BUILDING CONVERSION PROCESS, A COGNITIVE EXPLORATION

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Thesis submitted in partial fulfillment of the requirements for Doctor of Philosophy

2003

ABSTRACT

Over the last 35 years the conversion of buildings has emerged as an important activity of the U.K. construction industry. Much has been written on the approaches taken to convert buildings and its economic, social and environmental benefits. Most recently, work has concentrated on identifying the capacity and the potential for conversion work where issues and factors which influence the activity are listed. However, very little attention has been paid to capturing the individual actor's cognitive understanding of the process and the pivotal decision factors which influence the development and outcome of projects of this nature.

This study focuses on the conversion of non-residential buildings to residential use and looks at the central London area as an example of this practice. It explores the experiences and understanding of individuals involved in the activity of how a conversion project develops and what are the causes and effects of decisions taken on the project process development and outcome. A better understanding of the systems' process in building conversion projects could suggest areas in need of improvement.

The study is approached and developed through a case investigation of three conversion projects completed by private developers in 1999. Data was collected by means of in-depth interviews and archival research. Cognitive mapping techniques were used as an analysis tool from which individual "decisions boundaries" could be explored within context, subsequently combined, to obtain a project overview, and then compared.

The research concludes that the decision taking mechanisms which occur between the critical activities is largely determined by five pivotal factors: nature and level of input of client; quality and integration of actors; balance between cost and value; flexibility in achieving objectives and time available. Although more research needs to be done in this area, this research project makes five general recommendations to improve the conversion project process: clear formulation and communication of objectives and roles; selection of experienced team members and establishment of a team building strategy; integrated and flexible management of human resources; stream line management of communication and information systems process and establishment of a project re-evaluation exercise.

The value of this work lies in the establishment of the core decision mechanisms, issues and pivotal processes that strategic actors will need to consider and organize if they are to successfully engage in this risk laden sector of the construction.

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ACKNOWLEDGEMENTS

To my supervisors Dr. Andrew Edkins and Prof. Patrick O'Sullivan for their support, encouragement and patience; CONACYT for their financial support; UCL, firms and individuals who provided me with work when financial resources were scarce; London Residential Research for providing data on conversion projects; all the participants in this study for their time and information; my family and friends; and Nick for his support, sound advice and keeping me sane throughout this process.

Chapter One

Introduction

1.1 Introduction to the Study

Throughout history the fabric of a building has generally outlived its function. As a consequence buildings have presented the option of being modified to suit new uses. This still stands true today. The current housing crisis in the South East of England is in urgent need of solving and the government's standpoint on brownfield and sustainable development has indicated that the activity of converting buildings to residential use becomes ever more important. Current literature offers a repetition of issues, either external (related to the property market) or internal (related to the building) which affect the activity, but hardly any focuses on the individual actor's cognitive understanding of the process and the pivotal decision factors which influence decision makers during the development of such activity.

This thesis is concerned with the conversion of non-residential (for example, commercial, industrial, ecclesiastic, institutional) buildings to residential use. The study concentrates on London as an example of this phenomenon and reports on three conversion projects completed by private development companies in 1999. The study explores the way in which this activity developed, how the conversion process is understood by those involved in the process, the key issues and additional factors which influence this activity and its development; and finally it identifies pivotal decision factors in projects of this nature.

There are many explanations of how and why buildings experience changes of use and the implications of this, which vary in their approach; some provide it through urban history (Mumford, 1961; Inwood, 1998; Cunnington, 1988), others through description of before and after cases (URBED, 1981, 1987; Cantacuzino, 1989; Latham, 2000), or through a facilities management perspective (Duffy, 1993; Henket, 1990, 1992; Brand, 1996; Nutt, 1997; Kincaid,

2002) while most recent publications offer a list of factors that may influence the decision to convert and activity (RICS, 1998; BPF, 1999; DETR, 2000). Although these are generally accepted, the available information only provides a partial explanation of how a conversion project develops and what the perceived key aspects which may affect the project's development process and outcome are. These are still questions that need answering. The purpose of this thesis is to explore the experiences and understanding of individuals involved in the activity of how a conversion project develops and what are the causes and effects of decisions taken on the project outcome. We will be trying to see the prints of views of the different actor's, so when the different perspectives of the landscape are superimposed we will be able to either view a coherent picture and/or see mismatches. The chapters that follow will present this within context with the aim of answering two questions:

1. How do individuals involved in the activity understand the conversion project process?
2. What are the pivotal decision factors that affect either positively or negatively a project's development and outcome?

The need for answers lies in the limited knowledge available on the cognitive understanding of this activity's process and the potential implications for those involved. Current literature brings focus only to identifying the potential decision factors in the initial decision stage of the process, that is, of whether or not to convert a building. If the government is interested in encouraging conversion activity as a means to provide housing, then there has to be a clearer understanding of how the individuals involved in the activity perceive it and carry it out. Academics will benefit from this study for it will identify key issues that need to be addressed adequately in education and training. Through the methodology, practitioners will benefit by obtaining an insight into their learning process, which will allow them to asses and re-address important aspects of the process in future projects. This is significant as post evaluation exercises are hardly ever carried out in this context.

The following sections will set the context for this study; section 1.2 describes the area of interest, section 1.3 describes how recent conversion studies have been approached, section 1.4 defines the scope of the project, section 1.5 offers definition of terms and finally section 1.6 describes the structure of the thesis.

1.2 THE INTEREST IN CONVERSION

Throughout their lifetime buildings experience constant change. From the moment a building is conceived by a designer and given expression until, for whatever reason, it is demolished, a building endures changes time and time again. Buildings are enlarged, repaired, restored, rehabilitated, adapted and refurbished by the interactions of social, economic, political and technological factors (Brand, 1996). Shifts in the market, land use, policy, technological developments, population and lifestyle changes also play their part. It is therefore fair to say that the nature and pace of change of society is reflected in the built environment.

