and considerations related to the local market hardly any at all."

The location of the head office of these New Zealand-wide reuse activities is shown in Table 3.13. Most of these operations have their head office in a centre of the North Island other than in the Taranaki region, which concurs with what is indicated in Table 3.12, as does the fact that only one reuse activity has its head office in New Plymouth. While being the regional centre the effect of New Plymouth on dairy factory reuse is possibly somewhat less than might have been expected. These reuse activities, five in total, have brought their enterprise to the Taranaki region and more especially to the rural communities surrounding the disused dairy factory. These reuses draw their resources from sources external to the region. While this may be beneficial in saving scarce regional resources, it must be remembered that much of the profit would also be directed out of the region. Counter to this are the spin-off advantages of such enterprises locating in a disused dairy factory; as a generator of employment (this may well be group selective, for example offering married women the opportunity to work which may be otherwise unattainable) and increasing the demand for servicing in the community. While the corporate organisation of reuse activities such as these are external to the Taranaki, their presence in the region, and particularly in the disused dairy factories, can be regarded as advantageous, not only in the immediate sense of its present activities, but also in the indirect sense of potentially stimulating local entrepreneurial efforts.

Given the magnitude of the reuse activities it is not surprising that centres other than New Plymouth should figure more in Table 3.13 than New Plymouth itself. The presence of a South Island based company in Taranaki is presumably an example of a careful location decision, not only in a regional sense, but in the choice of site as well. This reuse activity is concerned with the manufacture of animal and bird feed. It has grown in such

proportions in the physical sense, that the disused dairy factory in which operations first started is hardly visible through the erection of additional buildings. The magnitude of such a reuse activity in Taranaki can be attributed to the company's management organisation, yet the enterprise must owe its success in some measure to the benefits it derives from its location.

In summary, the extent of reuse of disused dairy factories in Taranaki is considerable and is widely dispersed throughout the region. The most predominant reuses are storage, engineering and light manufacturing enterprises, with the majority of the former two appearing to carry on a service association with the rural sector, similar to that of the original dairy factory. Most of the disused dairy factories have a history of reuse, with the period 1960-1969 significant as the time when most of these buildings were taken up by reuse activities. The greater number of reuse activities are of local origin, with family firms and other locally owned firms mainly responsible for initiating these reuse activities.

CHAPTER IV
SPATIAL ASPECTS OF DAIRY FACTORY REUSE

This chapter examines the spatial factors which appear to influence the reuse of dairy factories in the study area.

4.1 REASONS FOR POTENTIAL DAIRY FACTORY REUSE

In considering the reasons for the potential reuse of the disused dairy factories, the investigation deals with the location decision at the regional scale and the choice of site location (i.e. the disused dairy factory). The regional scale of analysis is examined first. The essential simplicity of the regional economy has already been documented. Table 4.1 provides some understanding of this phenomenon in the study area.

TABLE 4.1: MAJOR REASONS FOR LOCATION OF REUSES IN STUDY AREA

	<u>Total</u>	<u>%</u>
Lived in the area and familiar with it	39	55.7
Building was available for use	1	1.4
Saw the region as a major market area	-	-
Availability of local labour	1	1.4
Attracted by other local resources (i.e. quality of the water supply etc)	4	5.7
Other	6	8.7
Not applicable	<u>19</u>	<u>27.1</u>
Total:	70	100.0

From the table there is further evidence of the local nature of the reuse activities, with 39 respondents citing their major reason for locating their enterprise in the Taranaki region as, having "lived in the area and being familiar with it". This appears to be a very simple answer to the very complex location decision. However, it seems a logical and rational response given the pattern of dairy factory reuse in the study area evident to this point. As the majority of reuse activities are

local in origin there is a high probability that the reason for locating in Taranaki is local in orientation also, which Table 4.2 suggests.

TABLE 4.2: BREAKDOWN BY REUSE OF LOCATION REASON:

<u>Reuse</u>	<u>Total</u>	<u>Total Reuses</u>	<u>% of Re-use Total</u>
Transport Services	-	1	0.0
Engineering	6	9	66.0
Light manufacturing	3	7	43.0
Storage	16	31	52.0
Livestock processing	4	4	100.0
Retail outlet	2	3	66.0
Concrete type products	1	1	100.0
Vacant	-	3	0.0
Other	<u>7</u>	<u>11</u>	<u>64.0</u>
Total:	39	70	

The data in Table 4.2 shows the activities of those respondents stating their main reason for locating in the Taranaki region to be "lived in the area and was familiar with it". This shows that this reason was not peculiar to any one particular reuse. In fact in no fewer than seven of the reuse types this reason for choosing to locate in Taranaki accounts for at least 43 percent of each particular reuse activity. In some instances, for example livestock processing, all the respondents of this type cite this reason as the major reason for locating in the study area. Knowing the area and having direct knowledge of it suggests that perhaps in this instance, it is not so much a case of deciding whether to locate in Taranaki as opposed to another area, but rather whether to establish the enterprise or not. Regional choice appears therefore less important than choice of site location for reuse activities.

The dairy factory's availability for use is cited only once as the major reason for locating in the Taranaki region, while none of the reuse activities has market-pull orientation drawing them

to Taranaki. The availability of local labour is not seen as advantageous to regional choice of dairy factory reuse either. Each of these categories shows something more of the nature and type of reuse activity utilising the abandoned dairy factories. Each of the aforementioned reasons are what would normally be termed high priority considerations in terms of a location decision: capital stock (i.e. building), labour and market. They have, however, proved of very little significance in the location decision of dairy factory reuses at a regional level. This is another indication of the small, local entrepreneurial talent which is capitalising on local knowledge of highly localised resources. The one response in each category referred to, is more than likely to be those reuse activities that are operating as branch enterprises of national enterprises, which presumably have very specific reasons for choosing to locate in the study area.

The attraction of other local resources generated a slightly better response, with four respondents citing this as their major reason for locating in the Taranaki region. One of the main local resources cited as attracting reuses was the availability of raw materials for the enterprise. This was the reason for a boiling-down plant deciding to locate in Taranaki, while access to get gut from a local freezing works was a major reason for the Pacific Natural Gut String factory deciding to establish in the study area. It must be acknowledged in the latter case, however, that the overriding location principle in a regional scale was the desire to locate the enterprise in a regional development priority area, such as Taranaki.

Some of the reasons in the "Other" category for locating the reuse in the Taranaki region include having been employed by the previous owner of the enterprise, attracted by the energy development programme in Taranaki, the savings in transport costs from locating a branch plant in the region as well as there being no other facility such as the reuse activity proposed, in the area at the time it decided to establish. In several cases, therefore, highly individual responses were made to locational questions.

The rather large "Not applicable" response can in fact be explained by the number of farming operations associated with dairy factory reuse. The reason for locating a reuse activity such as a hay shed, implement shed or general storage is more a matter of where the respondent chose to farm in Taranaki, rather than a conscious location decision to establish a dairy factory reuse in the study area. The location decision of these reuse activities has been made previously, in regard to a different set of location variables than those which have been discussed in relation to other current reuse activities.

In considering site locations, the reasons for choosing to locate a reuse activity in a disused dairy factory are thought to bear some relation to the advantages of this particular choice of site for the reuse activity. Respondents were asked to list in order of importance the advantages applicable to their site location decision. This question was not very well answered for the majority of respondents. Those respondents that did manage to list more than one advantage of their choice of site location did, however, lend more significance to these factors by the fact that the respondent was aware of just what the site location did offer at the time of establishment. The responses to this avenue of investigation are shown in Table 4.3.

Table 4.3 shows that the existence of an established building (i.e. the disused dairy factory) is the foremost advantage of the site as a location for the reuse activity, with 34 respondents stating this as their first choice. This raises the question of whether the enterprise would have located in the abandoned dairy factory premises had there been another building available for potential reuse.

TABLE 4.3: ADVANTAGES OF DISUSED DAIRY FACTORY AS REUSE SITE
LOCATION

<u>Site Advantages</u>	<u>Choice</u>				
	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>	<u>5th</u>
Existence of an established building	34	3	-	-	-
The size, shape and structure of the building	5	14	4	-	-
The materials used in the building's construction	-	-	3	-	-
Particular design features (e.g. solid foundation, concrete floor, etc.)	-	3	5	4	-
Special fittings: refrigeration facilities	-	-	-	-	-
Plenty of yard space and possible room for expansion	3	4	2	1	2
Other	12	11	3	3	-
Not applicable	<u>16</u>	<u>35</u>	<u>53</u>	<u>62</u>	<u>68</u>
Total:	70	70	70	70	70

TABLE 4.4: ADVANTAGES OF REUSE SITE LOCATION
(First choice only)

	1	2	3	4	5	6	7	NA	Total
Transport Services	-	-	-	-	-	1	-	-	1
Engineering	5	-	-	-	-	1	2	1	9
Light Manufacturing	3	1	-	-	-	-	3	-	7
Storage	13	3	-	-	-	-	5	10	31
Livestock processing	4	-	-	-	-	-	-	-	4
Retail outlet	2	-	-	-	-	-	1	-	3
Concrete type products	1	-	-	-	-	-	-	-	1
Vacant	1	-	-	-	-	-	-	2	3
Other	5	1	-	-	-	1	1	3	11
Total:	34	5	-	-	-	3	12	16	70

- Site Advantages:
- 1 Existence of an established building
 - 2 The size, shape and structure of the building
 - 3 The materials used in the building's construction
 - 4 Particular design features (e.g. solid foundation, concrete floor)
 - 5 Special fittings: refrigeration facilities
 - 6 Plenty of yard space and possible room for expansion
 - 7 Other

The reuse activities in Table 4.4 are grouped by their first choice of site advantage. This table suggests the value of the disused dairy factory as a potential site for most reuse types, with perhaps its greatest locational attraction being the physical existence of the building. Investigating any commonality between the reuse activities and the original use of the dairy factory may shed some light on this question.

Of the other site advantages specified only the size, shape and structure of the building, and the availability of plenty of yard space and possible room for expansion figure at all, if only very marginally as Table 4.3 indicates.

The category of "Other" shows considerable variety. In this instance the 12 respondents that cited advantages other than those specified in Table 4.3, evidence the highly individual responses to locational questions on this scale. Some of the reasons include:

- (i) rural labour being seen as more stable than urban labour;
- (ii) low purchase price;
- (iii) the disused dairy factory's location is more favourable for front-door sales than the reuse activity's previous location (i.e. increased market potential over previous location);
- (iv) the disused dairy factory provides a point of centrality: this is seen both in terms of transportation networks (i.e. the disused dairy factory may be located on a main highway) and sources of raw material supply;

- (v) the land was purchased for the house on the site;
- (vi) the historical value of the disused dairy factory;
- (vii) the price of space in the abandoned dairy factory (i.e. the purchase price) compares very favourably with the price of comparable space in town.

Each of these reasons for location of the reuse activity in the disused dairy factory gives an indication of the many forces that impinge upon the decision to locate a particular enterprise at a particular site. Purchase price is significant as an assessment of the abandoned dairy factory's physical worth as capital stock. If an intangible estimate of future earnings (in whatever sense) from location at this site did no more than outweigh the purchase price, dairy factory reuse would not exist as a phenomenon.

The price of the disused dairy factory can also be seen in terms of the space it purchases for the reuse activity. Given the large number of reuse activities currently utilising the abandoned dairy factories in a storage capacity, this aspect of site location takes on added significance. Where storage relates to a rural reuse activity, for example, hay or implement storage, the purchase price of the disused dairy factory becomes relative to the price of building a new barn or implement shed. This would probably account for why the majority of respondents registering a response in Table 4.3 and Table 4.4 cite the existence of an established building as their choice of site advantage. The high economic cost of building is probably more prohibitive than is widely recognised.

The price of space in a rural location as compared to the price of space in an urban centre or an urban-orientated reuse brings to the fore the debate of purchase of the dairy factory versus rental of urban space. In purchasing or leasing the storage space of an abandoned dairy factory the benefits gained must outweigh the disadvantages of site location, such as distance from point of sale or manufacture. In other words, the opportunity cost of reuse activities locating in disused dairy factories are all the opportunities that are afforded them by location at

other sites, but which have to be foregone in the decision to locate in the disused dairy factory premises. For 70 reuse activities the benefits of purchase are, presumably, advantageous to their operations.

Those features of the disused dairy factory peculiar to its original use appear in the main to have offered little advantage to reuse activities. Three respondents cite particular design features of the dairy factory building as their second reason for choosing to locate in the premises, while another five respondents state design features as their third choice of site location advantage.

The fact that plenty of yard space and possible room for expansion registered on all choice options from first to fifth, although in small numbers (Table 4.3) suggests that in choosing to locate in a disused dairy factory what is purchased is not restricted merely to an old dairy factory. Included in the purchase is usually some land, generally ranging from two and a half to five acres, and sometimes other buildings (i.e. housing). The location decision of respondents citing this option suggests an assessment of the site in terms of more than just what can be done with the building.

Table 4.3 and Table 4.4, however, add further weight to the previous evidence that the major advantage of the disused dairy factory for reuse activities is its existence as an established building. Given that the majority of these reuses are small local enterprises, this suggests that perhaps these reuse enterprises would not have established had there not been a building in existence within close proximity. The analysis to this stage favours this assumption.

4.2 COMMON LOCATION FACTORS ASSOCIATED WITH REUSE DECISIONS

To a certain extent this question has been covered in describing the pattern of reuse activity in the abandoned dairy factories. The spatial implications for potential dairy factory reuse are shown in Figure 2. It is evident from this that most of the disused dairy factories located off the main highways or at quite a distance from a service centre are more likely to be

reused as a hay or implement shed, or for general storage. Where access to a major arterial route is possible, the nature of the reuse activity appears to change quite considerably. On the main highway north from Hawera to New Plymouth, for example, a number of disused dairy factories are passed, each currently in use by what appears to be relatively prosperous reuse activities. Some of the reuse activities located in these disused dairy factories referred to include a shirt manufacturing company, a wooden toy manufacturing company, two engineering enterprises, a stock and poultry feed manufacture and a bulk-store for a grocery chain. These reuse activities all have good access to a main highway and thus share some advantage in accessibility, both to supply and demand in many cases, over other reuse activities.

By examining any significant location factors shared by a particular reuse some assessment of commonality may be made. From Table 3.2 there are nine engineering enterprises operating in disused dairy factories in Taranaki. The location of these is indicated in Figure 4. As can be seen from the map, five of the engineering reuses are within a 10 kilometre radius of Kaponga. This is quite a high concentration of activity of this kind, given that these reuse activities are located in a rural setting. If the minor arterials were drawn on the map, then each of these five engineering reuse activities would be situated on a major road or intersection, except for the engineering enterprise operating in the old Palmer Road Dairy factory. This enterprise is located along a minor arterial, as its location is determined by the siting of the Kapuni Gas installations and its associated developments.

All nine engineering reuse activities share immediate access to an arterial route, while the solid nature of the disused dairy factories construction makes this building particularly advantageous for this type of reuse activity. Respondents often cited the concrete floor and the solid wooden beams making up the roof as being beneficial to their engineering reuse activities. The latter feature is especially important as the sturdiness of the disused dairy factories roof means that engineering enterprises

FIG. 4 - THE LOCATION OF ENGINEERING ENTERPRISES IN DISUSED DAIRY FACTORIES

Mokau



NORTH TARANAKI BIGHT

Waitara

NEW PLYMOUTH

2 1

3

Inglewood



4 Tariki

Stratford

5

6 Eltham

Opunake

8

7

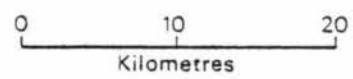
9

Hawera

SOUTH TARANAKI BIGHT

DIS-USED DAIRY FACTORIES

- 1 Onaero
- 2 Waipapa
- 3 Mangorei
- 4 Tariki
- 5 Cardiff
- 6 Mangatoki
- 7 Maire
- 8 Riverlea
- 9 Palmer Road



operating in these premises are able to capitalise on the fact that a roof of this calibre can sustain a gangtry, able to withstand much heavier weights than usual. This feature of the disused dairy factory means that the engineering enterprise is able to handle the construction or maintenance of machinery, not thought possible in an enterprise of the size of these engineering reuse activities.

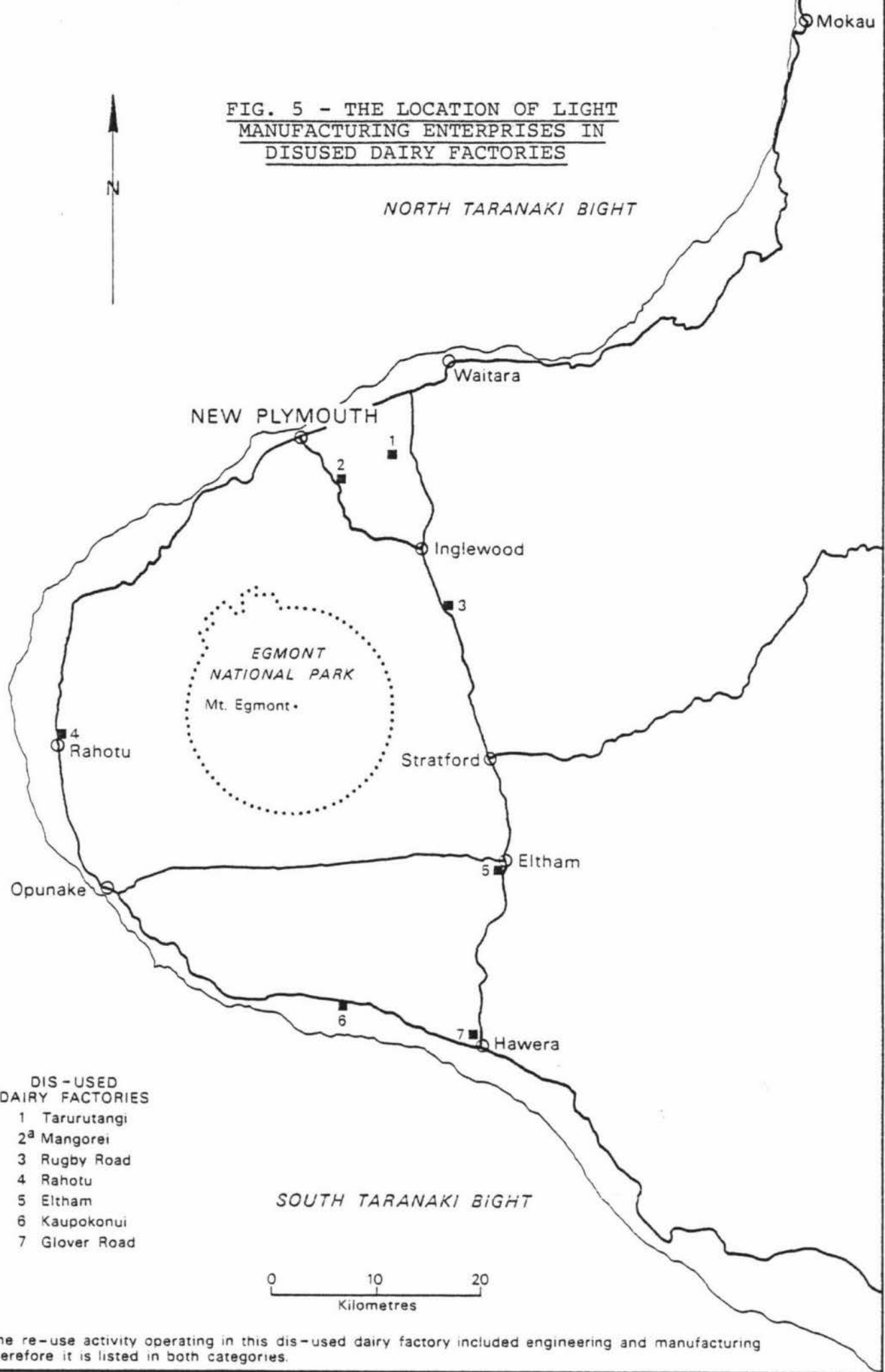
Another site advantage of the disused dairy factory for engineering activities is the amount of yard space which allows storage or room for expansion.

Each of the other four engineering enterprises not previously mentioned share a common feature in that they are all located on the main regional highway, SH3. These four engineering activities tend to be of a slightly greater magnitude than the five previously considered, with the exception of the enterprise operating in the Palmer Road Dairy Factory.

The nature of the engineering operations carried out in these disused dairy factories show six out of the nine could be classed as general engineering operations, while the other two have highly specific reasons for their site location. The En-Consult Technology Ltd (civil engineering), operating in the old Waipapa Dairy Factory (Figure 4, No. 2) was tied in terms of its location decision to somewhere within the immediate proximity of the energy development at Motunui, while the similar 'location pull' of the engineering enterprise utilising the Palmer Road Dairy Factory has already been discussed.

It appears then, that the engineering enterprises favour locations close to major regional developments or within the 'heartland' of the rural dairy landscape. Figure 5 shows the location of those reuse activities operating manufacturing enterprises in the disused dairy factories. These reuse activities are all located on a main highway, except the fertiliser manufacturer located at Tarurutangi (location is central to the source of raw material for this reuse activity). These reuse activities reflect more spatial dispersion throughout the study

FIG. 5 - THE LOCATION OF LIGHT MANUFACTURING ENTERPRISES IN DISUSED DAIRY FACTORIES



- DIS-USED DAIRY FACTORIES
- 1 Tarurutangi
 - 2^a Mangorei
 - 3 Rugby Road
 - 4 Rāhotu
 - 5 Eltham
 - 6 Kaupokonui
 - 7 Glover Road

^a The re-use activity operating in this dis-used dairy factory included engineering and manufacturing therefore it is listed in both categories.

area than the engineering reuse activities. While it may be presumed that enterprises engaged in manufacturing are 'footloose' (i.e. not tied by a source of raw material or market demand) in the main, the manufacturing reuse activities locating in the disused dairy factories of the study area all share a tie in some way to their present location or its immediate vicinity. The aforementioned fertiliser enterprise, operating its reuse activity from the Tarurutangi Dairy Factory is tied in its location by the source of raw material (i.e. chicken waste) with 80 per cent of this obtained within approximately 10 kilometres of the disused dairy factory. The nature of this reuse activity requires an isolated site location, hence the location off a main highway. The Pacific Natural String Gut Company, operating its enterprise from the Kaupokonui Dairy Factory, is in a similar situation. This location enables the enterprise to utilise the natural animal gut waste from the local freezing works. The shirt manufacturer, operating in the Glover Road Dairy Factory, just north of Hawera is tied to a site within proximity of Hawera, because of the need to centralise its previous operations scattered throughout the town. Other reasons often tie activities to certain locations - for example, wooden toy manufacturing reuse activity in Eltham, is a family business and for this reason the owners do not want to relocate.