According to Cowan (1962) each building has its own process of change and like humans changes in cycles. Both are born, grow, mature, evolve and die. During the evolution stage the effects of the building's interaction with its surrounding context begin to show. Technological developments, social and cultural changes, change in intensity of use, changes in the property market, among other variables, may render a building redundant or obsolete. When this occurs a building faces the possibility of either evolving to a new use or dying; in other words demolition. Figure 1.1 illustrates this point by showing the decline in performance level of a building over its initial design life.

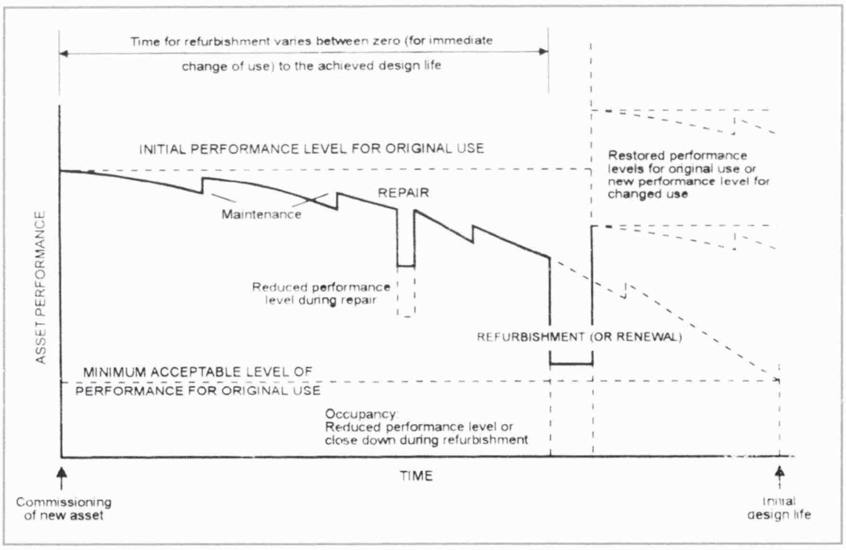

***Fig.1.1** Building asset performance level over initial design life. Source: CIRIA, 1994:6.*

During the evolution stage the question of what to do with the building arises. According to Douglas (2002) the criteria used for keeping or removing a building are: the building's state of dilapidation; overall performance; architectural or historical importance; future demand of the property; impact on surrounding properties; and overall benefit to the community. In terms of management options Nutt (1997) proposes six: marketing, leave vacant, refurbish, modify use, change use class, demolish/redevelop or sell site. Historically, the problems associated with the re-use of the existing building stock have been dealt with by a number of different approaches, such as restoration, repair, rehabilitation, alteration or conversion (Markus, 1979). Each of these historic or managerial options have their own characteristics, but it is the conversion or change of use that presents the greatest challenge; as conversion or change of use encompasses more complexity and offers the most potential for economic, social and environmental benefits. This view is supported by Douglas (2002), who mentions: "the best most suitable solution for saving an obsolete or redundant property is conversion to a more beneficial use" (Douglas, 2002:136).

In most "new" towns and cities (less than 100 years old) in developing countries[1], the notion of changing the use of buildings has hardly been considered, for it does not represent "progress". Instead the city's periphery continues to expand while its centre is left abandoned. Gradually however there has been a change in perception about the value of the built environment and the value of re-using buildings. Although buildings have been modified to suit new uses, these have generally tended to be for commercial purposes only, as it is the thriving economic sector in these cities. Although the potential for re-use exists, the knowledge and skills associated with the re-use activity has still some way to develop particularly in the context of the residential market.

The perception of the built environment and its potential is different in the United Kingdom. Here the significance of the majority of its buildings lies in the history which is embodied in them, their sense of durability and in their value as scarce resources that have the potential of being re-used (Markus, 1979). Buildings embody substantial valuable resources in terms of materials, money, human resources, energy, equipment, usage, and so forth (Markus, 1979).

The conversion of buildings is hardly a new phenomenon but has been a growing activity throughout the western world. In the United Kingdom interest in putting buildings to new uses gained popularity during the late 1960s, when the preservationist movement took off. Since then conversion has experienced several trends. At first, buildings were converted to museums or galleries as a way of ensuring their future survival (Cantacuzino, 1989). By the late 1970s redundant industrial buildings were being used as artists' studios, workshops or small firms as a way of helping sustain a healthy economy (URBED, 1981). During the 1980s and early 1990s the conversion of industrial buildings, mainly warehouses, to residences was also carried out as an urban regeneration strategy. The early 1990s also experienced the conversion of London office buildings to residences, which was seen as a way of contributing to growing housing needs. During the past 30 years the approaches taken to conversion have shifted from a conservationist/economic argument to a more socio-economic and environmental one. Conversion activity has contributed as a tool for conservation, regeneration and "sustainability", its benefits have been experienced and now it forms an integral part of planning policies.

The Department of the Environment Transport and the Regions (DETR)[2] has encouraged conversion activity throughout its development. Its position today is that rehabilitating and

[1] The author's own city of Mexicali in north west Mexico is just one example of this: the observation of this different approach was a strong impetus in the development of this research project.

[2] At the time of writing (May 2002) the government department dealing with construction is the DTLR. Until June 2001 it was DETR. It is referred to as DETR in this thesis.

refurbishing the existing building stock may be more sustainable in economic, social and environmental terms than building new.

Conversion or change of use activity is represented within the refurbishment (repair and maintenance) sector, which has played an important role in the country's economy. In 2000 it accounted for approximately 5% of the Gross Domestic Product (GDP); just under half of the construction sector's contribution (DTI, 2001). In 2000 the refurbishment sector represented 47% of the total construction output activity (Fig.1.2), this activity has more than doubled since 1970 when it represented 22.5% (DOE, 1981).

It is not certain how much change-of-use activity represents. Nutt (1996) estimates that it represents 18% of all refurbishment work, but maybe more as major alteration projects are described by planning authorities as new development.