The implications for employment opportunities through these groups of reuse enterprises locating in the disused dairy factories, can be assessed in terms of the geographic dispersion of these activities throughout the study area. Figure 5, indicating the location of light manufacturing reuse activities, shows the dispersed nature of employment opportunities associated with this reuse. To some of these areas this may be a chance for employment possibly not having been available since the closure of the original dairy factory. Reuse activities locating at Rahotu and Kaupokonui are evidence of this occurring. Both of these locations are off the main transport axis of the region.

Thus, there is a tendency for some groups of reuse activities to share common features from the individual decision of each to locate in a disused dairy factory.

4.3 LOCATIONAL ADVANTAGE FOR REUSE COMPARED WITH LOCATIONAL ADVANTAGE FOR DAIRY FACTORIES

The major reasons for the spatial distribution of the original dairy factories and the origin of disused dairy factories were presented in Chapter I. The main points from this were that on a regional level Taranaki is a very dairy intensive region with a climate and physical environment well adapted to high dairy production. At the scale of the site location of a dairy factory, the major factors influencing this generally were the highly perishable and bulky nature of the raw material and the means of transportation available to transport the milk to the processing plant. These two major factors combined to produce a network of creameries at about five mile intervals, which in turn supplied a central butter factory.

Other more specific site location factors included being located as close as possible to the centre of the milk supply area, a site location with good accessibility (i.e. a road junction), proximity to a fast running stream (water being important for both processing and hygiene), an adequate labour supply nearby and space around the factory site for suppliers to tether their horses as they waited to off-load their milk.

The dairy factory building itself was generally a wooden or concrete structure with a sloping concrete floor. A central channel often ran the length of the dairy factory to enable water to drain away. The design of the building generally followed the same pattern of one central room with numerous small rooms leading from it. In some cases the dairy factory floors were on different levels, in order to facilitate the operation of gravitational separation (this latter building was indicative of early dairy factory design).

In comparison to the dairy factory's original use the reason for locating the current reuse activity in the study area is, more often than not, a case of those people initiating the reuse having lived in the area and being familiar with it (refer to Table 4.1). This does not bear any similarity to the natural

resource-orientated reasons for the spatial distribution of dairy factories throughout Taranaki.

The choice of site location directs itself to the particular demands of a site for different kinds of enterprise. The reasons for choice of site location are referred to in Table 4.3. The majority of respondents chose the present dairy factory location because of the "existence of an established building".

At neither the regional nor site location level do the original use and current reuse activity appear to share any common features, other than their both being highly localised in origin. Table 3.9 and 3.10 confirm the local origins of most reuse activities, while the original dairy factory was, by virtue of its function, a highly localised processing unit, the "raison d'etre" of the local community.

In assessing the comparability of the site requirements of the former and current use, the disadvantages of the site location cited by the respondents provide a basis for analysis. In the most basic assessment of site location there must be some degree of comparability between the dairy factory and reuse activity, for the reuse activity to be able to locate there and utilise the building.

The nature of the former use and current reuse are seen to differ. The original dairy factories were most often operated as co-operative concerns, run by a board of directors with all suppliers having a financial share in its operation. Often numerous small branch dairy factories were operated by large companies within an area. The land on which the dairy factory was built was often bought off one of the suppliers, exemplifying the co-operative principles of the total dairy factory operation.

In contrast Table 3.11 shows the reuse activities to be in the main independent enterprises owned by families or other local interests. Thus, a basic difference in the principles behind the former use and current reuse is evident.

One way of examining any degree of commonality between the dairy factory's original use and its reuse may be to classify the latter on a "rural" and "non-rural" industry basis. The original use is obviously a rural-based industry. The problem of how to define "rural" is solved by developing a number of criteria by which the "ruralness" of a reuse activity can be assessed. Non-ruralness is defined as non-conformation with the criteria.

The criteria for classifying a reuse activity as "rural" are:

- 1 Processing a product essentially natural (rural) in its nature: i.e. a raw material needing to be processed near to its point of origin.
- 2 Offering a service to the local rural community.
- 3 Located in a rural environment.

A reuse is classed as being "rural" if it qualifies on at least two of the above criteria. This is used only as a very rough indicator of "ruralness". The following table shows the results obtained.

TABLE 4.5: "RURAL" AND "NON-RURAL" REUSE ACTIVITIES

	"Rural"	"Non-Rural"	Not Applicable	Total
Transport Services	1	-	-	1
Engineering	8	1	-	9
Light manufacturing	2	5	-	7
Storage	28	3	-	31
Livestock processing	4	-	-	4
Retail outlet	1	2	-	3
Concrete type products	-	-	1	1
Vacant	-	-	3	3
Other	-	1	10	11
Total	44	12	14	70

The table shows the reuses to be predominantly "rural" given the classification used in this assessment. Over half the reuse activities can be classified as being "rural" according to Table 4.5 (44 out of 70; 63 percent). As such they share some degree of comparability with the original dairy factory.

With only five of the 70 reuse activities actually processing a rural product, for example, poultry, rabbits or bees, the original dairy factory's function as a food-processing industry is not a common feature among the current reuse activities. Those few reuse activities operating food-processing activities are essentially highly specialised activities requiring highly specialised conditions. Being far more mechanised than the original dairy factory these enterprises do not offer the same magnitude of employment opportunities as the original use.

The majority of those reuse activities classified as "rural" by the above table are classified so because they fulfil the second and third criteria. These "rural" reuses are mainly engaged in storing rural associated products or equipment (i.e. hay and farm implements).

It can therefore be seen, that while the original dairy factory and its current reuse do not share many common regional or site locational features, there is a tendency for the nature of many of the reuse activities to be "rural" in their orientation.

4.4 SERVICE LINKAGES OF REUSE ACTIVITIES WITH URBAN CENTRES

The previous analysis suggests that the nature of the service linkage of reuse activities with urban centres may well indicate some allegiance to the local town centre. By investigating the location where the reuse activity carries out its banking as terms of reference, because it involves the reciprocal movement of finance between the reuse and the town, the following table evidences the nature of reuse service linkages.

TABLE 4.6: BANKING FACILITIES USED BY REUSES

	(the urban centre)	
	<u>Total</u>	<u>%</u>
Within the local community (i.e. within 5 km radius)	2	3.0
In nearest town	6	8.0
In other centre	42	60.0
No response	<u>20</u>	<u>29.0</u>
Total:	70	100.0

Closer inspection of the category "in other centre" reveals a breakdown as follows:

TABLE 4.7: BREAKDOWN BY URBAN CENTRE OF "IN OTHER CENTRES"
(Refer to Table)

	<u>Total</u>	<u>%</u>
New Plymouth	17	41.0
Hawera	12	29.0
Manaia	1	2.0
Eltham	3	7.0
Kaponga	1	2.0
Stratford	6	14.0
Inglewood	<u>2</u>	<u>5.0</u>
Total:	42	100.0

It is evident that more than half of the reuse activities use banking facilities not considered to be local. There is a notable concentration of service linkage between reuse activities and the urban centres east of the mountain, located between Hawera and New Plymouth. This could well be a comment on the standard of banking facilities available on the west coast.

Table 4.6 may also indicate the centre where the reuse activity may have obtained money to purchase the disused dairy factory, and where any profit arising from the reuse's activity may be directed.

While the majority of reuse activities are local in origin, local banking facilities are not well patronised by reuses and could be assumed to be inadequate for the purposes of reuse activities' operations.

The above tables suggest reuse activities look further afield for banking facilities. This may be the result of larger centres offering a better or a more extensive range of services. Reuse activities may be able to obtain a loan more easily from these sources as opposed to a local agency. Table 4.8 seems to support the idea that reuse activities are more likely to deal with a main branch of their bank in a larger service centre, than an agency in their local community.

More than half of the reuse activities (37 out of 70:53 percent) verify that the majority of reuse activities see a larger service centre as necessary to fulfil their banking requirements.

TABLE 4.8: NATURE OF BANKING FACILITIES USED BY REUSE

	<u>Total</u>	<u>%</u>
A local agency	4	6.0
Main branch in larger centre	37	53.0
No response	<u>29</u>	<u>41.0</u>
Total:	70	100.0

The breakdown by urban centre of where the respondents carry out reuse banking requirements is shown in Table 4.7. New Plymouth accounts for nearly half these reuse activities with 17 of the 42 respondents stating they banked there (refer to Table 4.6 - 42 respondents indicated they used banking facilities in "other centre"). While New Plymouth may not be the major innovating centre for reuse activities, being the regional centre it does offer the most extensive range of services available to the regional economy. It is not surprising, therefore, that the majority of reuse activities would have linkages with this centre.

This linkage is probably also a function of today's increased

accessibility as opposed to the restrictions the friction of distance placed on communication in the heyday of the original dairy factory. New Plymouth is not as inaccessible to most areas of the study area in terms of both time and cost as it was some 20 or 30 years ago.

Hawera is the next highest centre, affording service linkages with about three-quarters of the number of reuse activities that have linkage with New Plymouth (12 out of 70, 29 percent).

It is significant that the two centres having the majority of service linkages with reuse activities are situated at the opposite extremes of the Taranaki regional boundary. New Plymouth and Hawera are the two largest centres of population concentration in Taranaki, and as such the nature of their service linkage with reuse activities does appear to be a logical response to those reuses located at the northern and southern boundaries of the region.

All the other urban centres shown in Table 4.7 are smaller centres whose prime function is to service the rural economy, for as was noted previously, three quarters of the employment in these towns is in the tertiary sector (Franklin, 1978, 261).

While reuse activities are mainly local in origin they appear to be looking to the larger service centres for service linkages. This could be in the hope of gaining greater benefits for their reuse activity by utilising these services rather than local services. It is also possible that reuse activities combine a journey to a main centre with other business associated with their operations in the disused dairy factory, as well as personal business. This has the effect of leaving the smaller service centres of the region at a disadvantage in not being able to gain from any spin-off effects (i.e. other trading - equipment, sundries, etc.) that may have come from service linkages with reuse activities. This seems to further the pattern of the larger centres growing at the expense of smaller centres. The effect of reuse activities having service linkages in New Plymouth do not nearly bear the same significance as if those

reuse activities utilised the services of the local service centre. With more money invested in the immediate area these smaller centres may well be able to provide increased services to all the residents in the surrounding district.

The use of postal facilities by reuse activities does not appear to have the same degree of regional polarity as exhibited by the spatial linkage of banking facilities.

TABLE 4.9: POSTAL FACILITIES USED BY REUSES

	<u>Total</u>	<u>%</u>
Rural delivery	24	34.0
PO Box at local post office	7	10.0
PO Box in nearest town	14	20.0
PO Box in New Plymouth	4	6.0
No response	<u>21</u>	<u>30.0</u>
Total:	70	100.0

Rural delivery postal service is favoured by the majority of reuse activities as the means of receiving and sending communication (24 responses; 34 percent). This pattern possibly reaffirms the linkage of reuse activities to their local community that the pattern of banking linkages in some ways displaced.

With the majority of reuse activities located off major arterial routes rural delivery is a "boon to their existence" with a daily mail service. This linkage contrasts with banking linkages which are presumably not as frequent; possibly only once a week in the instance of some reuse activities.

Only 14 respondents use a PO Box in the nearest town, while even fewer respondents use a PO Box in New Plymouth.

The significance of service linkage with the major service centres is that the nature of the linkage is of a higher order than linkage with the local community or nearest town (i.e. banking services are considered of greater economic importance than postal services, unless the reuse activity's market relies on mail orders).

While the nature of the reuse activities' linkage with urban centres can be partly assessed on banking and postal allegiances, another indicator of service linkage may be which town centre each respondent considers to be the nearest for the reuse activity's operations. The evidence in Table 4.10 suggests a service linkage tendency towards the main centres of the region, New Plymouth and Hawera. Geographic location and the size and functions of these centres as the main two service centres of the Taranaki region could account for this pattern.

TABLE 4.10: NEAREST TOWN CENTRE FOR REUSE ACTIVITIES

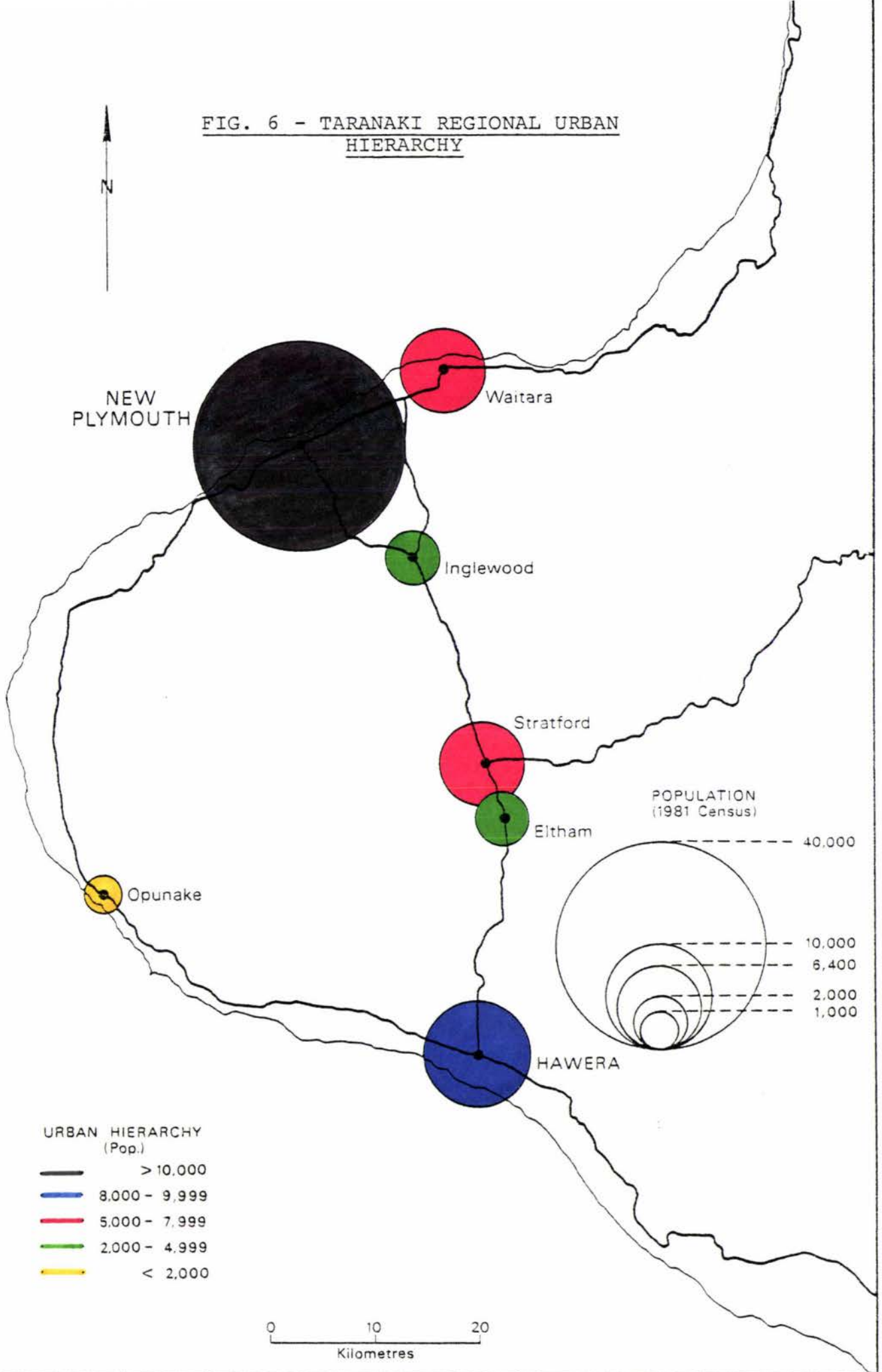
	<u>Total</u>	<u>%</u>
Hawera	11	16.0
New Plymouth	16	23.0
Kaponga	4	6.0
Manaia	1	1.0
Eltham	2	3.0
Stratford	4	6.0
Inglewood	4	6.0
Opunake	1	1.0
Auckland	3	4.0
No Response	<u>24</u>	<u>34.0</u>
Total:	70	100.0

The premise behind the Taranaki Urban Hierarchy as seen in Table 4.11 is that there is a positive relationship between the population size and the number of services offered by the urban centre. The general hypothesis is the larger the population the more services are offered in the urban centre. It is possible to define hierarchy on this basis as Table 4.11 shows.

TABLE 4.11: TARANAKI URBAN HIERARCHY

<u>Urban Centre</u>	<u>Population</u>
1 New Plymouth city	> 10 000
2 Hawera	8 - 9 999
3 Manaia, Stratford	5 - 7 999
4 Inglewood, Eltham	2 - 4 999
5 Opunake	< 2 000

FIG. 6 - TARANAKI REGIONAL URBAN HIERARCHY



In Figure 6 the size of the circle is proportional to the size of the population and the colour of the circle designates its classification according to the urban hierarchy in Table 4.11.

As a means of investigating whether population size is a good indicator of the degree of service linkage between reuse activities and the urban centres of Taranaki, a reuse activity hierarchy based on which town the respondent considered to be the "nearest" for the enterprise's operation is used.

The "nearest town" concept was chosen as an indicator of service linkage because it is presumed to combine the banking and postal facilities utilised by the reuse activity, and other spin-off transactions involving the reciprocal movement of finance between the reuse activity and the town: a measure of the spatial interaction between them.

The limitations of this analysis are acknowledged as only 33 responses to the information in question were obtained.

Table 4.12 represents the classification of data from Table 4.10 into a REUSE Urban Hierarchy based on the number of respondents citing each town as the nearest urban centre for the reuse activity's operations.

TABLE 4.12: REUSE URBAN HIERARCHY

<u>Urban Centre</u>	<u>Number of Reuses</u>
1 New Plymouth	+ 15
2 Hawera	10-14
3 Inglewood, Stratford, Kaponga	4-9
4 Eltham, Manaia, Opunake	< 2

In Figure 7 the circle size is proportional to the number of reuses having a service linkage with each urban centre. The colour of the circle represents the hierarchy of urban centres according to service linkage with reuse activities.

FIG. 7 - REUSE SERVICE LINKAGE
~~FIG. 8 - HIERARCHY OF TRANSPORTATION~~
~~ROUTES IN TARANAKI~~

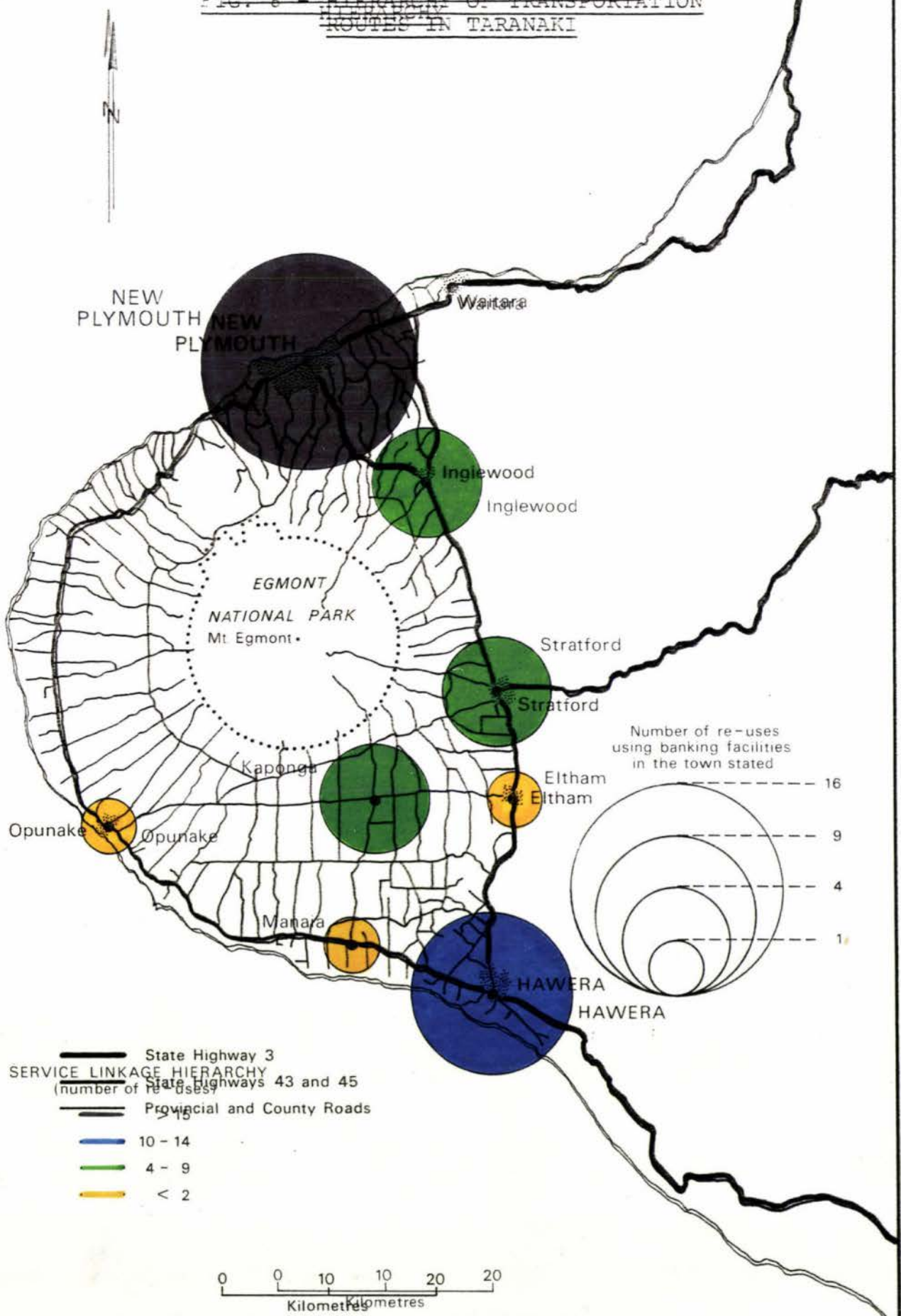


FIG. 7 - REUSE SERVICE LINKAGE HIERARCHY

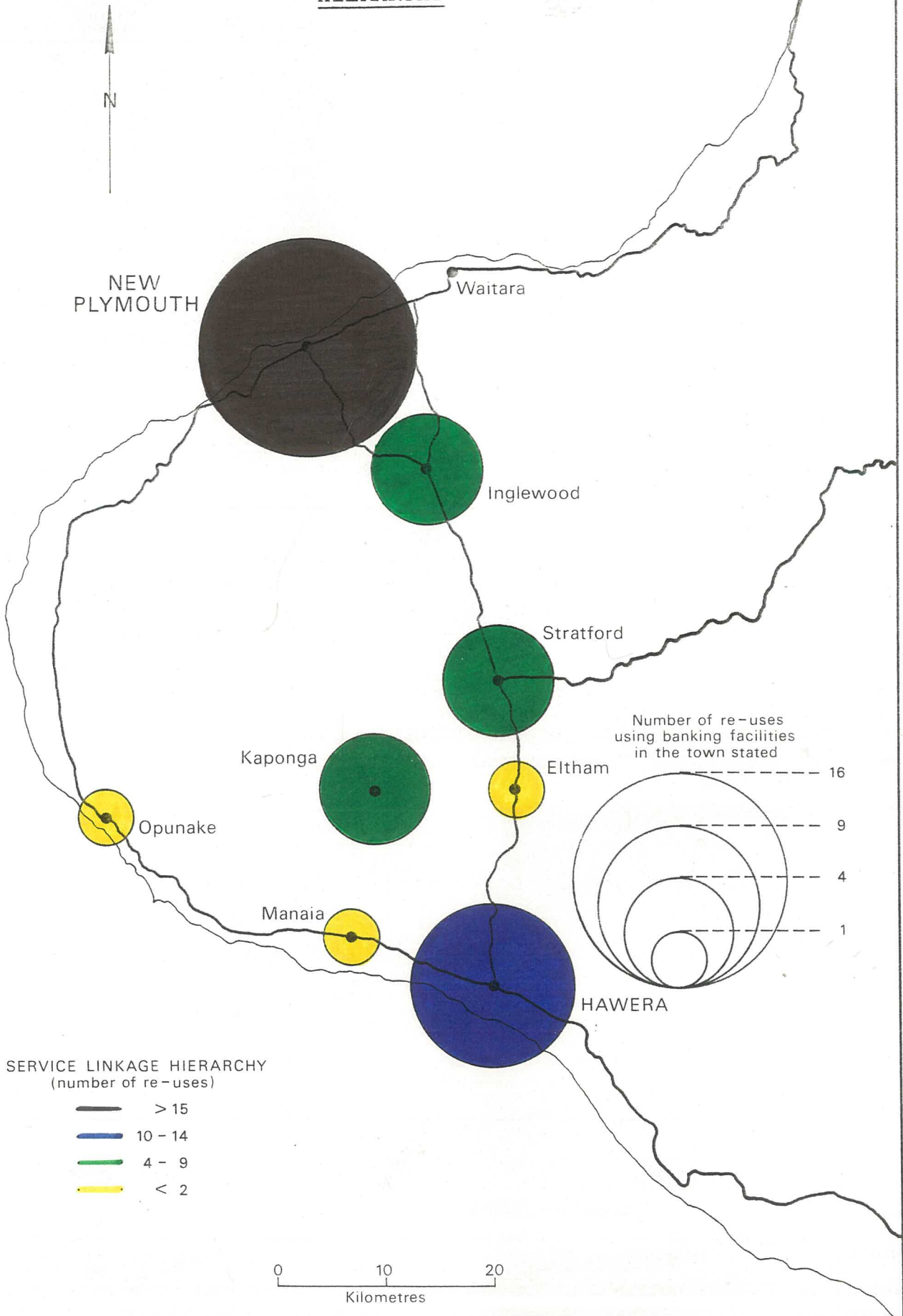
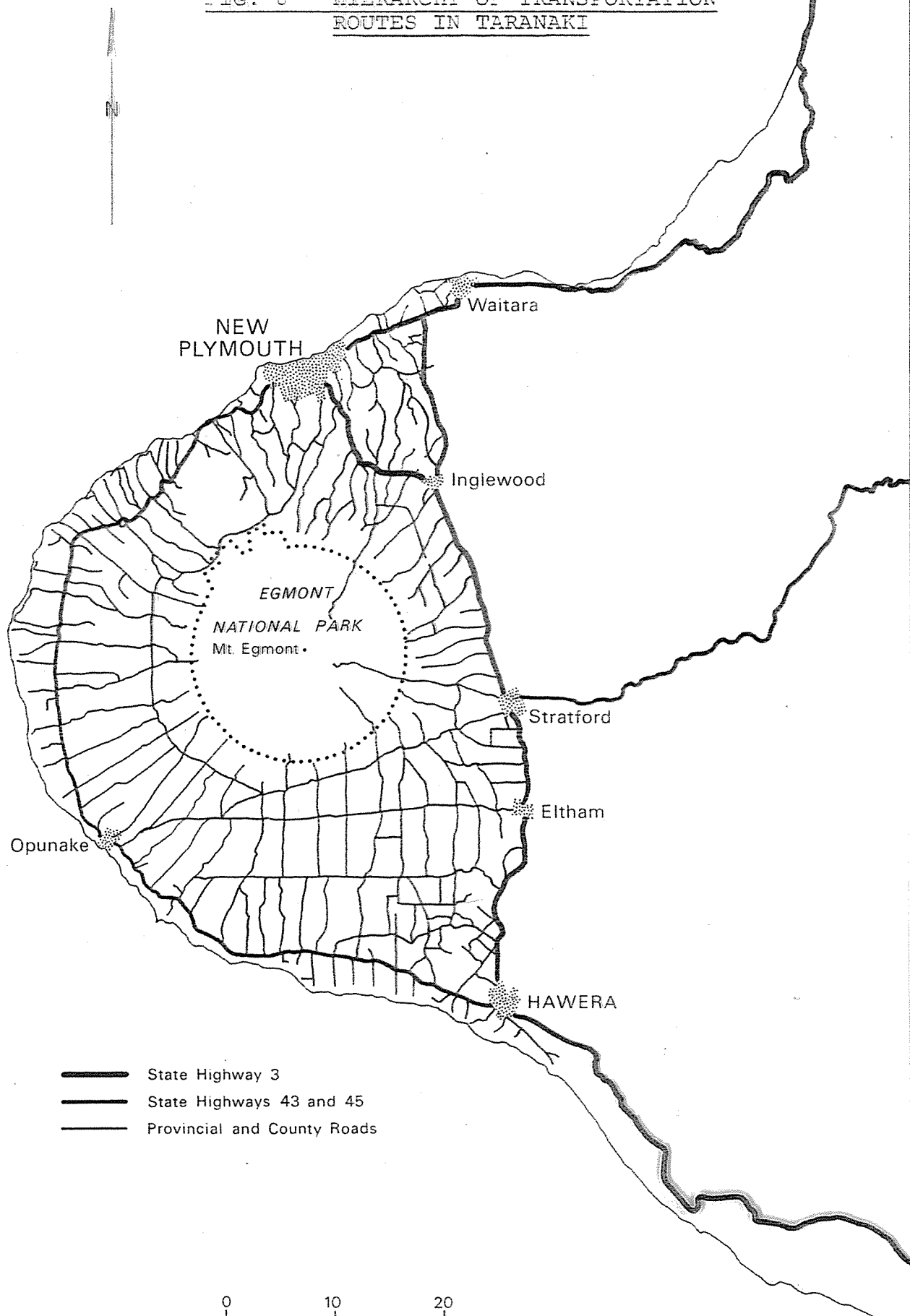


FIG. 8 - HIERARCHY OF TRANSPORTATION ROUTES IN TARANAKI



From analysing the spatial distributions of the urban centres of Taranaki represented in Figure 6 and Figure 7 it can be seen that there are discrepancies between the two distributions. A striking feature of the service linkage hierarchy is the absence of Waitara and the appearance of the small local communities of Kaponga and Manaia. Waitara is in the third tier of the urban hierarchy measured by population size but does not appear in Figure 7. Being only 15 kilometres north of New Plymouth, Waitara appears to be by-passed in preference to the regional centre of Taranaki. There is not the concentration of reuse activities in this northern region to presumably warrant using the services of a smaller urban centre with New Plymouth in close proximity. The dense concentration of reuse activity in central South Taranaki would aid in accounting for the small centres of Kaponga and Manaia appearing in Figure 7.

The position of New Plymouth as the regional centre of Taranaki is not disputed by either hierarchy. The relationship between New Plymouth and Hawera according to both hierarchies is, however, significant. In Figure 6 where population size is used as the measure of classification, New Plymouth has a population approximately four times that of Hawera, which illustrates the degree of primacy that New Plymouth commands over other Taranaki centres.

The same relationship between Hawera and New Plymouth does not exist when assessed in terms of the reuse service linkage hierarchy. While New Plymouth is still at the top of the hierarchy, the number of service linkages it controls does not even approach one and a half times those reuse activities using Hawera as their service centre. The spatial distribution of the original dairy factories and therefore the spatial distribution of dairy factory reuse contributes to explaining the relative importance of Hawera, Eltham, Inglewood, Kaponga and Manaia for reuse activities. South Taranaki represents the heart of dairying in Taranaki and therefore provides the greatest concentration of disused dairy factories available for potential reuse.

A feature of the relationship between these two largest Taranaki

centres in their absolute location at the northern and southern boundaries of the region. In terms of their relative accessibility to reuse activities those reuse activities using Hawera as their service centre would in the main not have to travel as far as those reuses as with affiliations to New Plymouth, given the geography of the region and the network of transportation routes in the region (see Figure 7 and Figure 8). By laying the service linkage hierarchy over the network of transportation routes the pattern of reuse service linkage becomes more meaningful in terms of the accessibility of these centres to reuse activities.

The service linkage of reuses in central Southern Taranaki with Kaponga represents a rational response by reuses to the town as an intervening opportunity between the services offered at Eltham and Opunake. Both of these latter centres are patronised by only half the number of reuses that Kaponga services.

Following SH3 northward from Hawera to New Plymouth each tier of the service linkage hierarchy is represented, with two centres of the third tier occurring in this continuum. These two centres, Stratford and Inglewood, are only 21 kilometres apart. Inglewood is 20 kilometres south of New Plymouth and Stratford is 29 kilometres north of Hawera. Inglewood and Stratford appear to command relatively the same proportionate share of service linkage with reuse activities as their distance from their nearest large centre, New Plymouth and Hawera respectively, would presume. A feature of this pattern is the intervening centre of Eltham, between Hawera and Stratford, which does not appear to have absorbed too many of potential reuse service linkages from Stratford. In the urban hierarchy by population size (Figure 6) Stratford is nearly twice as large as Inglewood (the former being in the second tier, with the latter in the third tier of the hierarchy). In comparison, the service linkage hierarchy sees the relative importance of Inglewood to Stratford being of the same hierarchical stature in relation to reuse activity.

As a means of measuring the strength of the association between population size and reuse service linkage the Spearman rank correlation coefficient (r_s) is used (see Appendix B for computation). While a value of +1 would indicate a perfect posi-

tive relationship between population size and reuse service linkage (i.e. the number of reuses with service links with an urban centre increases with increasing population size) and -1 a perfect negative relationship (i.e. as population increases the number of reuse linkages decreases) whilst a value of 0 means there is no association at all. The r_s value computed for the two variables in question is $r_s = 0.59$.

This indicates that while some relationship does exist between the two variables population is not, in general, a very good indicator of the degree of service linkage by reuse activities with the urban centres of Taranaki.

In summary, the spatial distribution of reuse service linkages in the study area indicates that dairy factory reuse is not a simple and definitive phenomenon as may have been presumed.

4.5 OTHER LOCATIONS CONSIDERED IN THE LOCATION DECISION

This part of the analysis deals with whether locations other than the disused dairy factory were considered in the location decision and if they were, why the abandoned dairy factory premises was chosen. This suggests there may have been a feature of the abandoned dairy factory that had a significant bearing in the final location choice of the reuse activity.

TABLE 4.13: INFLUENCE OF OTHER LOCATIONS ON LOCATION DECISION

	<u>Total</u>	<u>%</u>
Number influenced by other locations	17	24.0
Number not influenced by other locations	27	39.0
No response	<u>26</u>	<u>37.0</u>
Total:	70	100.0

Table 4.13 shows the influence of other locations in the location decision prior to dairy factory reuse.

Out of the 70 reuse activities, 17 respondents (24 percent) did

consider locating their enterprise at another site. In some cases this other site was known to be another abandoned dairy factory. For example, the Tawhiti Museum currently embodied in the old Tawhiti Dairy Factory could have been in another similar abandoned dairy factory within the southern half of Taranaki according to its owner. He in fact cited having looked at the old Mere Mere Dairy factory at Ohangai for the purpose of creating a museum.

With many of the disused dairy factories being utilised as hay-barns, implement sheds or farm storage of some kind, the 27 negative responses can partly be accounted for by the fact that the disused dairy factory often adjoined the farm property, was originally part of the farm, or was part of the farm when the farm was purchased. This being the case, then other locations considered in the location decision of the reuse activity refer not to other locations for the building of a hay-shed or the like but rather to a farm in a different area.

TABLE 4.14: SITES OTHER THAN DAIRY FACTORY CONSIDERED IN LOCATION DECISION

	Other sites considered	No other sites considered	Not Applicable	Total
Transport Services	-	1	-	1
Engineering	2	5	2	9
Light manufacturing	4	3	-	7
Storage	6	8	17	31
Livestock processing	-	4	-	4
Retail outlet	2	1	-	3
Concrete type products	-	1	-	1
Vacant	-	0	3	3
Other	3	4	4	11
Total:	17	27	26	70

If the responses to Table 4.13 are classified by reuse type (see Table 4.14) this shows the majority of respondents for engi-

neering, livestock processing and storage reuse activities did not consider siting their enterprises at another location, whereas the majority of respondents for light manufacturing activities did. This pattern could relate to the former respondents possibly more concerned with being able to obtain a building within a certain locality, given that these reuses are predominately family firms/companies (refer to Table 3.14: Nature of Local Reuse Activities). While the light manufacturing reuses, may have been tied to certain locations and also required a building, the locational advantages of the site appear to have been more important to their enterprise (i.e. the location of raw material supply, labour and market demand) and their location decision may have involved a trade-off between possible locations.

Having established that other locations may have been considered some analysis of the abandoned dairy factory's location relative to other locations is examined. Rural rates, although having increased notably over the last few years, are still comparatively low in relation to urban rates. How significant this fact was on the respondent's decision to locate in a disused dairy factory is shown in Table 4.15.

TABLE 4.15: INFLUENCE OF LOWER RATES ON LOCATIONAL DECISIONS

	<u>Total</u>	<u>%</u>
Number citing this factor	7	10.0
Number not citing this factor	42	60.0
No response	<u>21</u>	<u>30.0</u>
Total:	70	100.0

Table 4.15 shows quite conclusively that lower rural rates are not a significant factor in determining dairy factory reuse location decisions. Table 4.16 provides some information on what was the major inducement for those reuse activities that considered alternative locations to finally choose the abandoned dairy factory in which they currently operate. The 18 total responses of Table 4.20 concur with the 18 reuse activities indicated in Table 4.18 as having considered other locations.

TABLE 4.16: MAJOR REASON FOR LOCATING IN DAIRY FACTORY

<u>Reason</u>	<u>Total</u>	<u>%</u>
Cheap	5	29.0
Large yard space available	1	6.0
Existence of a vacant building	5	29.0
Proximity (to market/residence)	3	18.0
Other	<u>3</u>	<u>18.0</u>
Total:	17	100.0

It appears from this table that there were two major reasons for these reuse activities choosing to locate in an abandoned dairy factory rather than elsewhere; the price and availability of the abandoned dairy factory. These two features of the disused dairy factory are positive factors in the potential reuse life of the old dairy factory premises, as well as being attractive factors given the magnitude (i.e. small local enterprises) of the majority of the reuse activities. Table 4.17 shows these two features are not peculiar to any one reuse type.

TABLE 4.17: MAJOR REASON FOR LOCATING IN DAIRY FACTORY BY REUSE

	Cheap	Yard Space Available	Exist- ence of Building	Prox- imity	Other	Total
Transport services	-	-	-	-	-	-
Engineering	-	-	1	-	1	2
Light manu- facturing	1	-	1	1	1	4
Storage	1	1	3	1	-	6
Livestock processing	-	-	-	-	-	-
Retail outlet	-	-	-	1	1	2
Concrete type products	-	-	-	-	-	-
Vacant	-	-	-	-	-	-
Other	3	-	-	-	-	3
Total:	5	1	5	3	3	17

The significance of the existence of the vacant dairy factory is thought to best be examined by investigating how many of the reuse activities would have located on the dairy factory site had there not been a building on the site. Table 4.18 indicates in the main, 34 respondents (48 percent) would not have established their reuse activity in its present location had the disused dairy factory building not been there.

TABLE 4.18: INFLUENCE OF VACANT BUILDING ON LOCATION DECISION

	<u>Total</u>	<u>%</u>
Number choosing site location even if vacant	18	26.0
Number not choosing site location if vacant	34	48.0
No response	<u>18</u>	<u>26.0</u>
Total:	70	100.0

Some of the 18 respondents stating the presence or non-presence of their enterprise at its present location does not take into account the existence of the disused dairy factory, would include those farming operations where a new hay-barn or implement shed would probably have had to be built, but at a far higher price than that paid for the abandoned dairy factory premises.

It is important to be able to identify those reuse types that would have located on the present site had they had to build a building and those reuses which would not. Clearly, those respondents who would have built had the dairy factory not been there consider the site location to have an important influence on their enterprise's operations. The other group of reuses have presumably foregone site advantages elsewhere for the favourable relative cost of purchasing an existing building rather than building in a better location. Table 4.19 identifies these reuse types.

TABLE 4.19: REUSES WHICH WOULD HAVE ESTABLISHED ON DAIRY FACTORY SITE HAD THEY HAD TO BUILD

No

	Yes	No	Response	Total
Transport Services	1	0	-	1
Engineering	2	7	-	9
Light manufacturing	1	6	-	7
Storage	11	9	11	31
Livestock processing	1	3	-	4
Retail outlet	1	2	-	3
Concrete type products	1	-	-	1
Vacant	-	-	3	3
Other	-	7	4	11
Total:	18	34	18	70

The most significant feature of this table is that seven engineering enterprises (71 percent) and six of light manufacturing activities (86 percent) would not have established on the dairy factory site had they had to build. These enterprises are possibly operating at a sub-optimal location in terms of perhaps market potential or raw material supply. The disused dairy factory premises, on the other hand, may well have been the compromise between the present site location, and the cost of an alternative building or building. Both of these alternatives would have been financially prohibitive, as the majority of reuse activities are small local enterprises.

Those reuses which value the advantages offered by the site location over the existence of the dairy factory building are predominately storage activities. This supports the earlier idea that many of these dairy factories are used as hay barns or implement sheds, which are necessary requirements for farming operations.

The point that Table 4.19 makes significant is that many of the small communities now served by engineering reuse activities, and having a light manufacturing enterprise in their midst, affording the rural area not only service requirements but

employment also, owe this to the mere physical existence of the dairy factory. Without the disused dairy factory being available for potential reuse these activities would not have established there. For as Table 4.19 indicates, 34 out of 70 reuses or approximately half of the total respondents said they would not have established at their present location without the existence of the dairy factory.

This investigation suggests that the abandoned dairy factory's greatest asset for potential reuse is its existence, availability and its cheapness relative to other buildings and site locations.

4.6 DISADVANTAGES AND LIMITATIONS OF DISUSED DAIRY FACTORIES FOR REUSE ACTIVITIES

While the disadvantages of the disused dairy factory for its current reuse activity must outweigh the disadvantages for the reuse to decide to locate there, some knowledge of the disadvantages of the location may provide some insight into the kinds of problems reuse activities can expect to encounter, if establishing in a disused dairy factory in the study area.

The disadvantages of locating an enterprise in a disused dairy factory are analysed at three spatial levels: the region, the site location and the dairy factory building itself.

At the regional scale Table 4.20 indicates that 29 out of 70 respondents (41 percent) do not see their enterprise disadvantaged in any way from locating in the study area.

TABLE 4.20: DISADVANTAGES OF LOCATING IN ABANDONED DAIRY FACTORY

(A) Region

<u>Disadvantages</u>	<u>Total</u>	<u>%</u>
No disadvantages	29	41.0
Larger markets elsewhere	2	3.0
High transport costs	7	10.0
Other	3	5.0
No response	<u>29</u>	<u>41.0</u>
Total:	70	100.0

(B) Site Location

<u>Disadvantages</u>	<u>Total</u>	<u>%</u>
No disadvantages	25	36.0
Remote from main market	4	6.0
Problems with security/vandalism	3	4.0
Not located on a main road	4	6.0
Proximity to a waterway	2	3.0
Travel distance to site location	7	10.0
Other	1	1.0
No response	<u>24</u>	<u>34.0</u>
Total:	70	100.0

(C) Building

<u>Disadvantages</u>	<u>Total</u>	<u>%</u>
No disadvantages	29	41.0
Building not specifically designed for the current reuse activity	8	12.0
Differing floor levels of building	1	1.0
Repair/maintenance required	4	6.0
Other	3	4.0
No response	<u>25</u>	<u>36.0</u>
Total:	70	100.0

This is to be expected given that 39 respondents (refer to Table 4.1) state the main reason for locating their reuse enterprise in the study area is because they lived in the area and were therefore familiar with it. For the majority of reuse activities, which are local in origin, regional disadvantage is of minor consequence, as has been indicated.

The high transport costs of raw materials is cited in five cases (7 percent) as a limitation to the operation of the enterprise on a regional scale. While this disadvantage is a problem even for those reuse activities located on the main road between Hawera and New Plymouth, the magnitude of this problem is far greater for the likes of those reuse activities located on the west coast of Taranaki. This area relies solely on road transport for its raw material supplies, and unless the final product can bear the incidence of the high raw material transport costs the reuse

activity would be economically inefficient and unprofitable.