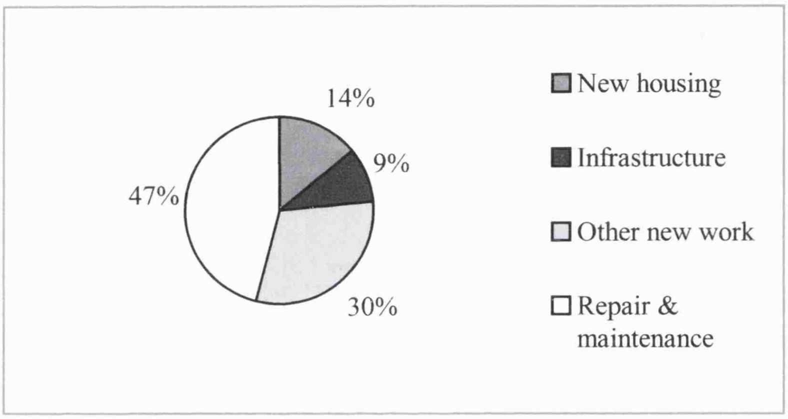

Fig.1.2 *UK construction sector output in the year 2000. Source: DTI, 2000*

In London, conversion to residential use has been of particular significance. During the 1990s the conversion of office buildings to residential use grew considerably, generally due to the levels of demand and over supply of office space. Of the buildings that had changed their use in 1993-94, 33.7% of office buildings were converted to residences compared to 7.6% of industrial and 10.8% of other building types, such as public buildings, education and hospitals (Nutt, 1996). The figures are representative of changes occurring in the supply and demand of space in buildings, driven by the pace of change and the influence of economic, social, political, environmental and technological factors on the built environment.

The projected increase of 4.3 million new households needed between 1996-2021, with 700,000 projected for London, the escalation of house prices in the South East, and the government's concern for reviving towns and cities all point to the potential for conversion to contribute to housing demands and needs. Although conversion continues in London, albeit at lower rates now than in earlier years, and is expanding to other parts of the country, both the benefits and problems associated with it will continue.

1.3 UNDERSTANDING CONVERSION ACTIVITY

Work related to conversion to residential use has focussed mainly on the potential of re-using existing building stock as a way of contributing to current housing needs. Studies such as LPAC's (1996) report on converting offices to other uses only focus on the potential capacity of vacant office space for accommodating residences in London. Others focus on a specific sector; Barlow and Gann's (1993) report looked at the potential of converting offices into flats by considering the influences of social, technical, economic and political (STEP) variables; Freer's (1998) study, looked at the potential of dwellings over shops. In 1998 the RICS published a report on the growth of office conversions to residential use in London and identified issues that influence developers decisions to convert; they also noted the importance of these issues (RICS, 1998). The British Property Federation (BPF) (1999) published a report which examined the role of commercial property owners and developers in promoting the conversion of commercial space to residential use. The study focused on assessing the possible link between redundancy, measures of under performance and the potential for conversion schemes. In March 2000 the DETR commissioned a report to investigate the contribution of conversion, subdivision and redevelopment to the housing supply. It concludes that conversion could provide between 18,000 and 26,500 new homes in England. In addition, there have been specific initiatives that have promoted conversions to residential use, like the Government's "Flats over Shops" programme (1992-1995). And currently, with the projected increase in the number of households up to the year 2016, there has been a move for more investigation on the subject of conversion by the Government's Urban Task Force and other organisations. The work carried out in this field has highlighted the potential benefits of this activity as (BPF, 1999):

- a tool for improving the urban environment;
- a contributor to the local economy and vitality of a community;
- a contributor towards meeting the government's 60% national average target of accommodating new dwellings on brownfield sites;
- a tool for conserving buildings of historic value;
- a means to a more "sustainable" community in economic, social and environmental terms.

While previous work has presented capacity and potential issues it does not go beyond mentioning aspects that influence conversion activity. In cases where a listing of issues that influence the decision to convert has been made, it focused on either external (changes in the condition of the property market, legislation, population) or internal (building characteristics, costs, location variables) (Quah, 1988; RICS, 1998; BPF, 1999; DETR, 2000). Little effort has been directed to study the process at a micro level, that is, at an actor's cognitive level, those who are involved in this activity. The current literature refers to the high level of uncertainty and risk involved in this activity, as well as the difficulty of understanding the complexity of all the issues that come into play during the development process. It is therefore considered that more research needs to be conducted in this area. A better understanding of this process at a project base level will provide a backdrop for making suggestions on how to improve it. This improved understanding will benefit academics interested in the construction and project management sector, and practitioners interested in improving their organisation's performance.

1.4 SCOPE OF THE PROJECT

The direction of the project was largely influenced by the findings of nine preliminary semi-structured interviews carried out with developers, architects, planning consultants and financiers. These interviews were carried out to explore the influencing factors and issues already identified in the literature and described in section 2.6. The results of the preliminary interviews highlighted two key research issues:

- first, Social, Technical, Economic, Environmental, Political and Location (STEEPL) factors and their issues (described in section 2.6) do indeed influence the key actors involved in conversion activity, albeit to different degrees;
- second, an individual's perception and understanding of the factors and issues played an important role in the way decision making was carried out and in how the conversion process developed.

The first point corroborates the findings of the existing literature, giving a theoretical in grounding to the research; the second research issue highlighted gaps in the existing research and therefore enabled the development and focus of the principal research questions.

This study therefore attempts to explore the actor's cognitive understanding of the process of building conversion, based on an entrepreneurial approach, and to identify additional factors and the key issues that determine, limit or push the decision maker to take on and develop a conversion to residential use scheme in London. A better understanding of the dynamics of the system at play may suggest ways of improving it. The study attempts to understand the decision taking mechanisms during the project process by addressing the following questions:

- how do actors involved in conversion make sense of the numerous influencing issues?
- what is the combination of factors and issues that drive the decisions in a conversion project process?
- what are the pivotal phases and decision factors in a conversion project?
- how are these addressed and managed?

The improvement of a process begins with a clear understanding of its development, the elements involved, their inter-relation and key problems areas. This understanding can be achieved by mapping, through the use of cognitive mapping, individual actor's perception of the project's development process. This exercise will provide insights into the individual's "decision boundary" and allow us to explore it in context to address the questions above. The exploration will narrow its focus on the following aspects:

- a project level
- individual and group perception
- similarities and differences in views
- level of fragmentation and integration
- aspects of cause and effect
- level of control and freedom
- capture intervening processes
- uncover mechanisms

By looking at these aspects it is considered that the pivotal decision factors can be easily identified, understand how problem areas are addressed and managed and in general understand the conversion process at its micro level.

The study is limited to investigating the existing non-residential building stock in central London (11 main boroughs), which have presented a change of use to residential use between the periods of 1997-1999. The conversion schemes studied only include private accommodation and exclude social, students and elderly accommodation, hostels and hotels. The reason for these parameters is because the central London area has experienced a vast number of privately developed conversion schemes (see figure 1.3 and 1.4), indicating a level of expertise from this sector and the influence of the demand side of the residential property market. The issue of how much actors could recall suggested that it would be prudent only to include the most recent completed projects.

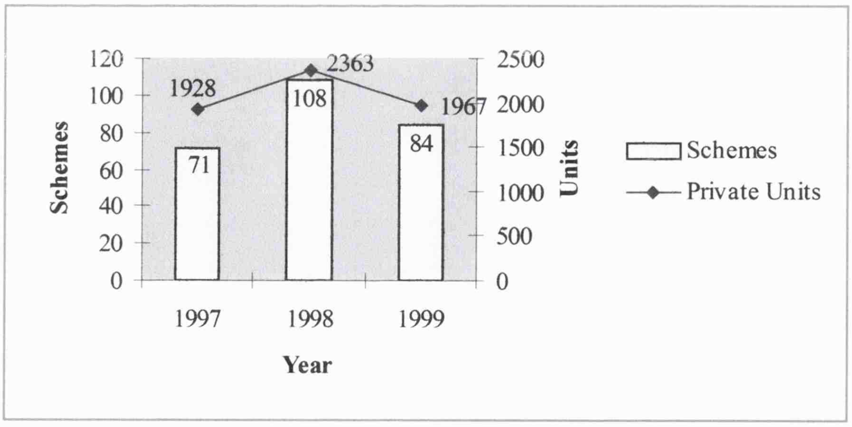

Fig. 1.3 *Conversion to residential use schemes/units in central London 1997-1999. Source: London Residential Research database accessed 1999.*

It is assumed that conversion activity will continue in the future although with varying levels of output. The process is a conglomeration of activities, actors and issues which are dynamic and interrelated and so should not be studied separately. Therefore, the nature of this study is exploratory and the selected case studies will not be representative of the universe of buildings converted to residential use. Nonetheless, the studies offer valuable and useful insight into the conversion process as the importance of the interaction of actors involved are sometimes overlooked.