The distance of some of the more specific reuse activities from their major raw material supplies can be quite extensive in some cases. For example, the animal and poultry-feed manufacturer located in the Rugby Road Dairy Factory obtains barley and wheat and other necessary products from as far afield as Manawatu, Rangitikei and Hawkes Bay. It is certainly to the benefit of the study area, that the advantages the region offers in terms of market potential outweigh the high transport costs the products of this reuse activity must bear.

Another specific regional disadvantage stated by respondents is the possibility of obtaining larger markets for their products in other parts of New Zealand rather than just looking to the Taranaki region as their only market area. Only two respondents cite this as disadvantageous to their operations. Both of these reuse activities are engaged in the rabbit-meat industry. The nature of this enterprise is such that the major metropolitan centres provide the largest potential markets, as large population centres create demand on a scale that New Plymouth cannot sustain.

Part B of Table 4.20 shows how respondents saw the disadvantages of the specific site location of the disused dairy factory. Notably 25 out of 70 respondents (36 percent) do not see the site location as having detrimental effects on their enterprise. This seems logical with the majority of reuse activity being small and local in origin. As long as the site location of the reuse activity was within reasonable boundaries for supply and demand purposes, the reuse enterprise is not too disadvantaged in terms of raw material or distribution costs.

Seven out of the 70 reuse activities (10 percent) are disadvantaged by the fact that the distance travelled to the dairy factory site is too great. This is seen in terms of time and cost to employees of one reuse activity, while other respondents state the dairy factory's location at one end of their property caused minor disadvantages to their farming operations, in terms of the factory not being located more accessibly to the rest of the farm. It appears that whatever the nature and magnitude of

the reuse activity, as these two examples exemplify, the site location of the reuse activity is hardly ever, if ever, going to be ideal by any measures of assessment.

The problems posed by the relative isolation of the Taranaki region from main markets become compounded when this problem is transposed to the scale of site location. Even those respondents not looking outside the Taranaki region for their market cite as a problem locating off a main road; a location which in itself creates a potentially larger market. Four out of 70 respondents claim disadvantage in this respect.

Vandalism and maintaining security is not only an urban problem. Reuse activities are also faced with these problems. This problem arises where the disused dairy factory is being used for storage purposes, with the owner or main part of the reuse activity not sited at the same location as the dairy factory.

Proximity to a waterway was a major location factor for the original siting of the dairy factory. This factor is now disadvantageous, as proximity to a waterway limits the potential reuses of the dairy factory. For example, the reuse of the dairy factory for fattening pigs is prohibited because of regulations guarding against the emission of waste into waterways.

The limitations of the dairy factory building are shown in Part C of Table 4.20. For the majority of reuse activities, 29 out of 70 (41 percent) there are no major design or structural disadvantages of the dairy factory. A major disadvantage of the dairy factory building for some of the more specific reuse activities is the fact that the building is not specifically designed for the activity which they are operating. The case of those reuse activities engaging in poultry operations numerous modifications have been carried out. While the dairy factory building was designed to operate as a dairy factory, this has not proved so limiting a factor that reuse activities have decided not to utilise the building in a modified form.

Repair and maintenance of the disused dairy factory is a disadvantage stated by some respondents. While the main part of the dairy factory is usually constructed of concrete or wood, with a concrete floor, it is generally the roof which is in need of repair along with broken windows (if these have not already been boarded in). The cost of re-roofing a building the size of a dairy factory is expensive. While some people could claim the dairy factory to be an eyesore, the high cost which is involved in repair may well account for its current state of disrepair in some cases.

In summary, while some specific disadvantages can be cited at the regional, the site location and building scales these disadvantages are not significant enough to deter dairy factory reuse.

A measure of how suitable the dairy factory premises is for reuse can be seen by investigating whether the building has been modified in any way, and the reason or reasons for these alterations.

TABLE 4.21: STRUCTURAL ALTERATIONS TO DAIRY FACTORY

	<u>Total</u>	<u>%</u>
Alterations made	37	53.0
No alterations made	18	26.0
No response	<u>15</u>	<u>21.0</u>
Total:	70	100.0

Table 4.21 shows that changes to the dairy factory have been made by 37 reuse activities (53 percent). Table 4.22 summarises these modifications. These categories of modifications are not mutually exclusive with some respondents citing more than one modification, which implies that dairy factory reuse does entail spending some time and money in order to make the building operational for the reuse.

TABLE 4.22: MODIFICATIONS MADE TO DAIRY FACTORY

<u>Modification</u>	<u>Number of Reuses</u>	<u>Total % of Modification</u>
Make access ways through walls, etc.	41	43.0
Rebuild interior of the dairy factory to suit needs of reuse	11	12.0
Installation of sanitary facilities	10	10.0
Installation of eating facilities	2	2.0
Built on extras, e.g. porch	5	5.0
General repair and maintenance	<u>27</u>	<u>28.0</u>
Total:	96	100.0

The problem of access into the dairy factory figures most in the list of modifications undertaken. This usually entails making doorways in walls to allow vehicle access into the building. Some interior modification is often necessary. For example, the removal of some interior walls to make one large room. Making provision for exterior and interior access to the building accounts for 43 percent of the modifications carried out.

General repair and maintenance totals 28 percent of the modifications. The extent of the work required in repairing and maintaining the dairy factory varies according to whether the building is a concrete or wooden structure, the latter requiring more maintenance. Often the building is in need of a new roof (an expensive task) with one reuse enterprise estimating the cost of re-roofing the dairy factory building in the vicinity of \$6,000.

A further 12 percent of the modifications involve the rebuilding of the dairy factory's interior to meet the specific requirements of the reuse activity. This is especially the case for those reuses operating poultry enterprises. In addition to the

building of cages, specific light and heating regimes have to be installed.

Other modifications include the building of sanitary and kitchen facilities to meet health regulations. In some instances reuse activities have built additional buildings onto the original dairy factories for extra storage space.

The main reason for modification to the dairy factory is the need for improved vehicle access in and out of the building. This was apparent for all the categories of reuse.

Indications are that most of the reuse activities modified the dairy factory building in some way. The significance of these alterations is thought to give an indication of the degree of difficulty the reuse activity encountered in making the disused dairy factory suitable for its intended reuse. Table 4.23 evidences how respondents perceive any modifications they undertook. The response shows the majority of respondents consider any modifications they did to be of minor importance (29 out of 70; 41 percent) with only 8 respondents claiming these alterations to be major.

TABLE 4.23: SIGNIFICANCE OF MODIFICATIONS MADE TO DAIRY FACTORY

	Major	Minor	No Response	Total
Transport Services	-	1	-	1
Engineering	1	4	4	9
Light manufacturing	2	4	1	7
Storage	3	13	15	31
Livestock processing	-	2	2	4
Retail outlet	1	1	1	3
Concrete type products	1	-	-	1
Vacant	-	-	3	3
Other	-	4	7	11
Total:	8	29	33	70

These reuse activities include those which had to "build a factory within a factory". For example, the Glover Road Dairy Factory was completely rebuilt inside with only the original

outer shell of the dairy factory remaining intact. This type of modification becomes a major undertaking when the original building has been specifically designed for a different use. The storage reuses making major alterations to the dairy factory are those engaged in the bulk storage of fertiliser which require access for heavy equipment. The majority, however, of respondents consider any changes only minor, and as their associated reuses are varied in type, altering the building can not be thought of as a deterrent to reuse of the dairy factory building. Any change made is minor in relation to having to build a new building.

The dairy factory building can be seen then as requiring only minimal modification for most of the reuse activities currently operating in them. As such, having to modify the dairy factory for its proposed reuse appears only a minor consideration in the decision to locate in a disused dairy factory.

4.7 THE SIGNIFICANCE OF FACTORS OF PRODUCTION IN THE LOCATION DECISION OF REUSE ACTIVITIES

Some of the factors of production which the reuse activities would have to take into account when deciding upon the location of their enterprise include the location of their raw material supply, the transfer costs incurred in obtaining these raw materials and distributing the final product and proximity to market demand. Land, labour and capital availability are also crucial in the location decision. All these factors vary in their spatial distribution making the choice of location difficult for the reuse activities. As the reuse activity is operating from the disused dairy factory, land as a factor of production is examined in an aspatial sense, as are capital and labour supply in Chapter 5. This analysis is limited to consideration of the spatial significance of raw materials, transport costs and market demand as they impinge on the location decision of the reuse activities.

(i) Raw Materials

The nature of the raw materials which are used by the reuse acti-

vities can be seen in Table 4.24. The significance of "construction materials" relates to the engineering and contracting reuse activities which require materials such as steel, and iron for their operation. Some of the categories have been broadened to take into account some of the highly specific raw materials which are required by some reuse activities. The category of "general feed" refers to the feed required for poultry operations in addition to the wheat, barley and associated grains which go into the making of animal and bird-feed. The main point to be taken from this table is that the raw materials required by the reuse activities are generally in a primary condition rather than a manufactured state. This tends to suggest that most of these raw materials may be obtained locally or within the study area. Figure 9 taken from Table 4.25 gives a comparative illustration of the various sources from which the reuse activities obtain their raw materials.

TABLE 4.24: RAW MATERIALS USED BY REUSES

<u>Raw Material</u>	<u>Number of Reuses Using Raw Material</u>
Animal by-products	5
Fertiliser	4
Construction materials	16
Breeding animals	2
General Feed (processed/unprocessed)	10
Fabric	3
Packaging, printing, paint materials	3
Gas	2
Sundries (associated materials required)	12
Other	8
Not Applicable	31

Those reuse activities obtaining some or all of their raw materials from local sources (local refers to within a 5 km radius of the dairy factory) represent 32 percent of the population, while 42 percent draw their raw materials from within the Taranaki region. This indicates that 74 percent of the reuse activities gain some or all of their raw materials from the Taranaki region. The reuse activities appear to be using regional resources in the main, as opposed to raw materials from outside the region which would incur higher transport costs.

FIG. 9 - SOURCE OF RAW MATERIALS
USED BY REUSE ACTIVITIES

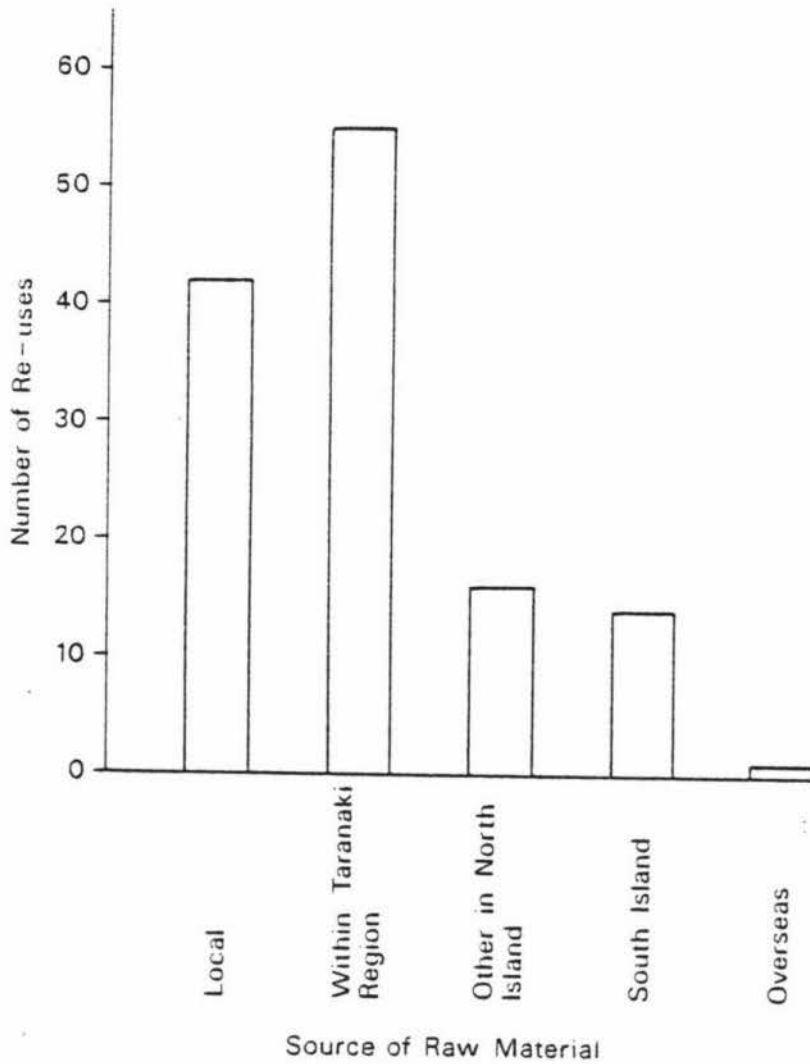


TABLE 4.25: SOURCE OF RAW MATERIALS USED BY REUSES

<u>Source</u>	<u>Number of Reuses*</u>	<u>%</u>
Local (within 5 km)	42	32.0
Within the Taranaki region	55	42.0
Other in the North Island	16	12.0
South Island	14	11.0
Overseas	1	1.0
Not Applicable	<u>2</u>	<u>2.0</u>
Total:	130	100.0

* A reuse may obtain raw materials from more than one source.

It should be noted that those drawing their raw materials from other parts of the North Island and those using the South Island as a raw material source do not differ significantly in their proportion of sources utilised by reuse activities. These two sources represent 12 and 11 percent respectively. This tendency suggests very specific raw material requirements only able to be supplied from particular sources.

Only one reuse activity seeks overseas materials. This reuse buys raw materials overseas and markets its product both New Zealand-wide and overseas. While this reuse activity is highly localised in terms of its labour supply, the local market cannot supply the necessary raw materials or market for the final product.

With the major source of raw materials being regionally orientated an assessment of how significant the location of raw material supply is in the decision to locate in the dairy factory premises may indicate two possible extremes of influence. The regional supply of raw materials is very influential in attracting the reuse activity to its present location or is of no consequence at all in determining the reuse activities present location. The results of this analysis are shown in Table 4.26.

TABLE 4.26: THE PERCEIVED SIGNIFICANCE OF RAW MATERIAL SUPPLY IN LOCATION DECISION

	<u>Level of Significance</u>				Total
	Little or no Signi- ficance	Signi- ficant	Very Signi- ficant	Not Applicable	
Transport Services	-	-	-	1	1
Engineering	8	-	-	1	9
Light Manufacturing	5	1	1	-	7
Storage	5	1	2	23	31
Livestock Processing	4	-	-	-	4
Retail Outlet	3	-	-	-	3
Concrete type products	1	-	-	-	1
Vacant	-	-	-	3	3
Other	3	-	-	8	11
Total:	29	2	3	36	70

The table shows that respondents perceive the location of raw material supply to have had little or no significance on the decision to locate in the dairy factory premises for 29 reuse activities (85 percent assuming a potential total of 34 reuse activities to which the question is applicable). This trend is widespread through most of the reuse activities.

In only five instances does the location of raw materials have any bearing on the decision to locate in the disused dairy factory. One of these is engaged in the manufacture of tennis racquet strings from natural gut and therefore tied to a location in close proximity to a meat works. This table suggests a tendency for reuse activities to be footloose and therefore not tied to any specific location through raw material requirements. This feature of the reuse activities is advantageous to the further potential reuse of disused dairy factories by similarly footloose enterprises.

(ii) Means of Transport

With the reuse activities obtaining their raw materials in the main from within the Taranaki region, then it is plausible to assume that road transport is used to procure these materials. This assumption is borne out by Table 4.27 which indicates road transport as the major means of conveying raw materials to the reuse activity site.

TABLE 4.27: MEANS OF TRANSPORT FOR RAW MATERIALS

	<u>Number</u>	<u>%</u>
Road	29	42.0
Rail	4	6.0
Air	-	-
Sea	1	1.0
Not Applicable	<u>36</u>	<u>51.0</u>
Total:	70	100.0

As the rail route extends along State Highway 1 from Hawera to New Plymouth only those reuse activities located near to the main highway would be able to use this as a viable means of transport. Four reuse activities have access to rail facilities and use them for obtaining raw materials.

Air transport does not figure at all while sea transport is utilised in only one instance.

At the other end of production is the need for distribution and marketing of the final product. Table 4.28 evidences the importance of a good road network in the study area with road transportation being the predominant means of distribution favoured by reuse activities. The region is served with good radial roads as is shown in Figure 8. These provide very important links for reuse activities in terms of obtaining raw materials, distributing their products and enabling their reuse activities functional links with the service towns of the region.

TABLE 4.28: MEANS OF TRANSPORT FOR DISTRIBUTION AND MARKETING

	Means of Transport*				Customer's		Total
	Road	Rail	Air	Respons- ibility	Not Applicable		
Transport Services	-	-	-	-	1	1	
Engineering	4	1	-	3	1	9	
Light manufacturing	4	-	2	1	-	7	
Storage	6	1	-	1	23	31	
Livestock processing	3	-	1	-	-	4	
Retail outlet	2	-	-	1	-	3	
Concrete type prodts	1	-	-	-	-	1	
Vacant	-	-	-	-	3	3	
Other	1	-	-	2	8	11	
Total:	21	2	3	8	36	70	

* As no reuse activity used sea transport in distribution it does not appear in the table.

TABLE 4.29: MAIN MARKET FOR PRODUCTS OF REUSE ACTIVITIES

	At Fac- tory Door	Local Comnty	Taranaki Region	NZ Wide	Over- seas	Not Applc.	Total
Transport Services	-	-	-	-	-	1	1
Engineering	-	2	5	1	-	1	9
Light manufactg	1	-	3	1	2	-	7
Storage	-	3	3	-	1	24	31
Livestock procssg	-	-	2	2	-	-	4
Retail outlet	2	-	1	-	-	-	3
Concrete type prods	-	-	1	-	-	-	1
Vacant	-	-	-	-	-	3	3
Other	3	1	1	-	-	6	11
Total:	6	6	16	4	3	35	70

Air transport is only of marginal importance, while sea transport

does not figure at all. Rail plays only a very minor role in distributing the products of reuse activities. The category of "customer's responsibility" refers to those activities where the purchaser or client takes the product away by their own means. This is the case for a retail outlet, and three engineering reuses which take no responsibility in distributing their products. These enterprises are possibly involved in general repair and maintenance engineering whereby their site location would probably dictate the market area which they service.

(iii) Market Area

With sources of raw materials being mainly local and within the Taranaki region, it is important to identify whether the market area of reuse activity is similar in its boundaries. No enterprise will establish unless it perceives there is a market demand for the goods it intends to produce. This basic economic principle applies also to the reuse activities operating in the disused dairy factories. How far afield these reuse activities assess their market is indicated in Table 4.29.

Only six reuses are able to sustain their enterprises on sales at the factory door. In some of these cases, the reuse activity has been the extension of a hobby, and is not considered the prime source of income for its owner. For example, the sale of honey from the Omata Dairy Factory is the result of a long involvement in beekeeping which now involves the processing of honey in the old dairy factory.

From the table it can be seen that the Taranaki region provides the main market area for the reuse activities. These reuses include engineering, light manufacturing and livestock processing activities. While these reuses are not as highly localised in their market area as some other reuses, they possibly also serve their surrounding areas in addition to other parts of the region. Some of the engineering reuses for instance, may service local farm maintenance needs and could possibly have larger contracts from further afield for structural engineering work.

The reuse activities which market their products New Zealand-wide tend to be relatively new enterprises on the New Zealand business front, as rabbit farming, or of such a magnitude that overseas markets must also be considered to make the enterprise economically viable, as in the case of the John Miller Shirt Factory in the old Glover Road Dairy Factory. The significance of transport costs on the total cost structure of those seven reuse activities operating New Zealand-wide or overseas is examined in Table 4.30. Five respondents claim transport costs to very significantly affect the total cost of their product, while one respondent finds these costs to represent a significant proportion of total cost. Even though transport costs are a very significant proportion of total cost, they are not seen as prohibitive to the extent of making the reuse activities uneconomic. Some degree of satisfaction with the location of the reuse activity in other respects could well be counterbalancing the adverse effect of the region's relative isolation from the rest of New Zealand, as none of the respondents consider the high transport costs incurred as reason for ceasing operations.

The main feature of this investigation is the basic similarity in space between where most of the reuse activities obtain their raw materials and eventually market their product. The majority of reuse activities are therefore utilising the region's resources for the benefit of the region. This fact is significant in aiding the Taranaki region to develop its regional resources apart from its traditional farming heritage.

TABLE 4.30: SIGNIFICANCE OF TRANSPORT COSTS TO TOTAL COST

	<u>Number of Reuses</u>
Not significant	1
Significant	1
Very significant	<u>5</u>
Total:	7

In endeavouring to account for the pattern of dairy factory reuse this chapter has examined the spatial factors which may have

influenced this phenomenon. The main feature to be singled out of this analysis is the significance of the existence of an established building, as the disused dairy factory's greatest asset in influencing its potential reuse. Another major feature from this investigation is the importance of the small local nature of the majority of reuse activities. This is evidenced in terms of both service linkage with other centres in the study area and the production requirements (i.e. raw materials and market) necessary for the reuse activity's operations.

CHAPTER V
ASPATIAL ASPECTS OF DAIRY FACTORY REUSE

In this chapter the contribution of the aspatial factors is examined.

5.1 METHODS OF OBTAINING KNOWLEDGE ABOUT THE DAIRY FACTORIES' AVAILABILITY FOR SALE

Methods which respondents use to obtain knowledge about the dairy factories' availability for sale may be seen as an indication of the information network which surrounds dairy factory reuse. Those means which influence the pattern of reuse activity are evident in Table 5.1.

TABLE 5.1: METHODS OF OBTAINING KNOWLEDGE ABOUT THE DAIRY FACTORIES' AVAILABILITY FOR SALE

	<u>Total</u>	<u>%</u>
Direct local knowledge (i.e. drove around the area)	10	14.0
Indirect local knowledge (i.e. heard from a friend or acquaintance)	10	14.0
Lived in the area	22	32.0
Real estate agent	1	1.0
Other	19	27.0
No response	<u>8</u>	<u>12.0</u>
Total:	70	100.0

An important consideration in this analysis is that the categories shown in Table 5.1 are not mutually exclusive. For example, having lived within the proximity of the abandoned dairy factory implies the respondent has both direct and indirect local knowledge of the area.