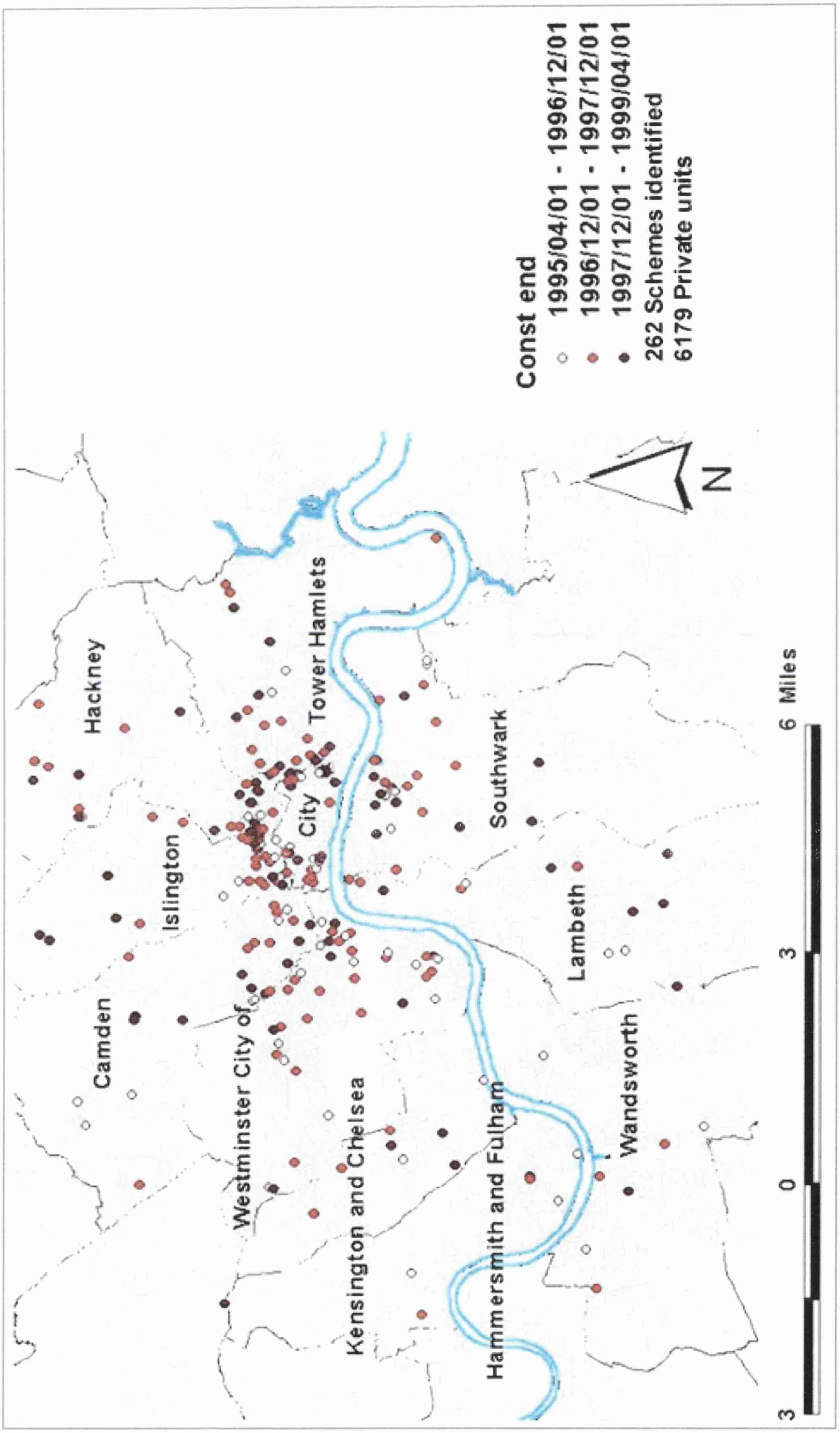

***Fig 1.4** Activity clusters in central London 1997-1999. Source: London Residential Research*

1.5 Definition of terms

As conversion or change of use activity is considered to be within the refurbishment (repair and maintenance) sector for statistical purposes, it is appropriate to define some terms. Several authors such as, Markus (1979), Marsh (1983), Hall (1984) and Quah (1988) provide some definitions for refurbishment work.

Reference	Definition
Hall, 1984	Refurbishment is a process of repair, conversion and alteration of existing buildings to permit their use for various specified purposes.
CIOB, 1987	The alteration of an existing building designed to improve the facilities, re-arrange internal areas and/or increase the structural lifespan without changing its original function.
Quah, 1988	Refurbishment is a generic term that includes rehabilitation, modernization, renovations, alterations, improvements, additions, repairs, renewals, retrofitting; the terms do not include domestic maintenance work such as cleaning and emergency maintenance.
Mansfield, 2000	Refurbishment is an adaptation for an existing use.
Douglas, 2002	Overhauling the building and bringing it up to a client's requirements. It is usually restricted to major improvements primarily of a non-structural nature to commercial or public buildings. It may involve extensions.

The terms used in these definitions are defined below.

Term	Definition	Reference
Repair	Restoration of an item to an acceptable condition by the renewal, replacement or mending of worn, damaged or decayed parts.	BS 8210, 1986
Conversion	Making a building more suitable for a similar use or for another type of occupancy.	Douglas, 2002
Conversion	Re-use for a different function.	Mansfield, 2000
Alteration	Modifying the appearance, layout or structure of a building to meet new requirements.	Watt, 1999
Rehabilitation	Extending the life of a building and making it suitable for habitation and use. Normally a term used to housing.	Douglas, 2002
Renovation	Upgrading and repairing an old building to an acceptable condition, which may include works of conversion.	Douglas, 2002
Adaptation	Work accommodating a change in use or size or performance of a building, which may include alterations, extensions, improvements and other works modifying it in some way.	Douglas, 2002
Adaptive re-use	Conversion of a facility or part of a facility to use significantly different from that for which it was originally designed.	Iselin and Lemer, 1993

It can be appreciated that there is no common definition for refurbishment work and although the terms vary the underlying concept remains the same. The inclusion or exclusion of terms within these definitions, and their implications for professional practitioners and regulatory bodies are explored by Mansfield (2000). However, there is a clear distinction made between:

- Refurbishment, an adaptation for existing use and
- Adaptive re-use/ Conversion, re-use for a different function.

Hence, adaptive re-use/conversion is a process that can involve activities of refurbishment work but with the particular characteristic that the building will accommodate a new and different use.

In relation to statutory requirements the re-use of a building for a different purpose is labelled a "Change of Use", and definitions for this also vary across the construction sector. According to the Town and Country Planning Act 1991, a "Change of Use" is defined as development when it is "material". This means when development is carried out from one purpose to another that is within a different "Use class order" or when the work is substantially different from the old use (section 2.6.4 provides a detailed explanation). In addition, change of use can be considered within the New Construction Work category of the Housing and Construction Statistics, for new construction work includes "extensions, major alterations (i.e. improvements), site preparation and demolition, except for housing where work done on improvements, extensions and alterations and house/flat conversions is included under repair and maintenance" (DETR, 1997).

The lack of a common definition has and will continue to cause confusion between academics and professionals. It has also made it difficult, as Nutt (1996) observes, to have an accurate idea of the contribution of building conversion activity to the construction sector.

This study will use the term conversion to refer to the re-use of a non-residential building for residential purposes.

By residential use we mean that the space has been designed for people to live in. Although HMO, hostels, hotels and student accommodation can be characterised as residential, they are not considered within the parameters of this study. Specifically this study looks at single dwellings (C3) as classified under the General Development Order 1987 as residential use.

1.6 Structure of the Thesis

This thesis is organised into nine chapters. Chapter Two reviews the existing literature dealing with conversion, and sets out the context for the research. It presents a historical background of conversion activity in the United Kingdom; the requirements for a conversion project; and identified factors and issues, which are to be considered before taking on a conversion project. It discusses that the available information only provides a partial understanding of the conversion process and this has important implications for its management.

Therefore, Chapter Three looks at project management practice development and application, particularly related to refurbishment/conversion work. The chapter concludes that the little existing research in this area puts emphasis on the uncertainties and risks in projects of this nature and the complexity in managing numerous interrelated issues.

The need for understanding how individual actors made sense of all the numerous issues to reach a decision, how they managed them and how this affected the project process and outcome led to the development of the methodological approach described in Chapter Four. Here we discuss how cases were identified and selected, how data was collected, what was the basis for selecting cognitive mapping as an analysis tool, and how data was analysed and presented.

In Chapters Five, Six and Seven we see the application of cognitive mapping. The chapters provide a detailed description of the conversion project and analysis of individual actors' perceptions of the conversion process. They provide an individual view of the intricacy of the process and allow the main problem areas to be identified.

Chapter Eight brings together the individual views into a project overview. The findings from the three previous chapters are then superimposed, compared and the results of the analysis presented. Here key stages and pivotal decision factors are identified.

Finally, Chapter Nine presents the conclusions to the research, reflects on the methodology and research process, and makes recommendations for future work.

Chapter Two

Building Conversion: trends, approaches and process

2.1 INTRODUCTION

The previous chapter presented a brief background to the activity of converting buildings and suggested a way in which to understand this phenomenon. In addition it pointed out the features that need to be observed in order to understand the conversion process at its macro and micro level. The purpose of this chapter is to identify the range of general concepts that should be present in any study of the subject of conversion. The subject matter is presented in five sections which look at how conversion has developed over the past thirty years, what trends have been experienced, how conversion has been studied, how conversion projects are generally approached and what factors and issues are taken into consideration when taking on a project. The final section summarises the main points of the literature and discusses the implications for research in this area.

2.2 PUTTING BUIDINGS TO NEW USE

As mentioned in chapter one, a building's fabric has tended to outlive its function. As a consequence buildings have presented the option of being re-used. In the past, the main issue that was considered for modification was the quality of the structure, as its condition had to be good enough to justify the work involved (Cunnington, 1988). Today this issue is as relevant and important as ever; however there are other issues to consider as well. By looking at conversion activity through time we will begin to gain a better understanding of the approaches taken today towards this activity.

The study of conversion within a historical context has been carried out by several authors: Cunnington (1988) and Cantacuzino (1989) give an interesting account of why buildings have changed their use in the past; while urban historians such as Mumford, (1961), Hall (1999) and Inwood (1998) provide the socio-economic and political context. Both Cunnington (1988) and Cantacuzino (1989) state that generally the main reason for converting buildings was economic since it was cheaper to alter an existing structure than to build a new one. This point is reinforced by Mumford (1961) who mentioned that in Rome during Caesar's time, Crassus, who made a fortune in tenement house properties, boasted that he never spent money on building since it was more profitable to buy partly damaged old properties at fire sales and rent them with minimum repairs.

The Roman period provides a clearer vision of conversion activity. For example, Roman walls and underground chambers of circuses were used by the Christians for their chapels and old basilicas and temples were converted into shelters for Christian congregations (Cunnington, 1988). The Forum of Nerva and the arcades of the Theatre of Marcellus were useful for butchers up to the fifteenth century, while other Roman buildings like the arena and baths became functionally useless (Mumford, 1961).

In the United Kingdom Romans concentrated on building new towns once they gained control of Southern Britain and the Midlands in AD 47 (Inwood, 1998). However, there are examples of structure modification made; in Dorchester a Neolithic henge was altered to form an amphitheatre and later modified again to form a town defence in the seventeenth century (Cunnington, 1988). By the end of the Roman Rule in 410, standing buildings were occupied and sometimes modified (Cunnington, 1988; Inwood, 1998).

In medieval times the construction of housing responded to society's current needs. This meant that in some instances entire streets of houses were destroyed in order to permit the construction of castles (Colin, 1987). Alteration work was considered, but only in stone buildings like churches and houses of wealthy people; the remaining timber houses were simply taken down and rebuilt when they became outdated. Alterations of houses generally consisted of dividing it into different spaces used for sleeping, eating, social or religious rituals. This was due to the development in society of a sense of privacy (Mumford, 1961). Churches were enlarged to accommodate the growing population and were also altered to meet new and elaborated forms of worship. Many of the early Norman castles were turned to other uses, like country houses, but others were abandoned, becoming redundant and obsolete (Briggs, 1952).

The Renaissance period, unlike the previous one, was characterized by radical and serious economic, social, political and religious changes. These changes were reflected in the architecture and in a building boom of both new as well as considerable conversion work. In England the most important consequence for buildings was the dissolution of the monasteries.

The changes brought by the Reformation meant that many religious buildings were no longer needed for their original purpose. Large monastery churches were either destroyed or altered for other uses. The monastic buildings that survived were often kept for their solid construction and converted; and in the case of the ones demolished the materials were used for constructing new buildings (Briggs, 1952; Cunnington, 1988). Some monastery churches were used by the new secular clergy and turned into parish churches. They were also adapted or rebuilt as grand houses by the nobility and were used as early upper class housing estates. Houses used by the wealthy were large town houses whose names, such as The Grange, The Priory or The Abbey reflected their religious origin (Schofield, 1984). While most monastic buildings were demolished, domestic buildings were divided into smaller residences or for agricultural or industrial purposes and later on were again converted to residential use (Cunnington, 1988).

By the early seventeenth century the increase in population transformed the London medieval city into an early modern metropolis (Inwood, 1998). The destruction of the monasteries made a great deal of land available, and this was developed for town houses and artisan houses, which later become slums. Building was intense in the West End and less extreme in the area of Southwark. By the mid-17th century, London's buildings were a multitude of styles dating back in some areas three or four hundred years. Most buildings, despite some small progress towards brick construction in the western suburbs, were high, closely packed, and timber framed (Schofield, 1984); a disastrous fire was likely to take place. The effects of the great fire of 1666 saw a restructuring and rebuilding of the city of London and a dramatic growth in the west end, which became a refuge for many of those affected by the fire, and a permanent new home for others (Martin, 1961; Inwood, 1998).

Through the rest of the seventeenth and eighteenth century the changes in urban life brought about by the increase in commercial activity were reflected in the English town buildings. The growth of prosperity introduced new business ideas which gave way to the demolition of old buildings and encouraged development in areas like the west end. Terraced houses were built to meet new regulations and large private houses were built to meet the demands of wealthy merchants and aristocrats (Coupland, 1997). By the late eighteenth century developments had extended to the north and east of the City and south of the Thames. The trend of merchants moving away from the city centre and into the suburbs increased, which resulted in the division of their large city houses into tenements or their adaptation for commercial or industrial use (Cunnington, 1988).