Ten of the 70 respondents claim to have obtained knowledge of the dairy factory's availability for sale by direct means. In other words, some sort of direct involvement with the actual site location of the dairy factory is made by these respondents. Searching the area by car is the most common means cited. This

suggests some prior interest in the area which was chosen to search. Interest may derive from the owner living in the vicinity, or the search area being foreseen as having market opportunities for the reuse activity. This pattern of search behaviour could suggest also that the decision to establish an enterprise within the area has already been made, and the problem is one of finding a suitable building or site location.

Indirect means such as hearing from a friend or acquaintance, accounts for the means by which 10 respondents obtained knowledge of the dairy factory's availability for sale. This sort of information is conveyed by secondary sources, which suggests these sources have some prior knowledge of the respondent's desire to establish an enterprise. An information search such as this extends the reuse activities' potential locational possibilities over further geographical space and social space than would otherwise be possible, if the respondent is restricted to only primary search patterns. The implication of this is that if the desire to establish an enterprise is already known by various sources, then the problem of finding a suitable building or location may be the only major obstacle hindering the development of other similar activities.

The most significant category in Table 5.1 is that of those respondents, who knew the disused dairy factory was available for sale because they lived in the area. This information method accounts for more than double any of the other methods stated in Table 5.1. A major reason for this could be attributed to an inertia factor, whereby these respondents, while wanting to establish an enterprise did not wish to leave the area. Identification with the area in which the disused dairy factory is situated, could be an added incentive for respondents to establish reuse enterprises in their immediate environs.

Only one disused dairy factory was sold through the aid of a real estate agent. It appears on the strength of local knowledge that there is no apparent need for the more recognised channels of information. Given the dairy factory's former role in the rural community, knowledge of the factory's closure and subsequent availability for sale may be concurrent. This

analysis tends to negate any large scale information searching on the part of prospective purchasers.

TABLE 5.2: KNOWLEDGE OF DAIRY FACTORY'S AVAILABILITY FOR SALE FOR DIFFERENT REUSES

How Knowledge was Obtained

Reuse	1	2	3	4	5	6	Total
Transport Services	-	-	-	-	1	-	1
Engineering	1	1	2	-	4	1	9
Light manufacturing	-	3	2	1	1	-	7
Storage	3	2	14	-	9	3	31
Livestock processing	1	-	1	-	2	-	4
Retail outlet	1	1	1	-	-	-	3
Concrete type products	1	-	-	-	-	-	1
Vacant	-	1	-	-	-	2	3
Other	3	2	2	-	2	2	11
Total:	10	10	22	1	19	8	70

How Knowledge was Obtained

- 1 Direct local knowledge (i.e. drove around the area).
- 2 Indirect local knowledge (i.e. heard from a friend or acquaintance).
- 3 Lived in the area.
- 4 Real Estate Agent.
- 5 Other.
- 6 No response.

Table 5.2 indicates by reuse type how knowledge of the dairy factory's availability for sale was obtained. A feature of this table is the importance of indirect local knowledge for light manufacturing reuses. In nearly half of this reuse type the influence of secondary information was enough to interest the

purchaser. Information from a wide variety of sources appears to influence all other reuses. This suggests the existence of a strong local information network in these small rural areas aiding various local entrepreneurial efforts.

Formal administrative bodies do not have a large involvement in assisting prospective reuses in the information search for suitable locations or buildings. The Taranaki Regional Development Council was approached by one reuse activity wanting to establish an enterprise specifically in a regional development area, which the Taranaki region is designated under New Zealand's Regional Development Programme. The Taranaki Regional Development Council instructed this reuse activity in the availability of disused dairy factories in the region. It is on this basis that the site of the old Kaupokonui Dairy Factory was chosen as the location for the Pacific Natural Gut String Company. While local knowledge appears to have the greatest influence in facilitating the sale of the dairy factories, more could be achieved by bodies such as the Taranaki Regional Development Council in furthering the direction of reuse activities into these abandoned buildings.

5.2 DIFFICULTIES ENCOUNTERED IN THE PURCHASE OF THE DAIRY FACTORY

Before examining the nature of any difficulties encountered by reuse activities in the purchase of the disused dairy factory, analysis of from whom, and how the building was acquired is considered a necessary preliminary. The results are shown in Table 5.3

As expected purchase of the dairy factory from the Dairy Company directly is the most common means of purchase. Storage, light manufacturing and livestock processing are prominent in this acquiral process.

Purchase from a private individual accounts for how 15 respondents acquired the dairy factory. In total 47 out of 70 disused dairy factories (67 percent) are owned privately. This suggests a desire by the respondents for reuses to be independent enterprises and own the building rather than lease or rent the building space.

TABLE 5.3: NATURE OF DAIRY FACTORY ACQUISITION

Reuse	1	2	3	4	5	Total
Transport Services	1	-	-	-	-	1
Engineering	-	4	4	1	-	9
Light manufacturing	6	-	1	-	-	7
Storage	16	6	1	6	2	31
Livestock processing	3	1	-	-	-	4
Retail outlet	1	2	-	-	-	3
Concrete type products	1	-	-	-	-	1
Vacant	-	1	-	-	2	3
Other	4	1	2	1	3	11
Total:	32	15	8	8	7	70

- Index:
- 1 Purchase from the Dairy Company directly.
 - 2 A private individual.
 - 3 A lease agreement.
 - 4 Other.
 - 5 No response.

Some investigation of the extent to which reuse activities have difficulty in arranging the purchase of the dairy factory shows that for the majority of reuse activities no difficulties are encountered (refer to Table 5.4). While it is difficult to make any assessment of this data in Table 5.4 without knowing the exact nature of the difficulty involved, recognition of potential difficulties may assist future reuse activities overcome possible obstacles to their establishment.

TABLE 5.4: DIFFICULTIES ASSOCIATED WITH DAIRY FACTORY PURCHASE

	<u>Total</u>	<u>%</u>
Some difficulty associated with purchase	5	7.0
No difficulties encountered	44	63.0
No response	<u>21</u>	<u>30.0</u>
Total:	70	100.0

A high initial sale price for the dairy factory set by the Dairy Company can apparently be rectified with negotiation. Another major

difficulty encountered in the purchase of disused dairy factories appears to be in relation to regional planning regulations. For the more recently closed dairy factories, under the Town and Country Planning Act, sale of the dairy factory in some cases is not allowed for a period of up to five years, during which time the Dairy Company must try to sell any associated housing. This clause endeavours to ameliorate the dramatic effect of the dairy factory's closure on the local community. This could mean that those reuses which provide employment may be favoured in the subsequent sale of the dairy factory.

Evidence is however, weighted against there being many major difficulties involved in purchasing a disused dairy factory.

5.3 PERCEIVED INVESTMENT IN DAIRY FACTORY REUSE

How respondents perceive the investment made in the disused dairy factory is thought to be an indicator of the level of satisfaction gained from the operation of the reuse activity. Reference to whether or not respondents feel they are satisfied with their purchase of the dairy factory shows the majority of responses to be affirmative. Since all reuses activities in the survey population are currently operating from abandoned dairy factory premises this presumes a certain minimum threshold of satisfaction. Given the self-fulfilling nature of this analysis further investigation is not required.

TABLE 5.5: LEVEL OF SATISFACTION WITH INVESTMENT IN DAIRY FACTORY

Reuse	No			Total
	High	Low	Response	
Transport Services	1	-	-	1
Engineering	7	-	2	9
Light manufacturing	6	-	1	7
Storage	20	3	8	31
Livestock processing	3	1	-	4
Retail outlet	3	-	-	3
Concrete type products	-	-	1	1
Vacant	1	-	2	3
Other	8	-	3	11
Total:	49	4	17	70

FIG. 10 - PURCHASE PRICE OF DISUSED DAIRY FACTORIES

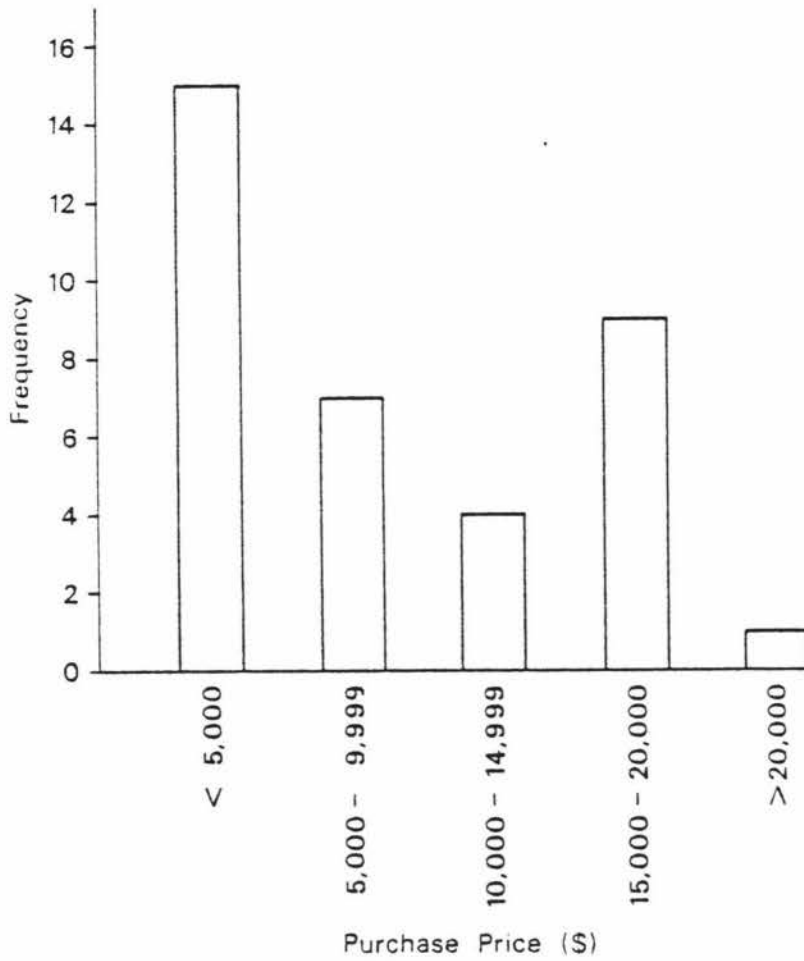
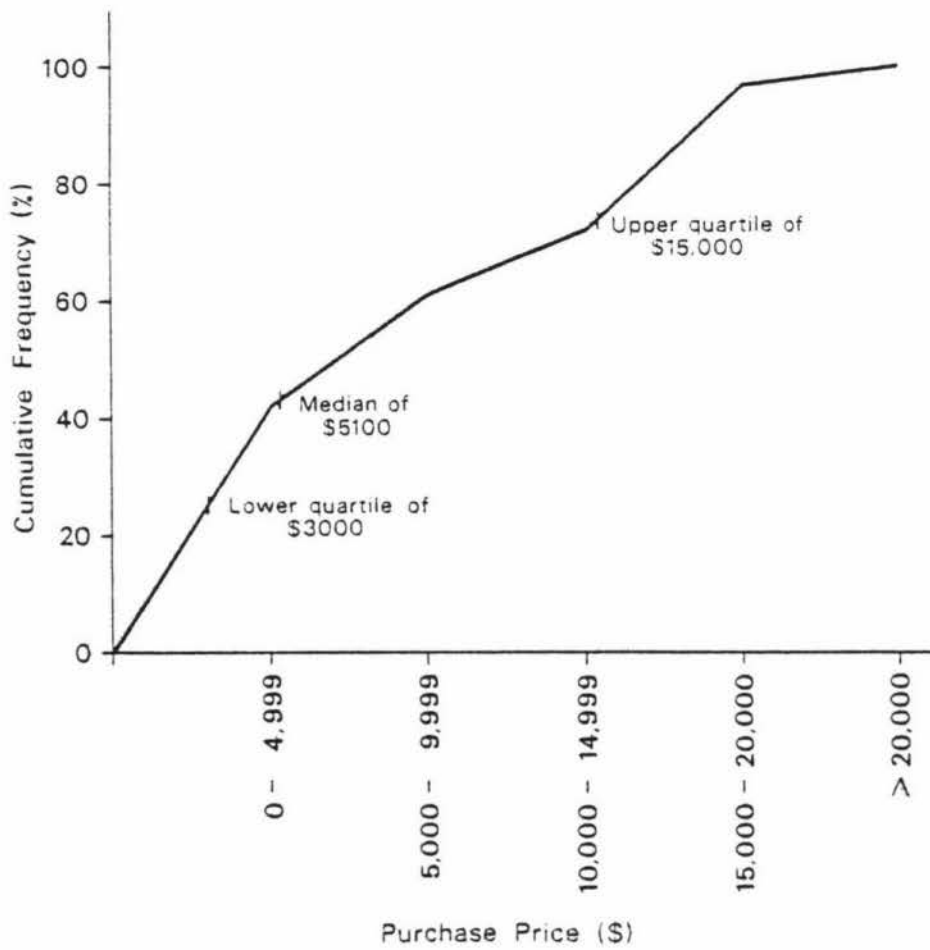


FIG. 11 - CUMULATIVE FREQUENCY GRAPH
OF PURCHASE PRICE OF DISUSED DAIRY
FACTORIES



With only 4 respondents feeling a low level of satisfaction with their investment in the dairy factory, it appears that those people investing in disused dairy factories are, in the main, satisfied with their investment. This suggests that respondents are gauging their dairy factory investment against comparable investment elsewhere or a higher level of investment at another location.

With the majority of respondents perceiving a high level of satisfaction from their purchase of the disused dairy factory, a closer inspection of the spatial distribution of the purchase price of these factories could aid further explanation of this phenomenon.

A histogram of the purchase price of the disused dairy factories is shown in Figure 10. This clearly illustrates the highest frequency of the disused dairy factories to have been purchased for less than \$5,000. As only 36 out of the 70 respondents were willing to state what they paid for the dairy factory, any analysis is very crude in its findings. This response is, however, considered enough to note the general interplay of purchase price, location and dairy factory reuse in influencing the pattern of dairy factory reuse.

Nearly half of the dairy factories sold for less than \$5,000. Over 60 percent of respondents stating purchase price (22 out of 36) paid less than \$10,000 for the dairy factory, with 72 percent (26 out of 36) having paid less than \$15,000. These percentages are indicated on a cumulative frequency graph (Figure 11). Evident from the histogram and cumulative frequency graph, is the noticeable absence of very expensive disused dairy factories, with only one factory selling for in excess of \$20,000. This dairy factory has a purchase price six-and-a-half times that of the next highest ranking purchase price. The outstanding feature of this data is therefore, the relatively cheap purchase price of the disused dairy factories.

A hierarchy of disused dairy factories in relation to their purchase price can be formulated. The spatial distribution of dairy factory purchase price is mapped according to the following

hierarchy:

TABLE 5.6: HIERARCHY OF DAIRY FACTORY PURCHASE PRICE

		<u>Number of</u> <u>Reuses</u>
1	\$20,000+	1
2	\$15,000-\$19,999	9
3	\$10,000-\$14,999	4
4	\$5,000- \$9,999	7
5	\$2,000- \$4,999	8
6	≤\$2,000	7

Figure 12 illustrates the spatial distribution of purchase price according to the above hierarchy. The most expensive dairy factory is located just out of Hawera, in close proximity to State Highway 3, the main highway into the Taranaki region from the south. It is significant that the dairy factory selling for the highest purchase price is located in South Taranaki. This represents a point of regional importance in relation to the reuse of dairy factories, as this dairy factory is located at the furthest point away from the regional centre of New Plymouth.

Those dairy factories selling for between \$15,000-\$19,999 are distributed throughout the entire region and are located mainly near to the main highways, although one is on SH3. Nearly half of this group of dairy factories are located on the road around the west coast of the study area. The number of dairy factories in this price range (\$15,000-\$19,999) is double that of the next purchase price range of \$10,000-\$14,999. Some of these dairy factories have better locational attributes in terms of accessibility to SH3, than some of the more expensive dairy factories. This is probably related to the time of closure and the condition of the building, as well as any locational attributes of the dairy factory site. In other words, a relatively cheap purchase price, in addition to a good site, with good location could indicate the present reuse has occupied the present dairy factory premises for some time.