All through the nineteenth century additional economic changes and an increase in population took place. By the middle of the nineteenth century 54% of the population (around 18 million people) in England and Wales were urban dwellers. This growth in urban population took place almost entirely within the limits of existing developed areas (Coupland, 1997). The prosperity that was occurring was reflected in the construction of new buildings such as theatres, libraries and assembly rooms, so building conversion was minimum at the time. In addition, the introduction of the railway demanded improvements on roads; thus, roads were built and buildings removed. Victorian commercial buildings usually replaced smaller Georgian or earlier houses; redevelopment was preferred to rehabilitation or extension. Conservation was rarely an issue at this time (Forshaw and Bergstrom, 1990). In some areas however, the growth of industry started to replace residential activity. In Smithfield, for example, Briton Street and Charterhouse Square, once fashionable residential streets, began to be occupied by industry and commerce (Forshaw and Bergstrom, 1990; Coupland, 1997). This activity was also experienced in other parts of the country, for example in Manchester in 1842; the increasing business of the town rapidly led to the conversion of all the principal dwelling houses, centrally situated, into mercantile establishments (Briggs, 1963). Up until the beginning of the Industrial Revolution buildings were more frequently adapted to new uses.

The Industrial Revolution brought prosperity and confidence and this continued to be expressed with new developments, demolition and new build became more usual than conversion. By the late nineteenth century new Victorian housing suburbs were developed while in the poorer parts of the city industry was mixed with housing creating very poor living conditions. In 1875 the development of health legislation "led to significant clearance and redevelopment of the city centres" (Coupland,1997:46).

By the early twentieth century the effects of industrialization and sub urbanization could be seen: more space required for industry, spread of trade and industry into residential districts, overcrowding, change in health conditions experienced in cities, poor and dangerous conditions for the residents living among factories among others. This led to the emergence of new ideas for improvement. The London County Council built on a large scale on vacant land; while others like Ebenezer Howard "encouraged new forms of development, to create housing and social facilities around new employment" (Coupland, 1997:49). Municipal authorities took steps to improve public health and in 1909 the first House and Town Planning Act was produced allowing local authorities to establish special areas called town planning schemes (Coupland, 1997). The initial impact of town planning schemes was minimal, but the garden city design principle was given much wider application by 1919 (Punter and Carmona, 1997). After the first World War, development in Britain was slow; it was not until between 1924-1929 when there was an increase in the construction of public housing in the form of housing estates. These were built to remedy the housing shortage and to relieve congestion in inner areas. By the 1930s it was apparent that developing cities and their rapidly expanding suburbs had problems (Coupland, 1997). The concerns were related to the separation of employment and residential uses and the increase in individual dependence on road transport. People became less attached to where they worked or lived. New developments were mainly one use and did not respond to any other use or to an overall plan (Coupland, 1997). The construction of public housing, new ways of transport, communication and power gradually contributed to the dereliction of the existing central urban housing stock, and the Garden City movement, which idealized the way of life in suburbia, was highly influential in the redundancy and often demolition of buildings in the city centre (Cantacuzino, 1989).

After the second World War, changes were taking place at an accelerated rate. The redundancy of buildings followed by their demolition was a common occurrence in urban areas. In a number of towns a portion of central areas were destroyed during air attacks, buildings were damaged beyond repair, and this had an impact on commercial and civic life that presented no possibility of restoration. The main concern at the time was reconstruction. The opportunity was taken to incorporate new developments in policy, and so planning authorities were called upon to plan and stimulate a speedy redevelopment of land that was important to the life of the town (Ministry of Town and Planning, 1947). With the introduction of planning policies such as the Neal report in 1946 and the advisory handbook on the redevelopment of central areas in 1947, major activity zones such as residential, commercial and industrial were segregated. Industrial and commercial activities were relocated away from central areas to suburban zones, where land was less expensive and more suitable for factories. As a result the buildings that had once housed these activities such as warehouses were left standing empty on valuable land. Many of these buildings were demolished to introduce new profitable developments such as offices or commercial centres (Cantacuzino, 1989; Coupland, 1997).

Between the 1950s and 1970s the clearance of poor areas which had started in the 1930s continued. Large areas of Victorian houses were cleared for new developments (Coupland, 1997). During the 1950s economic expansion dominated the large-scale urban renewal projects; more and more old buildings were regarded as obsolete and their replacement was considered necessary for the sake of modernisation. In 1954 the new developments (office buildings, shopping centres) came under criticism from architects, journalists and architecture critics. Concern was raised and emphasis was made on the quality and value of historic townscapes. This concern was not only experienced in the United Kingdom but also in the United States as described in Jane Jacob's "*The death and life of great American cities*" (Jacobs, 1961).This situation gradually gave way to the formation of the Civic Trust in 1957. The Civic Trust was the political force of emerging local amenity societies who were defending the townscapes and countryside from industrial redevelopment. Campaigns for conservation grew and listed building controls were tightened from the late 1950s to early 1960s. But it was not until the elaboration of the Civic Amenities Act of 1967 when emphasis on preservation shifted from individual buildings towards the conservation of coherent areas. From that moment on the conservation of historic towns assumed greater importance as part of planning policy. The impact has been vast: today there are over 8000 conservation areas in Britain compared to the initial expectation of up to 2000 (Punter and Carmona, 1997). This has resulted in the promotion of finding new uses for old buildings and in the integration with the planning policies.

2.3 TRENDS IN BUILDING CONVERSION ACTIVITY IN THE UK

In Britain building conversion activity has developed significantly over the last thirty years. There have already been a number of trends in the new uses that a building is put to. The first trend was initiated with the conservation movement of the late 1960s and early 1970s where concern was focussed on preserving historic buildings for their architectural or historical value by means of repair, rehabilitation, restoration or change of use. The main purpose was to secure the future survival of buildings. During this movement the change of use was mainly to public uses, such as museums and galleries (Cantacuzino, 1989).