The dairy factories which sold for less than \$10,000 are scat-

FIG. 12a - THE SPATIAL DISTRIBUTION OF PURCHASE PRICE OF DISUSED DAIRY FACTORIES ROUTES IN TARANAKI

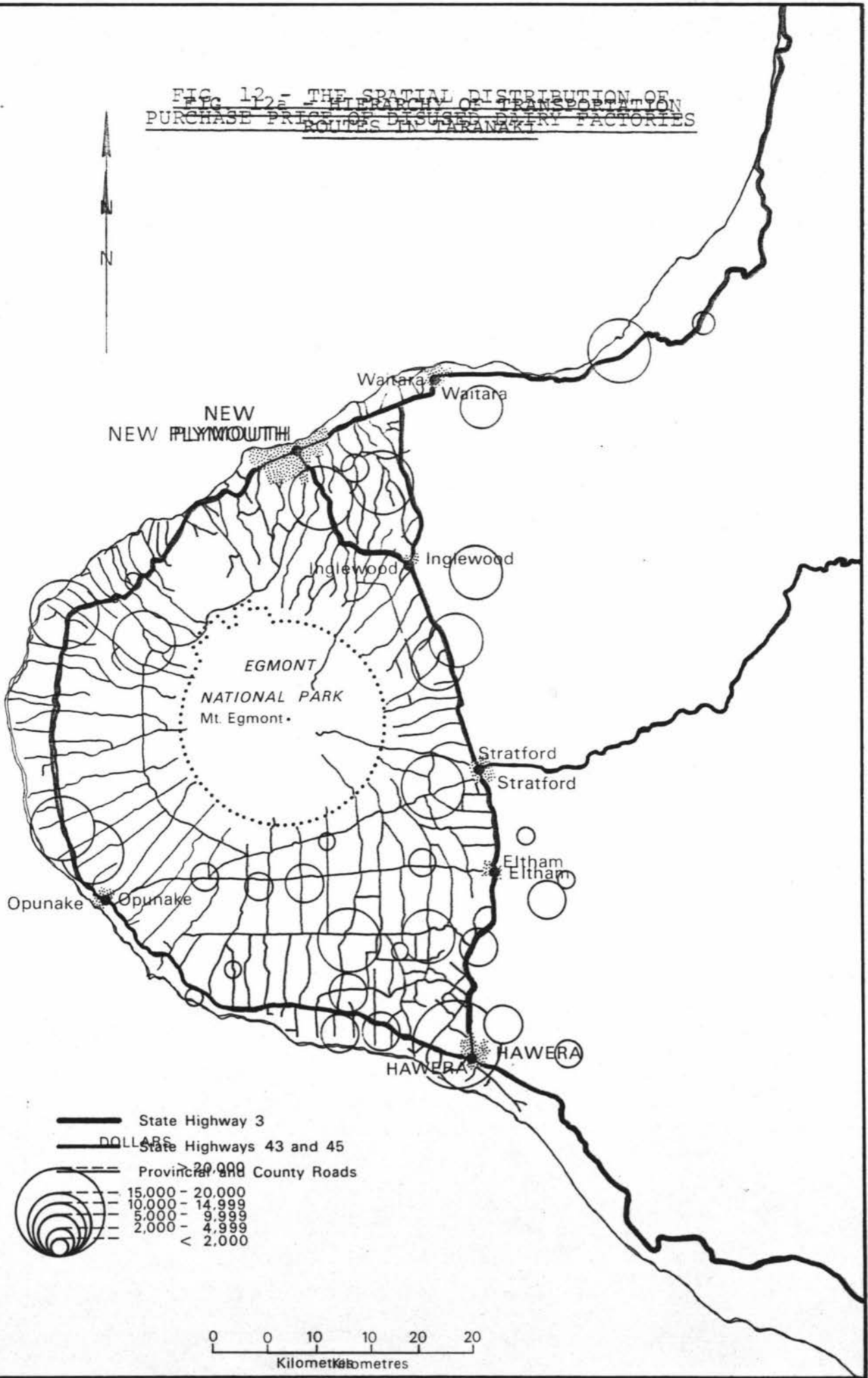


FIG. 12 - THE SPATIAL DISTRIBUTION OF PURCHASE PRICE OF DISUSED DAIRY FACTORIES

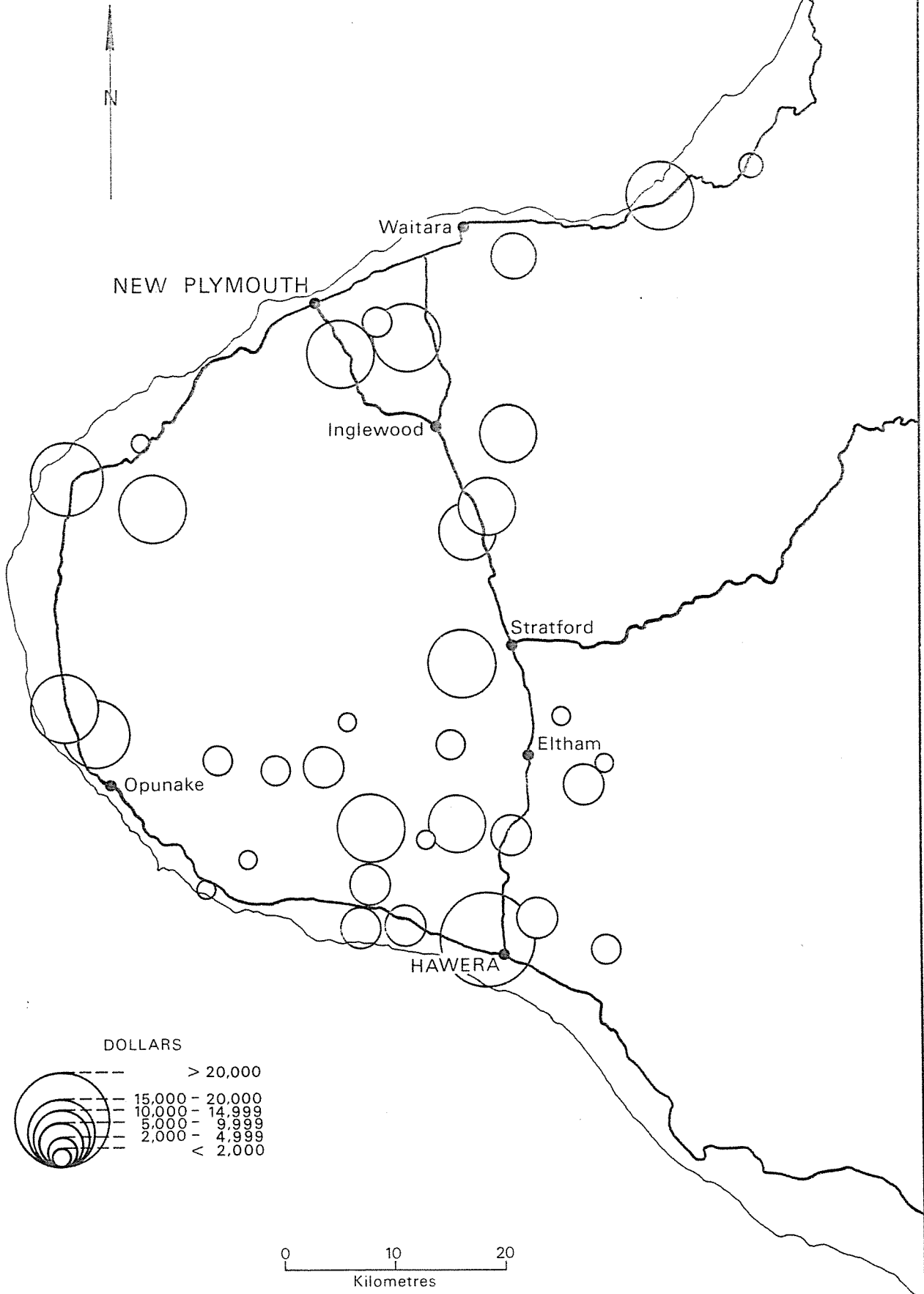
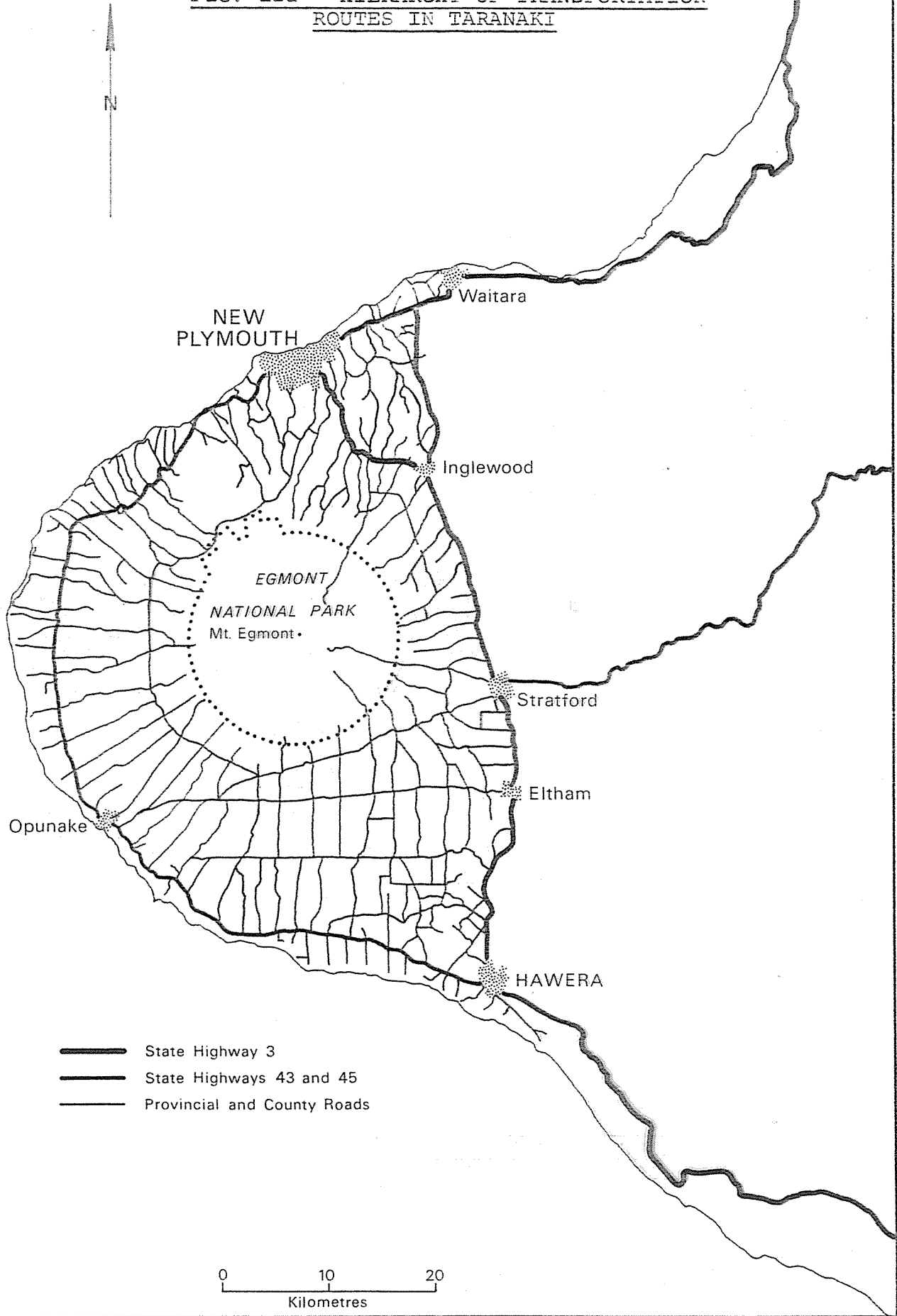


FIG. 12a - HIERARCHY OF TRANSPORTATION ROUTES IN TARANAKI



- State Highway 3
- State Highways 43 and 45
- Provincial and County Roads

0 10 20
Kilometres

tered throughout the whole of the Taranaki region. They are, however, concentrated in South Taranaki, located on most major intersections or road junctions and along radial roads leading up to and around the mountain. It appears that there is a pattern of cheaper purchase price with increasing age of the dairy factory, i.e. those dairy factories closing in the 1950s sold for significantly less than those factories closing more recently. Between SH3 to New Plymouth and the coast road from Hawera to New Plymouth (SH45) there exists a concentration of relatively cheaply purchased disused dairy factories. The majority of these had a purchase price of less than \$5,000. A pattern of reuse may have been initiated from those dairy factories located close to the main highway and moved westward toward the coast. As such, those disused dairy factories encountered on the way represent intervening opportunities between SH3 and SH45. These factories, theoretically may have accounted for many of the potential reuse activities before the more expensive disused dairy factories located on the west coast of Taranaki were known to exist.

In all there are nine reuse activities operating enterprises on the coast road between Hawera and New Plymouth. The further north from Hawera, and the closer to New Plymouth the dairy factory, the greater the tendency for the increase in purchase price to reach all but the highest class of the hierarchy.

While a relatively cheap purchase price for a disused dairy factory appears to be consistent with increasing isolation, the influence of the date of dairy factory closure, and the size of the building tend to be a better indicator of purchase price in some cases, than the locational attributes of the dairy factory site.

Those reuse activities located in less dense concentrations of disused dairy factories tend to have paid in general, higher purchase prices than those reuse activities located in central Southern Taranaki. For example, the Oaonui Dairy Factory on the coast road was purchased for \$20,000, while the Riverlea Dairy Factory, in the heart of Southern Taranaki, had a purchase price of

\$5,000. Some of the more isolated dairy factories being used as hay barns, sold for approximately \$1,000.

The original spatial distribution of the dairy factories was very much a product of the technology of the day and the nature of the raw material. The spatial distribution of disused dairy factories by their purchase price displays some similarity to this pattern. Purchase price does appear to bear a direct relationship to the dairy factory's proximity to major transportation routes (i.e. with increased accessibility to a major transportation route the higher the dairy factory purchase price is likely to be). The influence of proximity to other disused dairy factories tends to lower the purchase price. Early dairy factory closure also contributes to these buildings selling at a lower price than those purchased more recently.

A number of variables were investigated to further assess the perceived investment by respondents in the disused dairy factories. These factors include among others, the reported prime objective of the enterprise, an assessment by respondents of the future potential of the reuse and the degree of permanency associated with the reuse venture (i.e. short or long term). The findings of this analysis are, however, suspect given the high probability for respondents to give unreliable responses to this type of investigation.

One point to come from this analysis is the nature of those reuses which respondents consider to be long term ventures. Table 5.7 indicates the type of reuse which could set the pattern for future reuse. The predominance of storage as a reported long-term venture tends to have negative implications for the surrounding rural community. Storage represents underutilisation of the dairy factory in terms of profit and employment opportunity, as does no use at all.

TABLE 5.7: REUSE ACTIVITIES REPORTED TO BE LONG-TERM VENTURES

	<u>Total</u>
Transport Services	1
Engineering	5
Light manufacturing	7
Storage	16
Livestock processing	4
Retail outlet	2
Concrete type products	-
Vacant	1
Other	8
Total:	44*

* Five respondents stated their reuse to be a short-term venture and 21 did not respond; in total 70 responses.

5.4 Major Sources of Capital

This section examines the type of capital used in the purchase of the disused dairy factories as a further indicator of the magnitude of the reuse enterprise. When questioned as to the source of funding utilised, many respondents refused to answer. As is shown in Table 5.8, however, private capital is the major source of capital associated with the establishment of dairy factory reuse. Finance companies are involved in funding only two reuse activities, these being the larger reuse enterprises.

TABLE 5.8: SOURCE OF CAPITAL FOR ESTABLISHING REUSE ACTIVITIES

	<u>Total</u>	<u>%</u>
Private Capital	16	23.0
Private Loan	5	7.0
Bank Loan	4	6.0
Rural Bank Funding	0	-
Finance Company	2	3.0
No Response	<u>43</u>	<u>61.0</u>
Total:	70	100.0

The trend towards financing reuse activities with private capital suggests an element of independence on the part of those respondents associated with reuse activities, and supports the idea that the majority of reuse activities are small local enterprises.

As the Taranaki region is a Regional Development Priority Region funds are available for the establishment of some enterprises. The regional development programme is designed to encourage the full utilisation of the resources of each region.

Tools to promote regional development include a comprehensive range of incentives - suspensory loans, grants, etc. As well as providing incentives to encourage the regional location and expansion of manufacturing and advanced processing industries, the programme also includes special measures to aid development in the agricultural, horticultural, fishing, forestry, mining and tourism sectors.

As Taranaki is a Regional Development Priority Area, interest free loans converting to grants after five years compliance with loan conditions are available in the form of suspensory loans, usually calculated on capital costs. The maximum loan is \$100,000.

More significant to dairy factory reuse are the small enterprise suspensory loans which are available. The establishment of manufacturing or advanced processing plants are, however, preferred. There is therefore, a tendency for larger enterprises to be favoured in the allocation of funds. These suspensory loans are available only to small enterprises with a turnover not exceeding \$150,000, fixed assets not exceeding \$50,000 and project costs not exceeding \$30,000, with \$15,000 being the maximum loan. Other suspensory loans (pioneer status, industry relocation, staff transfer and staff training loans) are available primarily to manufacturing and advanced processing enterprises.

Qualification for assistance relates to the type of enterprise being established, (i.e. manufacturing, advanced processing), and the type of funding required. For example, approved pioneer sta-

tus designation requires the enterprise to be new to a region or introducing new technology, to qualify for Pioneer Status suspensory loans. Staff training suspensory loans normally require a minimum of 10 new full time jobs to be created in order to receive funding. On the basis of these two examples, very few dairy factory reuse activities qualify for these types of loans. Some reuses would, however, qualify for the small enterprise suspensory loans.

The number of reuses qualifying for regional development funds is evident in Table 5.9.

TABLE 5.9: REUSE ACTIVITIES QUALIFYING FOR REGIONAL DEVELOPMENT FUNDS

	<u>Total</u>	<u>%</u>
Yes	10	14.0
No	18	26.0
No Response	<u>42</u>	<u>60.0</u>
Total:	70	100.0

Of those ten reuse activities qualifying for regional development funds, only five enterprises received these funds (Table 5.10).

TABLE 5.10: REUSE ACTIVITIES RECEIVING REGIONAL DEVELOPMENT FINANCE

	<u>Total</u>
Yes	5
No	<u>5</u>
Total:	10

Regional development funding is found to be critical in the decision to locate in the dairy factory premises in only three cases. In two instances, these reuse activities are large enterprises in comparison with the other reuse activities and, as such, may well

have had more influence in obtaining these funds. Increased awareness of the availability of financial assistance from various sources for the establishment of enterprises such as these reuse activities, should be a priority of such bodies as the Taranaki Regional Development Council.

Wider dissemination of public knowledge of other forms of government assistance such as suspensory loans and Labour Department assistance, if additional labour is to be employed in the new enterprise, should also be investigated. An instance can be cited where regional development finance was not given to a reuse activity requiring assistance for staff housing, on the grounds that it was uneconomic to put capital into an isolated area of the study region. This particular respondent managed to get by without these funds and has prospered considerably since its inception, but other potential reuse activities may not be as fortunate. This suggests a tendency for regional development funding to favour large enterprises, perhaps at the expense of small enterprises.

5.5 LABOUR SUPPLY

A further factor considered important in dairy factory reuse is the significance of the employment opportunities offered by these activities to the local community. Some input of labour is fundamental to the operation of all production systems. Labour is not only highly variable in its spatial distribution but also in its nature. The labour pool can vary by age, sex, and by virtue of its skills and mobility; all of which complement its pattern of spatial distribution.

With the closure of an original dairy factory, primarily through the direct effects of mechanisation, tanker collection and increasing economies of scale in dairy processing technology, the dairy factory's labour became redundant. The establishment of reuse activities in these disused dairy factories could mean additional employment opportunities in these rural areas for local people. This section considers the structural characteristics of the labour supply engaged in the reuse enterprises

of the disused dairy factories.

In order to appreciate the structural characteristics of the labour force, however, some knowledge of how the employment opportunities offered by reuse activities are spatially distributed throughout the region is necessary. Figure 13 illustrates the number of persons known to be employed at those reuse locations marked on the map.

The main feature of Figure 13 is the concentration in Southern Taranaki of those reuse activities employing less than 10 people, and in the majority of instances, less than four people. The parallel between a peripheral location, low purchase price, and relatively low employment figures all concentrated in the same parts of Southern Taranaki, tends to support the preceding analysis of these reuse activities being predominately small family or local businesses.

In comparison there are very few reuse activities employing more than 15 people. A feature of these reuse activities is that they are all located around the west coast of the study area extending to Hawera in the south. The influence of SH45 would be an asset to these enterprises which are, in the main, tied to their locations by their raw material requirements. Two of these activities currently use (or will in the future) by-products of the local freezing works in the manufacture of their products, i.e. tennis racquet strings and soap. There are therefore labour pools in these relatively isolated areas able to be used in reuse activities of this kind.

Those reuse activities employing between five and nine persons display a very dispersed pattern throughout the region, from Urenui in the north, round the coast and along SH3 from New Plymouth to Hawera.

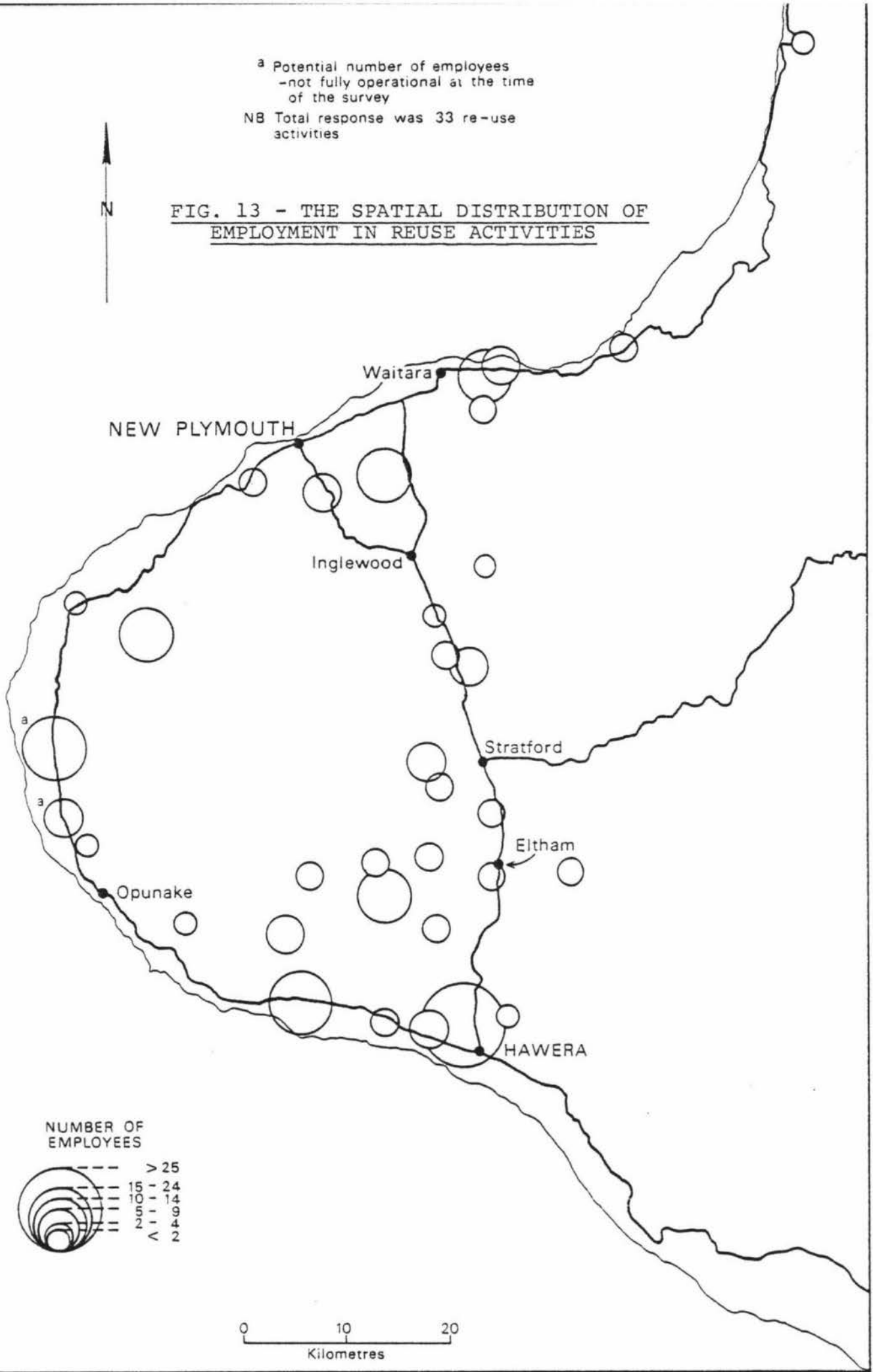
It is significant that those reuse activities located on or close by the main highway north from Hawera to New Plymouth

^a Potential number of employees
-not fully operational at the time
of the survey

NB Total response was 33 re-use
activities



FIG. 13 - THE SPATIAL DISTRIBUTION OF
EMPLOYMENT IN REUSE ACTIVITIES



0 10 20
Kilometres

(excluding the Glover Road factory) are not the major employers of labour associated with reuse activities. These reuse activities do not employ more than 10 persons, with the majority of them employing less than four persons. While location near to a main highway may influence purchase price, it does not appear to have the same positive effect on the number of persons employed by the reuse activity. In fact, there is a tendency for employment numbers to decrease the closer to New Plymouth the reuse activity is located.

In absolute terms the majority of reuse activities are not large employers by urban standards, with the exception of a large shirt manufacturing reuse which currently employs 118 people. It is to be remembered, however, that the majority of these reuse activities are located in rural areas where farming is the predominant means of earning a living. In relative terms then, any reuse activity employing more than one or two people is likely to be advantageous to local employment opportunities in these areas given that farming is generally a self-employed occupation.

The distribution of employment in reuse activities is, therefore, very much representative of a pyramid, with those reuse activities employing few persons predominating. The hierarchical structure is "bottom-heavy" with a noticeable absence of reuse activities employing more than 15 people.

The number of persons employed in reuse activities throughout the study area totals 295 in October 1982. This figure, however, represents responses from only 33 of the 70 reuse activities.

(i) Age and Sex

It can be seen from Table 5.11 that 166 males and 129 females make up the 295 people employed in association with the reuse activities in October 1982.

TABLE 5.11: AGE AND SEX OF PERSONS EMPLOYED IN REUSE ACTIVITIES

Sex	Age			Total
	<20 years	20-40 years	>40 years	
Male	36	94	36	166
Female	10	88	31	129
Total:	46	182	67	295

The largest proportion of both male and female employees are within the 20-40 age group. This group represents 62 percent of the total number of people employed in reuse activities. Those persons aged over 40 years account for 23 percent of the total reuse labour force, while those aged less than 20 years represent only 15 percent of the total. This pattern suggests a tendency for the reuse activities to employ older people rather than young people. This is probably related to the high migration of young people out of smaller rural communities to larger towns in search of employment.

Problems associated with rural depopulation appear to be affecting some population groups more than others. In Table 5.11 only 10 females aged less than 20 years are employed in reuse activities. While acknowledging that employment in the original dairy factory was almost exclusively male orientated, these 10 females represent approximately 8 percent of all females employed in reuse activities, but only 3 percent of the total labour force. It is, however, significant that of the total labour force 56 percent is male and 44 percent is female. These proportions of the labour force associated with dairy factory reuse represent an important departure from the male dominated original use. In this regard, dairy factory reuse has been effective in providing some much needed employment for the female component of the rural population. This group has long been under-employed or in some areas unemployed, therefore any reuse which utilises rural female labour is beneficial to these small rural communities. Some respondents did express a desire to locate their reuse activity in a small rural area where they could utilise female labour, claiming their conscientiousness and dexterity as

necessary requirements for their reuse activity. In one instance a preference for young Maori girls as suitable labour for the reuse activity was stated. This is illustrative of the kind of positive employment criteria necessary to rejuvenate these rural communities.

It appears, therefore, that in most cases the nature of the labour force required by the reuse activity is identified, and the endeavour to find a suitable location to satisfy all aspects of the location decision has resulted in dairy factory reuse.

Most respondents reuse activities are very much aware of the need for rural employment and the effects of their activity locating in these small rural areas.

Table 5.12 shows the age of employees employed in each reuse activity. A further breakdown of this table by sex is indicated in Table 5.13 (i) and Table 5.13 (ii). These employment figures are dominated by the large shirt manufacturing enterprise operating in the Glover Road Dairy Factory. This reuse employs 118 people in total, of which 106 are women. The tendency for this reuse to distort the employment figures is acknowledged.

TABLE 5.12: AGE OF EMPLOYEES BY REUSE

Reuse	Age			Total
	<20 years	20-40 years	>40 years	
Transport Services	1	10	-	11
Engineering	12	30	12	54
Light manufacturing	13	103	32	148
Storage	17	20	19	56
Livestock processing	-	5	-	5
Retail outlet	2	3	1	6
Concrete type products	1	6	3	10
Vacant	-	-	-	-
Other	-	5	-	5
Total:	46	182	67	295

TABLE 5.13: AGE AND SEX OF PERSONS EMPLOYED BY REUSE

(i) Males

Reuse	Age			Total
	<20 years	20-40 years	>40 years	
Transport Services	-	10	-	10
Engineering	12	29	12	53
Light manufacturing	7	24	7	38
Storage	15	16	15	46
Livestock processing	-	2	-	2
Retail outlet	1	3	1	5
Concrete type products	1	6	1	8
Vacant	-	-	-	-
Other	-	4	-	4
Total:	36	94	36	166

(ii) Females

Reuse	Age			Total
	<20 years	20-40 years	>40 years	
Transport Services	1	-	-	1
Engineering	-	1	-	1
Light manufacturing	6	79	25	110
Storage	2	4	4	10
Livestock processing	-	3	-	3
Retail outlet	1	-	-	1
Concrete type products	-	-	2	2
Vacant	-	-	-	-
Other	-	1	-	1
Total:	10	88	31	129

As can be seen from the preceding tables, engineering reuse activities account for the majority of male employees by reuse,

with 29 (55 percent) of these employees aged between 20-40 years. Of the total number of males employed by reuse activities 137 (83 percent) are employed in engineering, light manufacturing and storage activities. These reuse activities therefore represent the main reuse employment for males.

Female reuse labour is predominantly employed in light manufacturing with 110 out of 129 women (85 percent) evidence of this in Table 5.13 (ii). The distortion caused by the shirt manufacturing reuse has been noted. The tendency for the majority of females employed to be in the 20-40 age group is indicated also. Of this age group, 79 (90 percent) are employed in light manufacturing activities, with this age group accounting for 79 out of 110 women (72 percent) engaged in this particular reuse activity.

These tables indicate a tendency for men to be engaged in engineering, light manufacturing and storage reuse activities in the main, while women, however, have a rather more limited employment reuse base with only light manufacturing offering employment for them in any significant proportions. The 20-40 age group of both sexes appears to be the major source of labour for all reuse activities, with the tables showing those aged over 40 as 23 percent (67) of the total, whereas persons younger than 20 represent only 16 percent (46) of all employed. The predominance of the 20-40 age group in reuse employment suggests that reuse is unlikely to stop young rural outmigration.

In comparison with the original use of the dairy factory, employment figures for reuse activities generally do not compare favourably. Employment opportunities associated with dairy factory reuse are, in the main, much smaller in scale than the former dairy factory, some of which employed up to 50 men.

The composition of the labour force when the current reuse activities were initially established consisted of 132 males and 103 females, totalling 235 people (Table 5.14). In comparing these totals with those currently employed (i.e. 166 males and 129 females) this represents an increase of approximately 26 percent

in male employment and a 20 percent increase in female employment.

If a comparison of numbers of persons employed by reuse and sex is made between the two time periods (i.e. by comparing Table 5.14 with Table 5.13 (i) and Table 5.13 (ii)) it is evident that all reuse activities have additional labour units, or have not reduced their labour requirements since their establishment. This holds across both sexes, with the only exception being those males employed in storage reuse activities. This activity currently employs 46 males, but at the time of establishment employed 64 males.

These figures are evidence of growth in employment opportunities over time in reuse activities. While this growth is not great, it does indicate that dairy factory reuse activities are maintaining their employment base rather than retrenching. Dairy factory reuse represents, if very small, a positive contribution to seeking a solution to the problem of rural depopulation.

TABLE 5.14: NATURE OF LABOUR FORCE WHEN REUSES INITIALLY BEGAN OPERATING IN DAIRY FACTORY

Reuse	<u>Sex</u>		Total
	Male	Female	
Transport Services	2	-	2
Engineering	24	-	24
Light manufacturing	36	98	134
Storage	64	4	68
Livestock processing	2	1	3
Retail outlet	3	-	3
Concrete type products	-	-	-
Vacant	-	-	-
Other	1	-	1
Total:	132	103	235

(ii) Mobility of Labour

The mobility of labour refers to the ability of the labour force to move not only in a spatial sense between towns or areas, but also between jobs. It is in this latter respect that the labour force employed by the reuse activities is to be examined. As it is a matter of debate as to whether some of the reuse activities require any special skills (for example, some respondents claim the ability to weld is a special skill required for an engineering enterprise) it was left to the discretion of the respondent. The results of this investigation are shown in Table 5.15.

TABLE 5.15: MOBILITY OF REUSE LABOUR FORCE

	Special Skills Required	No Special Skills Required	No Response	Total
Transport Services	-	1	-	1
Engineering	7	1	1	9
Light manufacturing	3	4	-	7
Storage	5	3	23	31
Livestock processing	3	-	1	4
Retail outlet	1	1	1	3
Concrete type products	1	-	-	1
Vacant	-	-	3	3
Other	2	-	9	11
Total:	22	10	38	70

In the main, most respondents do consider their enterprises to require special skills. Whether or not the local community is able to meet this required level of skills is indicated in Table 5.16. Evidence is that the local communities are able to meet the skills demanded by the reuse activities. As such, there is no need to import persons from outside the local community in the main, other than in a few instances when a manager was transferred into the area to establish the reuse activity initially.

TABLE 5.16: LOCAL AVAILABILITY OF SKILLS REQUIRED BY REUSES

	<u>Total</u>	<u>%</u>
Skills available locally	25	36.0
Skills not available locally	7	10.0
No response	<u>38</u>	<u>54.0</u>
Total:	70	100.0

(iii) Origin of Labour Supply

This analysis is considered important in relation to the influence the origin of the labour utilised by the reuse activity could have on local employment, and the indirect spin-off effects for the local community. If, for example, most of the employees are local, then the benefits of the dairy factory reuse are being absorbed locally through the employment of local people and through any disposable income spent in the area, as is the case with the manufacturing reuse near Hawera. This is not true if labour is non-local in origin. In this case, reuse employment is likely to be at the expense of a local person and any additional benefits through the spending of wages/salaries are taken out of the local area.

As is evident from Table 5.17 the reuse activities' labour supply is predominately local, that is, the labour is drawn from within a 5 kilometre radius around the disused dairy factory. Of the total 295 labour force employed by reuse activities in the study area, 232 (79 percent) live in the local community. Of these same persons, 120 (52 percent) are engaged in light manufacturing activities. Some degree of distortion must be acknowledged, however, for the town of Hawera being within 5 kilometres of the old Glover Road Dairy Factory, which is the largest reuse employer with a staff totalling 118.

TABLE 5.17: ORIGIN OF REUSE LABOUR SUPPLY

	Living in the local community	Living outside the local community	Total
Transport Services	1	1	2
Engineering	27	22	49
Light manufacturing	120	26	146
Storage	57	11	68
Livestock processing	7	-	7
Retail outlet	8	-	8
Concrete type products	7	2	9
Vacant	-	-	-
Other	5	1	6
Total:	232	63	295

Of those persons employed in engineering reuse activities there is not a significant difference in the numbers of employees living locally and those living outside the local community. This may well be due, in part to the spatial distribution of this reuse activity (refer to Figure 4) with a number of these enterprises located not far from urban centres, e.g. the engineering reuse at Mangorei, south of New Plymouth. The high proportion of persons engaged in storage activities can be largely attributed to the need to live close by for security purposes.

The extent of employment drawn from the local community suggests there is local labour available in these small rural communities. This depth of local labour enables local people to derive the additional benefits arising from employment. Employment means a more stable community which could provide additional population necessary to sustain local services such as the local dairy, garage, post office and the local school. The local origin of the majority of those employed in reuse activities suggests that very few persons are commuting further than 5 kilometres to their place of employment, therefore not wasting valuable fuel, in

addition to having a rural-located job at the expense of a person residing in the local community. The reuse activities do aid in supporting the increasing emphasis to alleviate the problem of rural depopulation by developing enterprises based on local physical resources, the potential reuse inherent in the existence of the disused dairy factory, as well as the local human resources.

(iv) Labour Turnover

By trying to gauge some measure of labour turnover associated with reuse activities, an assessment of the stability of the labour force may be made. Respondents were asked to indicate their labour turnover for three time periods: the present year to date (i.e. October 1982), last year (1981) and two years ago (1980). The following table shows the number of reuse activities having had some labour turnover during the given periods, with this total also represented as a percentage of the survey population.

TABLE 5.18: REUSE LABOUR TURNOVER

	<u>Number of Reuses</u>	<u>% of Total Population</u>
Present year (Oct. 1982)	13	19.0
Last year (1981)	10	14.0
Two years ago (1980)	9	13.0

From this it can be said that labour turnover has been relatively stable, although 1982 indicates a slight increase of 5 percent over the previous year in the number of reuses experiencing labour turnover. These figures must not be interpreted out of context, for the magnitude of the labour turnover referred to is generally only in the order of two to three persons, with only one reuse activity recording a labour turnover of double figures. This tends to suggest that the stable rural nature of the reuse labour force may aid in attracting further reuse activities to these areas.

(v) The Effect of Distance on Reuse Employment

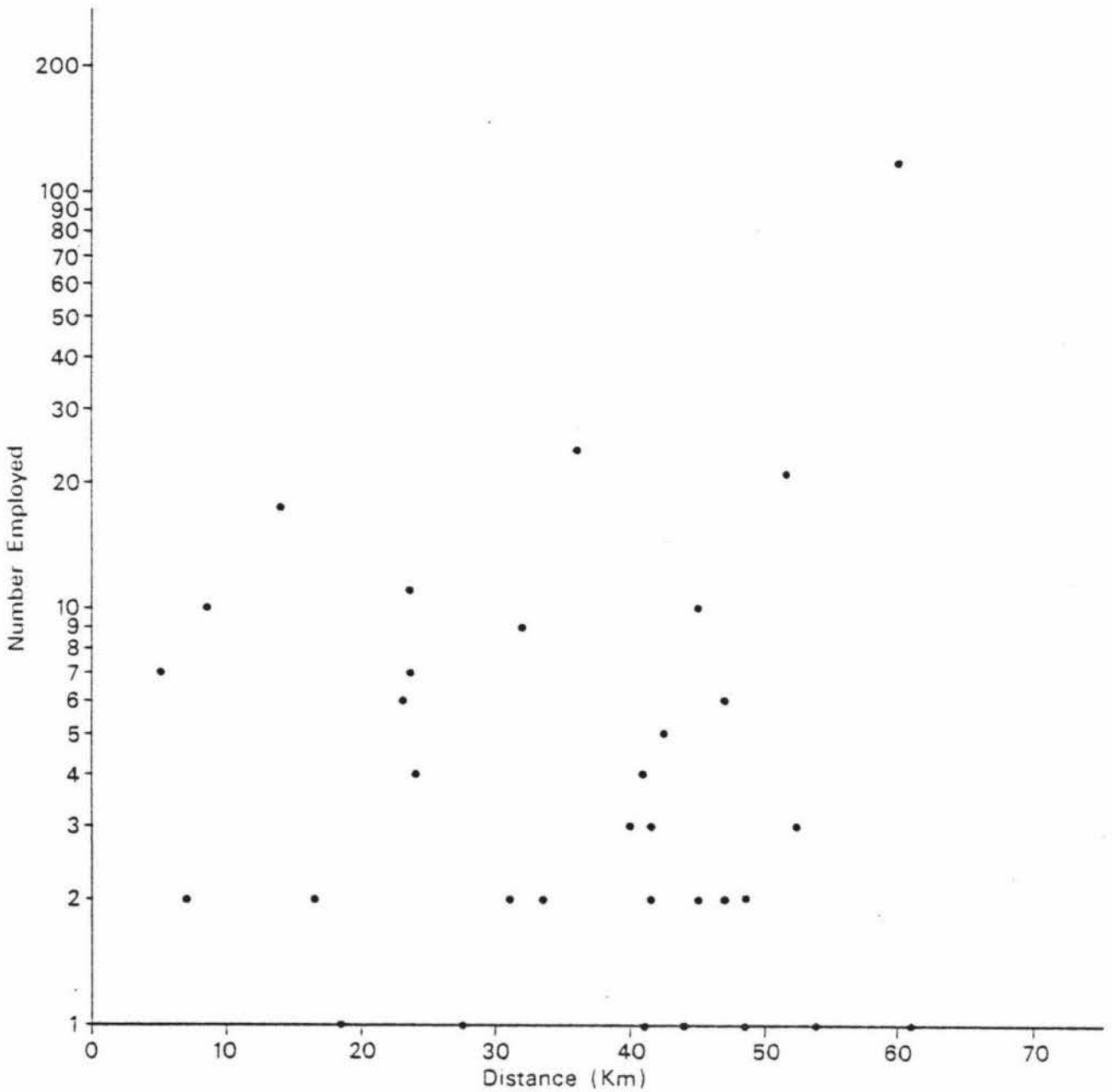
As a means of summarising the nature of reuse labour the following graph (Figure 14) illustrates the effect of distance on the employment opportunities offered by the location of reuse activities in these areas. Figure 14 shows the distance from New Plymouth of the reuse activity plotted against the number employed at that location. This graph is formulated on the basis of the distance from New Plymouth to each of the dairy factories being a measure of the difficulty of overcoming the intervening obstacle of distance, in population movement out of rural areas to a main regional urban centre. The reason for choosing New Plymouth is its attraction for rural migrants as a potential place of employment, being the main urban and regional centre. The subsequent pull effect on those people seeking employment is presumed to be stronger for New Plymouth than any other Taranaki centre.

The graph does tend to bear out the inverse relationship suggested previously, with the majority of those reuse activities located furthest away from New Plymouth tending to employ more people than those reuses located closer to New Plymouth. While it is shown that those reuses employing only one or two people are furthest away from New Plymouth, those reuses employing the greater number of people are located furthest away from New Plymouth also. This tends to break the reuses into two groups:

- (1) a larger group of reuses employing more people with increasing distance from New Plymouth; and
- (2) a smaller group of reuses employing 1-2 people in a very concentrated area distant from New Plymouth.

Figure 14 indicates that the employees of reuse activities are, in the main, likely to be local people. Thus reuse activities may be affording their local communities some measure of employment. Whether this represents a positive contribution to alleviating the problems of rural depopulation and stagnation of

FIG. 14 - THE EFFECT OF DISTANCE
FROM NEW PLYMOUTH ON EMPLOYMENT IN
REUSE ACTIVITIES



these peripheral areas, or merely emphasises the existing under-employment problem of these areas is debatable. The opportunities for employment in these isolated areas are so limited to be almost negative. For this reason alone, the reuse of an existing building such as an abandoned dairy factory, with prospects of any potential employment for local residents should be further encouraged. The disused dairy factories surveyed indicate how a seemingly obsolete building does have the potential to make further positive contributions, both in an economic and social sense to its local community.

The analysis of aspatial factors endeavours to show how factors such as the perceived capital investment and the structure of the labour supply, in addition to the spatial forces of distance, accessibility and relative location have influenced the decision of reuse activities to locate in a disused dairy factory.

The main features to emerge from this analysis, are that most information as to the availability of the dairy factory for sale is the result of respondents having lived in the area; purchase of the dairy factory is generally perceived by respondents as a good investment; and the reuse labour force is characteristically local in origin, with a slight tendency to favour male to female labour overall. Reuse activities exhibit a tendency to employ the 20-40 year age group. The effect of distance on reuse employment opportunities examines the interaction of a spatial and an aspatial factor associated with the phenomenon of dairy factory reuse. Increasing distance from New Plymouth appears to reduce the number of employment opportunities offered by reuse activities. Some support is also indicated for the attractiveness of the stability of a rural labour force.

CHAPTER VI
CONCLUSION

As a means of summarising how the spatial and aspatial factors interact to produce reuse activity in a disused dairy factory, an example of how these factors explain the use of one such dairy factory in Taranaki, is presented below. While a case study such as this, is to some extent "atypical", the reuse of each specific disused dairy factory is, in itself "atypical". The sorts of factors, however, which influence the decision to locate in such a building, at such a site location, have been shown in the preceding analyses to follow certain general patterns. The following case study illustrates how those factors which are most significant in the potential reuse of disused dairy factories operate and provides a framework for discussing those factors.

6.1 CASE STUDY: GLOVER ROAD DAIRY FACTORY

The Glover Road Dairy Factory, sited within 5 kilometres of Hawera, has since early in 1980, housed the Hawera-based clothing manufacturing company of John Millar Manufacturing Ltd. The Kiwi Co-operative Dairies Ltd building was closed in April 1979, completing the consolidation of small South Taranaki factories into Kiwi's Whareroa Road complex, just south of Hawera.

John Millar Manufacturing Ltd took over the Hawera business in 1974, when it acquired the local W J Emmerton factories in Hawera. This was the reason for the enterprise being located in the Taranaki region; a classic example of local enterprise. An originally local business of high repute, the period since 1974 saw the business grow until it was working from four units at Hawera, in addition to managing and cutting for its factory at Eltham. Thus, this enterprise shares a similar local impetus behind its reuse of the disused dairy factory, as do the majority of other reuse activities.

For a period of two years before moving into the Glover Road Dairy Factory, the Millar company had been looking at various proposals to house all the Hawera factories under one roof.

Thus, their decision making problem is similar to all the others.

An unusual feature of this dairy factory's sale was the role of a registered body, as the means by which knowledge of the dairy factory's availability for sale was obtained. The role of the real estate agent in the sale of disused dairy factories did not figure at all in the survey analysis, except in this instance. As such it is considered to be of minor significance, in relation to the local direct and indirect networks of information (including respondents having lived in the area) observed to convey knowledge of the dairy factory's availability for sale.

In a very competitive industry such as clothing manufacture, the operation of four separate units exposed many inefficiencies. The decision to relocate the business of John Millar Manufacturing Ltd in the Glover Road Dairy Factory, also meant a major expansion of its business. The site location of the disused dairy factory gave the business the opportunity to consolidate its operations, and therefore reduce inefficiency, and capitalise on the economies of scale operating from one central plant instead of four separate units would afford. Thus, dairy factory reuse in this instance represents a spatial solution to an aspatial problem.

The decision to locate in the disused dairy factory by Millars was, therefore, basically motivated by the desire for profit. Profit, as expected, is the prime motivator for the majority of reuse activities.

"It seemed sensible to make use of an existing building which, after extensive alterations (would) be not only unique, but a very functional manufacturing unit..."

(Source unknown, July 1979)

This quotation from a local Hawera newspaper, in the months preceding the clothing manufacturer's establishment in the dairy factory, brings to the fore three of the more significant factors influencing the potential reuse of most of the disused dairy factories of the study area.

The first, and by far the most important factor influencing potential dairy factory reuse, is the existence of the dairy factory as an established building. As existing capital stock, although bound in their physical state through the effects of geographical inertia, the abandoned dairy factories generally represent solid structures of dimensions ranging from 279 square metres to 9290 square metres. To build a structure comparable to any one of these disused dairy factories would involve major financial outlay. The opportunity cost of purchasing an existing building can be measured in terms of the expense involved in building a factory, purchasing another building or purchasing rental space elsewhere. All indications are that the disused dairy factory's greatest asset for potential reuse, is its physical existence and availability. Without the presence of the old dairy factory premises, the probability of many of the current reuse activities being in operation in other buildings, is not very high. For many of them, in peripheral rural locations, other buildings do not exist. The dairy factory therefore provides in its apparent disuse, the potential for its reuse.

The second factor mentioned in the earlier quote is the need for the dairy factory to often undergo modifications of some kind, to meet the requirements of the reuse activity. The alterations undertaken by John Millar Manufacturing Ltd for example, were to provide more floor space to accommodate workers and machinery. A cafeteria and staff room were also added. The nature of these alterations is similar to those modifications other reusers found necessary, for example, access in and out of the dairy factory and general repair and maintenance. What is peculiar to the Glover Road factory is the magnitude of these alterations. While the company considered these changes to be major, any alterations carried out by the majority of reuse activities were only minor. The significance of this, is that even though the disused dairy factories often require some modification, this does not prove a major deterrent to potential reuse activities.

This adaptability leads to the third significant point, the fact that a disused dairy factory can be made a "very functional unit". While there are some limiting factors associated with the

buildings and the site locations, the current reuse activities operating from these premises throughout the study area, are evidence that disused dairy factories are varied in their reuse, and able to maintain profitable enterprises in the main.

The source of funds to assist in this costly redevelopment of John Millar Manufacturing Ltd came from the Taranaki Savings Bank and the Regional Development Programme, through the government administered Development Finance Corporation. The importance of not only maintaining an industry like Millars in South Taranaki, but also offering assistance in further development, is realised.

The scale of funding emphasises the magnitude of this reuse activity in comparison with other reuse activities. Millars is only one of three reuse activities which received regional development funds, and only one of a small number of respondents who knew of this type of assistance, for establishing small businesses in Regional Development Priority Areas.

This brings this case study to one of the more salient factors attributing to the potential reuse of disused dairy factories. The purchase price of these dairy factories was found to be second only in significance, to the "existence of an established building" in accounting for their reuse. The Glover Road Dairy Factory is again atypical in this regard, selling for \$150,000, whereas 75 percent of the old dairy factories sold for less than \$15,000. With nearly a quarter of these buildings being purchased for less than \$5,000, low purchase price can be considered an asset to potential dairy factory reuse.

With the establishment of any enterprise, the location of raw material supplies, market and labour are important factors impinging, in varying degrees, on the location decision. One of the more unusual factors to emerge from this study is that these factors appear to play only minor roles, compared to the existence of the dairy factory building and its relative cheapness, as determinants of potential dairy factory reuse. For example, Millars imports most of its fabric from the East, and like most of the reuse activities, the location of raw material

supply is of little or no significance in the decision to locate in the disused dairy factory.

The analysis did indicate, however, that there is a basic similarity between where the reuse activities obtained their raw materials and their market area. The Taranaki region appears to provide the majority of both supply and demand forces in the main, and to this end, the reuse of the disused dairy factories is beneficial to the further use of the region's resources.

The utilisation of the region's human resources is an aspect of this study, which has significant implications for the local community surrounding the former dairy factory. The local labour employed by reuse activities accounts for over three-and-a-half times the labour employed from outside the local community. Dairy factory reuse in these peripheral rural areas of Taranaki does appear to make a positive contribution to the local community. The employment of two or three local people can hardly halt rural depopulation, but each local person employed is one less that will be drawn away for the sake of employment elsewhere. The effect of a few people employed in a rural area may mean the difference between the local school remaining open or closing. The implications then, of reuse activities employing predominantly local labour, are important in sustaining the viability of local communities.

The composition of the labour force employed in reuse activities, indicates the opportunity for employment that these activities often offer disadvantaged sectors of the rural labour force. Male and female labour are roughly equivalent, although males predominate by approximately 10 percent. This represents a significant departure from the male-dominated labour force of the original dairy factory. Some reuse activities offer rural women one of the few opportunities for employment within their immediate area. The Glover Road Dairy Factory exemplifies this pattern, employing a staff of 118 with a complement of 106 women and 12 men, nearly all of which are drawn from the local community.

While the future for John Millar Manufacturing Ltd seems

promising, with further expansion of both buildings and staff necessary to meet production orders, a similar stable future is envisaged by the majority of respondents in their present reuse activities.

6.2 CONCLUSIONS

One of the main conclusions to be drawn from this study is that the interplay of both spatial and aspatial factors is most important in accounting for dairy factory reuse in the study area.

The extent of dairy factory reuse in the study area is considerable, with storage, engineering and light manufacturing being the most predominant reuses. Storage of some kind (most often hay or farm implements) accounts for nearly half of the reuse activities. This reuse is seen as an extension of the dairy factory's original use, in servicing local rural needs. Storage does, however, represent under-utilisation of the dairy factory in terms of employment implications. The majority of engineering enterprises engaged in repair and maintenance of farm machinery, are also continuing an association with the agricultural sector initiated by the original use of the building.

The majority of dairy factories have a history of reuse, with the current reuse activity, most often being the second reuse since the building's operation as a dairy factory.

1960-1969 is significant as the major period of establishment of current reusers in the dairy factory premises. This can be attributed to the rapid adoption of tanker collection at the beginning of the 1960s, and the consequent rapid closure of many small dairy factories through the need for economies of scale in dairy processing. As production became increasingly concentrated at one central processing plant, more disused dairy factories became available for potential reuse at this time.

In the main the reuse activities have local origins, with most of the enterprises the result of local initiative rather than organised corporate development. Family firms and other locally owned firms are the main agencies of these local entrepreneurial reuse activities.

In seeking an explanation of dairy factory reuse the following factors appear to be the most significant in determining reuse patterns.

First and foremost, the physical existence of the building is the overriding factor influencing the reuse of these dairy factories. The fact that they are disused dairy factories only makes them part of a population of abandoned dairy factories scattered throughout the study area. What is of more significance to potential reuse, is the fact that these dairy factories exist as established buildings available for reuse. Their current physical status is, therefore, of greater influence than their being former dairy factories. Some significance is, however, attached to the size of the building which is related to its former use.

The second factor of major importance is seen to be the actual site location of these disused dairy factories. Those dairy factories with access to main arterial routes, or on major intersections or road junctions, are more likely to be used by a reuse activity engaged in a business activity. Those in the more isolated or peripheral areas of the study area have every likelihood of being used. The probability, however, of this reuse being an activity other than storage, is not high. Location therefore, may be more influential in determining the nature of the reuse activity, rather than the likelihood of potential reuse per se.

A number of aspatial factors appear to be associated with the influence of site location on potential reuse of the abandoned dairy factory. The purchase price of the dairy factory is one of the more significant factors after the "existence of the building", in influencing dairy factory reuse. The fact that the building is a former dairy factory becomes significant for potential reuse in this analysis. As obsolete buildings, these disused dairy factories may generally be acquired for very low purchase prices, in comparison to building another structure of similar dimensions, or leasing comparable space elsewhere.

The date of closure of the dairy factory seems to be interdepen-

dent with purchase price in determining the reuse of the dairy factory. Early closure means a lower purchase price relative to a dairy factory that has closed more recently. Those factories that closed initially, i.e. in the 1950s and 1960s, were the small dairy factories, and with time the larger dairy factories have closed. This analysis indicates a pattern of increasing purchase price and larger buildings available for potential reuse, the more recent the closure of the dairy factory.

Another of the aspatial factors important in explaining the reuse of dairy factories, is the role local information networks play in facilitating the spread of knowledge of the dairy factory's availability for sale. These sources may account for the predominantly local entrepreneurs establishing reuse activities. The fact that most of the reuse activities originate from the same area or in the vicinity of the dairy factory, is considered important in determining the potential reuse of the building. This local talent may well be attributed to these people recognising the potential value of the dairy factory building as a suitable site for an alternative use.

Some other spatial and aspatial relationships investigated tend to support the aforementioned factors. The influence of increasing distance from the main regional centre affects employment opportunities for local labour in a positive sense, i.e. more people are employed in reuse activities with increasing distance from the main centre.

While the abandoned dairy factory invariably has to be modified by the reuser, these alterations are not of such a magnitude as to limit the potential reuse of the building.

It may therefore be concluded, that the following factors are the most significant in determining the potential reuse of disused dairy factories in Taranaki:

- 1 The existence of an established building.
- 2 A site location accessible to major arterial routes.

3 A relatively low purchase price.

These three factors appear to operate interdependently in the majority of instances, in influencing potential reuse of dairy factories. The "existence of an established building" is considered the most significant single factor, paramount in determining the potential reuse of disused dairy factories in Taranaki.

6.3 LIMITATIONS OF THE STUDY

While these conclusions are well supported by the preceding analysis, it must be recognised that the study is limited in its capacity to fully explain the reuse of abandoned dairy factories in Taranaki. The conceptual framework around which the study is based, while useful for description, is not sufficiently powerful to allow a more definitive analysis of the phenomenon in question. The use of a survey questionnaire in gathering the data, provides a means of obtaining information on a number of variables, but of rather superficial quality in certain cases. A more thorough investigation, probing one or two variables in depth, could prove very worthwhile in yielding a fuller explanation of potential dairy factory reuse. This, however, is beyond the scope of the present study.

The objective of the study was "to set the stage in motion" as it were - to bring an awareness of the phenomenon of reuse, and to indicate some of the avenues of investigation that could be taken up in future research themes. In attempting to achieve its objectives the sacrifice of a more dynamic analysis was made. This study is presented as "a slice in time"; a static analysis. Herein lies its basic inability to analyse how the factors influencing the potential reuse of disused dairy factories, interact through both time and space.

Given the limited nature of the conceptual framework which is used in this analysis, some consideration as to how this framework may be improved, could aid future reuse studies. A more dynamic approach to the problem of dairy factory reuse, would enable investigation of the changing nature of reuse from the time of dairy factory abandonment to the present day.

The relationship between dairy factory reuse and the wider New Zealand economy has been ignored in this analysis. Relating potential dairy factory reuse to changes occurring in the agricultural sector, government policy and regional development schemes would provide a more integrated study of the phenomenon, than examination in notation as is presented in this thesis.

Strengthening the relationship between the spatial and aspatial factors would also improve this analysis. Regional economic analysis of the phenomenon may indicate the nature of the interdependent relationship, that appears to exist between those spatial and aspatial factors influencing dairy factory reuse.

While this study considers only dairy factory reuse, the phenomenon of reuse could be applied to other abandoned rural buildings, if the conditions leading to their abandonment produce an adequate population of similar buildings. The reuse phenomenon appears to apply rather more to rural buildings than urban buildings, which tend to be demolished if they are abandoned for any length of time. Other rural reuse studies could, for example, analyse the reuse of former country stores or garages which may have closed, perhaps through a downturn in economic conditions, the indirect effects of government decisions (i.e. the effects of a petrol price rise or restraint measures) or changing rural commuting and spending patterns.

The role of the regional development programme in dairy factory reuse is only superficially investigated in this study. From this, it is however evident, that wider dissemination of the type of assistance available to small enterprises wanting to establish, should be made available to the general public. More positive assistance could be given to make it less difficult for small enterprises. The regional development programme could, for example, encourage reuses to create employment, by lowering the minimum qualification for staff training suspensory loans from 10 new full-time jobs to approximately half this number. In relative terms, five people employed in a rural reuse activity has greater implications for the local rural community, than its non-establishment, or a similar enterprise locating in an urban

centre. The criteria by which small enterprises qualify for suspensory loans could be broadened. At present, only the establishment and expansion of manufacturing and advanced processing plants qualify for suspensory loans in priority regions, such as the study area. Loans for housing and transport subsidies for reuse employees could also encourage reuse activities to create more employment opportunities.

The basic research objective, as was stated at the outset of this study; to describe and account for the pattern of dairy factory reuse has been satisfactorily accomplished. The significance of this study is seen in its identification of those factors, significant in determining potential reuse and recognising that each of these could justifiably be a study in themselves. Some consideration could be given to investigating further the potential employment opportunities of dairy factory reuse, which the study suggests bears some relation to distance. More detailed analysis of reuse service linkages, as they relate to population concentration is also seen to be significant from the findings of this study.

Having identified the more salient features influencing the potential reuse of dairy factories in Taranaki, this study now looks towards further research to evaluate and explain the spatial interplay of these factors, and their implications for the local rural community and the New Zealand economy as a whole.

M A S S E Y U N I V E R S I T Y

DEPARTMENT OF GEOGRAPHY

TARANAKI REUSE OF DAIRY FACTORYQUESTIONNAIRE

Address: _____

Factory No Use No

					1
1	3				6

* Please circle the correct option unless otherwise stated

1. What is the current kind of operation carried out here?

1. Transport Services
2. Engineering (structural, maintenance...)
3. Light manufacturing
4. Storage (state...)
5. Livestock processing
6. Retail outlet (frozen goods, crafts...)
7. Concrete type products
8. Vacant
9. Other (state...)

7

2. What year did your firm begin operating initially?

1. Pre 1950
2. 1950-1959
3. 1960-1969
4. 1970-1979
5. 1980-1982

8

3. What year did your enterprise begin operations in the current dairy factory premises?

1. Pre 1950
2. 1950-1959
3. 1960-1969
4. 1970-1979
5. 1980-1982

9

4. Is this enterprise a branch plant of a larger enterprise?

1. Yes
2. No

10

5. If no, have you moved your whole operation from another location?

1. Yes
2. No

11

6. At what location did your firm begin operating initially?

1. The current premises (i.e. the dairy factory)
2. The local community (i.e. in the same area as at present but different premises)
3. A nearby town (please state...)
4. Within the Taranaki region
5. Outside the Taranaki region

12

7. What was/were the use/s of the building prior to its current use? (if more than one show order if possible).

1. Dairy factory
2. Light manufacturing
3. Engineering (structural, maintenance, etc.)
4. Storage (of what?....)
5. Retail outlet
6. Vacant
7. Other (please state.....)

13

8. How many uses has the building had since its use as a dairy factory?

1. One
2. Two

3. Three
4. Four
5. Don't know

14

9. How did you obtain knowledge of the dairy factory's availability for sale?

1. Direct local knowledge (i.e. drove around the area)
2. Indirect local knowledge (i.e. heard from a friend or acquaintance)
3. Lived in the area
4. Real Estate agent
5. Other (please state....)

15

10. From whom and how did you acquire the building?

1. Purchase from the Dairy Company directly
2. A private individual
3. A lease agreement
4. Other (please state....)

16

11. Did your enterprise have any difficulty in arranging the purchase of the building?

1. Yes
2. No

17

12. If yes, what was the nature of this difficulty?

1. The nature of your enterprise was not allowed under the Planning zonation of the site (e.g. rural as opposed to industrial)
2. County Council regulations (i.e. refuse, pollution. Please state....)
3. Residents objections (please state....)
4. Price set by the Dairy Company
5. Raising finance
6. Other (please state....)

18

13. What price did you pay for the building?

\$ _____,000

19

20

21

14. Was there any difference between the current market valuation at the time of purchase and the price you paid for the building?

1. Little or no difference
2. A significant difference
3. A very significant difference

22

15. Do you feel you got a "good deal"?

1. Yes
2. No

23

16. Is this a:

1. Family firm/company
2. Other locally owned firm/company
3. Neither of the above

24

17. If neither of the above, is your enterprise part of a:

1. Taranaki regional chain
2. National chain

25

18. If one of the above, where is your head office?

1. In New Plymouth
2. Other Taranaki centre
3. Other in the North Island
(please state....)

26

19. Did your enterprise qualify for Regional Development funds?

1. Yes
2. No

27

20. If so, did your enterprise get these funds?

1. Yes
2. No

28

21. Was such funding critical in your decision to locate in the dairy factory premises?

1. Yes
2. No

29

22. What were your other sources of funds?

1. Private capital
2. Private loan
3. Bank loan
4. Rural Bank funding
5. Finance company
6. Other

30

23. Where does your enterprise carry out its banking?

1. Within the local community (i.e. within 5 km radius)
2. In the nearest town
(please state....)

31

24. Is this an agency?

1. Yes
2. No

32

25. Which postal facilities does your enterprise use?

1. Rural delivery
2. PO box in the nearest town
(please state....)

33

26. What were your reasons for locating your enterprise in the TARANAKI REGION?
(if more than one option is applicable list in order of importance)

- | | | |
|---|----|--------------------------|
| 1. Lived in the area and familiar with it | 34 | <input type="checkbox"/> |
| 2. Building was available for use | | <input type="checkbox"/> |
| 3. Saw region as a major market area | | <input type="checkbox"/> |
| 4. Availability of local labour | | <input type="checkbox"/> |
| 5. Attracted by other local resources
(i.e. quality of the water supply etc...) | 38 | <input type="checkbox"/> |
| 6. Other (please state....) | 39 | <input type="checkbox"/> |

27. What were the special advantages of this particular choice of site? (list in order of importance)

- | | | |
|---|----|--------------------------|
| 1. Existence of an established building | | <input type="checkbox"/> |
| 2. The size, shape and structure of the building | 40 | <input type="checkbox"/> |
| 3. The material used in the building's construction | | <input type="checkbox"/> |
| 4. Particular design features (e.g. solid foundation, concrete floor, etc.) | | <input type="checkbox"/> |
| 5. Special fittings: refrigeration facilities | | <input type="checkbox"/> |
| 6. Plenty of yard space and possible room for expansion | 46 | <input type="checkbox"/> |
| 7. Other (please state....) | | <input type="checkbox"/> |

28. Was the fact that the rates are lower on a rural site such as this influential in your decision to locate here?

- | | | |
|--------|----|--------------------------|
| 1. Yes | | <input type="checkbox"/> |
| 2. No | 47 | <input type="checkbox"/> |

29. When establishing your enterprise did you consider locations at any other site?

- | | | |
|--------|----|--------------------------|
| 1. Yes | | <input type="checkbox"/> |
| 2. No | 48 | <input type="checkbox"/> |

30. If yes, what was the major reason for choosing to locate in a dis-used dairy factory? (Choose one only)

- | | | |
|----------|--|--------------------------|
| 1. Cheap | | <input type="checkbox"/> |
|----------|--|--------------------------|

- 2. Large yard space available
- 3. Existence of a vacant building
- 4. Other (please state....)

49

31. Would you have established your enterprise here had you had to build a new building?

- 1. Yes
- 2. No

50

32. What is the approximate floor space of the building at a single height?

_____,000 sq.ft.

51

53

33. Did you have to make any structural changes to the building?

- 1. Yes
- 2. No

54

34. If yes, list these changes and the reason for the modifications.

- 1. _____
- 2. _____
- 3. _____
- 4. _____
- 5. _____

55		
57		
59		
61		
63		

35. Did you consider these changes to be:

- 1. Major
- 2. Minor

65

36. What were the disadvantages or limitations of locating your enterprise here in terms of:

1. The Taranaki Region

(e.g. transport costs to and from an isolated region)

66

69

2. The actual site (or location) of the dairy factory premises

70

73

3. The building itself (other than those modifications stated earlier)

74

77

37. For your firm's operations, which is your nearest town centre?

78

						2
--	--	--	--	--	--	---

1

6

CURRENT EXPENDITURE

38. List the main raw materials used and where these are obtained according to the following:

1. Local (within 5 km)
2. Within the Taranaki region
3. Other in the North Island
4. South Island
5. Not applicable

7 Raw MaterialSource

1. _____	1. 2. 3. 4. 5.	
2. _____	1. 2. 3. 4. 5.	8
3. _____	1. 2. 3. 4. 5.	11
4. _____	1. 2. 3. 4. 5.	14
5. _____	1. 2. 3. 4. 5.	17
		20

39. How significant was the location of raw material supply in your decision to locate in the dairy factory premises?

1. Little or no significance
2. Significant
3. Very significant

23

40. What means of transport is used in obtaining raw materials?

1. Road
2. Rail
3. Air
4. Sea
5. Not applicable (i.e. customer's responsibility)

24

41. What means of transport is used in distribution and marketing?

1. Road
2. Rail
3. Air
4. Sea
5. Not applicable (i.e. customer's responsibility)

25

42. Where does your enterprise mainly market its product?

1. At the factory door
2. Within the local community
3. Within the Taranaki region
4. N.Z. wide
5. Overseas

26

43. If N.Z. wide or overseas, how much does transport costing affect total costing?

1. Not significantly
2. Significantly
3. Very significantly

27

44. Please state the gross turnover for your enterprise last year.

\$ _____,000

28 31 32 33

EMPLOYMENT

45. How many persons were initially employed when you began operating your enterprise in these premises?

a) Year 19__

Male _____ Female _____ 34

Full-time _____ Part-time _____ 38

42

46

b) Employees Sept. 1982

Male _____ Female _____ 50

Full-time _____ 52

Regular part-time _____ 54

Casual _____ 56

58

50. Were the skills your enterprise required compatible with those specialised skills of the dairy factory?

- 1. Yes
- 2. No

53

51. Age of Employees:

(please state the number of persons according to the following)

- Males:
- 1. < 20 years
 - 2. 20-40 years
 - 3. 40+ years

54		
56		
58		
60		
62		
64		

- Females:
- 1. < 20 years
 - 2. 20-40 years
 - 3. 40+ years

52. If known, state the approximate number of persons employed in the original dairy factory at the time of closure?

65

66

53. Marital Status of Employees:
(numbers)

- Males: Married _____
Single _____
- Females: Married _____
Single _____

68		
70		
72		
74		

54. Labour Supply: (numbers)
(Local: refers to a 5 km radius)

- 1. Living in the local community
- 2. Living outside the local community

76		
78		

UNION MEMBERSHIP

55. Are your employees members of a union?

1. Yes
2. No

80

					4
1					6

56. Is it:

1. A local branch of a nationwide union
2. A separate union

7

57. Has the presence or non-presence of union activities been a positive or negative influence on the operation of your enterprise?

8 9 OTHER ACTIVITIES

58. Does your enterprise operate any special activities for the workforce?

1. Yes
2. No

10

59. If yes, what are these activities?

1. Social club
2. Sports club
3. Credit club
4. Other (please state....)

11

60. To the best of your knowledge, were any of these activities offered by the former dairy company?

1. Yes
2. No
3. Don't know

12

61. What is the prime objective of your enterprise?

1. Profit
2. Survival
3. Growth
4. Satisfying personal goals
(such as.....)
5. Other (please state...)

13

62. Do you consider the future of your enterprise to be:
(given the present economic conditions)

1. Unstable
2. Stable
3. Very stable

14

63. When you began operating in the dairy factory premises did you consider your enterprise to be a:

1. Short-term venture
2. Long-term venture

15

64. If you were to expand would you consider taking over a disused dairy factory again?

1. Yes
2. No

16

65. Do you think that fairly widespread planning policy is a help or a hindrance in enabling enterprises such as yours to establish?

17

66. Does Central Government Policy help or hinder the establishment of enterprises such as yours?

18

67. How do you see your enterprise contributing to the local community?

19

SPEARMAN RANK CORRELATION COEFFICIENT

The purpose of a correlation coefficient is to measure the strength of the association between two variables.

$$r_s = \frac{6 \sum d_i^2}{N_3 - N}$$

where r_s = Spearman rank correlation coefficient

d_i^2 = the difference of the i 'th ranks, squared

\sum = means 'the sum of'

Procedure:

1. The observations of the X variable (i.e. the number of respondents stating each centre to be their nearest) and the Y variable (i.e. the population of those nearest centres) are separately ranked, from largest to smallest.
2. The value of d_i for each nearest centre is calculated by subtracting the Y rank from the X rank.
3. Each d_i value is squared.
4. The values of d_i^2 are summed.

If the correlations were perfect each centre would be ranked the same on each variable and every d_i would be zero. The larger the difference the weaker, the relationship.

SPEARMAN RANK CORRELATION COEFFICIENT COMPUTATION

Nearest Centre	Population	Rank	Nearest Centre for Reuses	Rank	d_i	d_i^2
New Plymouth	36 048	1	16	1	0	0
Hawera	8 400	2	11	2	0	0
Manaia	992	8	1	6.5	1.5	2.25
Eltham	2 411	6	3	4	2	4
Kaponga	1 200	7	1	6.5	1.5	2.25
Stratford	5 518	4	6	3	1	1
Inglewood	2 839	5	2	5	0	0
Waitara	6 012	3	-	8	5	5

$$r_s = \frac{1 - \frac{\sum d_i^2}{N^3 - N}}{1}$$

$$\sum d_i^2 = 34.5$$

$$N = 8$$

$$N^3 = 512$$

$$r_s = 0.59$$

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