The subsequent trend in conversion activity continued with the promotion of re-using redundant industrial building stock. This began in the early 1970s when industrial decline, and economic and technological changes were taking place at a much faster pace. Changes in planning policies, in the location of large firms and in the manufacturing process contributed to high vacancy levels of industrial buildings located in inner city areas, which were no longer needed for their original use. Redundant buildings ranged from waterside warehouses, railway buildings, mills, factories, breweries and markets. The effects of redundancy were experienced with the decay of the building's surrounding area and in the decline of their local economies. This situation presented planners with the challenge of what to do with the old buildings that had been left vacant. At the time conservation was seen by many as a luxury and it was only justified by the historic or architectural value of the building. However, gradually the economics of developments were considered more closely. Although in many cases high building costs and the uncertainty of demand made the conversion scheme an uneconomical solution, in others it was seen as the only practical option for preventing the decline of an area (URBED, 1981; Eley and Worthington, 1984; Roger, 1984). Consequently, the idea that the existing building stock is a resource that has the potential of helping revive the economies of run down areas was recognized. A report carried out by URBED in 1981 was one of the first to present some guidelines for carrying out conversion schemes. The study identified two constraints, economic and regulatory, and it focussed on the former by identifying the factors which affected it as: location, building configuration and building type.

As a result of social, economic and technological changes, conversion to workplaces, small firms followed by a variety of workshops were widely carried out.

Gradually the benefits and opportunities of conversion were identified and accepted. By the mid 1980s conversions were being carried out for a whole variety of new uses, such as commercial, retail, leisure and residential. During this time a number of reports dealing with this subject were published, such as URBED's 1987 *"Re-use of Redundant Buildings"* which promoted the conversion of redundant buildings. The report was a useful guide for those who were thinking of entering the business of building conversion. It briefly explained the nature and process of a conversion scheme and illustrated with examples the potential of the activity.

URBED (1987) recognised that some ideas being used in Britain had their origins in the United States and were classified in four concepts:

1. recycling old industrial buildings as a way of creating space for industry and other uses.
2. the principle of obtaining finance from different sources (for example, using public finance to lever private investment - the basic principle in Britain's Urban Development Grant scheme). The concept of private and public associated investments has been taken up by the establishment of the development trust.
3. the market concept where a variety of shops and restaurants are located under one roof.
4. having mixed uses in the same building.

By the end of the 1980s a number of conversions of industrial buildings to residential use, particularly in regeneration areas like the waterside buildings in London's Docklands, had been developed. Although London's Docklands is seen as a market driven redevelopment, albeit at the government's behest, and has been subject to much criticism, the conversion of redundant industrial buildings in this area demonstrated that housing schemes could be developed and sold effectively in areas once thought only suitable for industrial and commercial use. Old factories and warehouse buildings in the areas of Wapping, Limehouse and Rotherhithe were converted to high priced lofts and apartments. Butlers Wharf in Bermondsey, Plantation Wharf in Battersea, Concordia Wharf and St. Katharine's Dock were once large neglected industrial areas that have been redeveloped and regenerated by refurbishment, conversion and new build, to contain residential, retail and office complexes. These are just a few examples of schemes that gave experience to development companies in converting buildings originally designed for different uses. It was these types of conversions that served as the base point for other building types, likes offices being converted.

In London the conversion of office buildings to residences has been very notable since the late 1980s. While private developers were concentrating on converting industrial buildings, housing associations were the first to take on the conversion of office buildings to residential use (Barlow and Gann, 1993). Office structures from the 1960s were vacant for a number of reasons which varied in each case; however the main reason was their location away from the commercial activity centre and their specific design for a particular tenant. This resulted in a building becoming un-lettable for future occupiers (RICS, 1998). By the early 1990s the interest in property conversion for residential use increased as opportunities were identified more easily. The context which led to this activity is explained thus by Barlow and Gann (1993). Between 1986 and 1992 there was a drop in the property market that led to the recession of the British economy. This situation was characterized by an oversupply of offices and high vacancy levels, by falling returns, and rising property and company bankruptcies together with high exposure of banks to property loans. In addition, the restructuring of the housing system in the late 1980s had major effects on the demand for housing and on their prices. First, there was a demand for new affordable housing which was not being met. And second, due to the boom and slump in house prices in the 1980s, new patterns of housing demand were emerging in the 1990s. People were seeking accommodation closer to work as transport congestion and costs increased (Barlow and Gann, 1993).

The initial promotion of converting empty offices was carried out by various organizations, primarily The Royal Institution of Chartered Surveyors (RICS) and the London Planning Advisory Committee (LPAC) (Barlow and Gann, 1993). Three reports that elaborated upon the surrounding factors and potential for converting office space to residential use gave additional assistance. The first report was the *"Home Office Report"* elaborated in 1992 by Applied Property Research (APR); it was the first to look at the possibility and potential of converting empty office buildings to residential use. The report was carried out to promote the marketing opportunities for conversions. It examined the amount of office space that was un-let and the amount likely to be un-lettable in London; the influence of the market which led to that situation; and calculated how much space could contribute to residences. In addition, the report showed that similar types of building could potentially be converted to a variety of different uses, such as flats, hotels, hostels and student accommodation. Finally, it presented the difference in returns that could be generated if a building was used as residences instead of offices. The second report *"Planning for Chameleons"*, only focused on the planning aspects related to conversions. The third report was *"Offices into Flats"* published by The Joseph Rowntree Foundation in 1993. This report identified a number of political, social and economic forces that were creating new demands on the built environment. The report showed that in the early 1990s over 15% of United Kingdom offices were empty while at the same time there was an increase in demand for new housing. The report examined the potential of converting empty office buildings could have towards contributing to the housing needs. When the report was published only a few schemes had been developed (9 schemes providing 460 units) and it stated that only a limited amount of conversion projects would be initiated in the future, for the success and failure of a conversion scheme depended on a range of social, technical, economic and political (STEP) variables. However the potential for conversion was underestimated and in the following years London experienced a rapid growth of this activity: Shell Downstream, Elephant and Castle's Department of Health, Baltimore Court, the former British Gas Headquarters and many other office buildings were converted to residential use, ranging from social housing to high cost accommodation. Figure 2.1 below, illustrates and compares the growth in the number of units created from the conversion of offices in Central London to the vacant office space available. The fall in office availability and the correlation with the rise in the number of housing units can be readily seen.

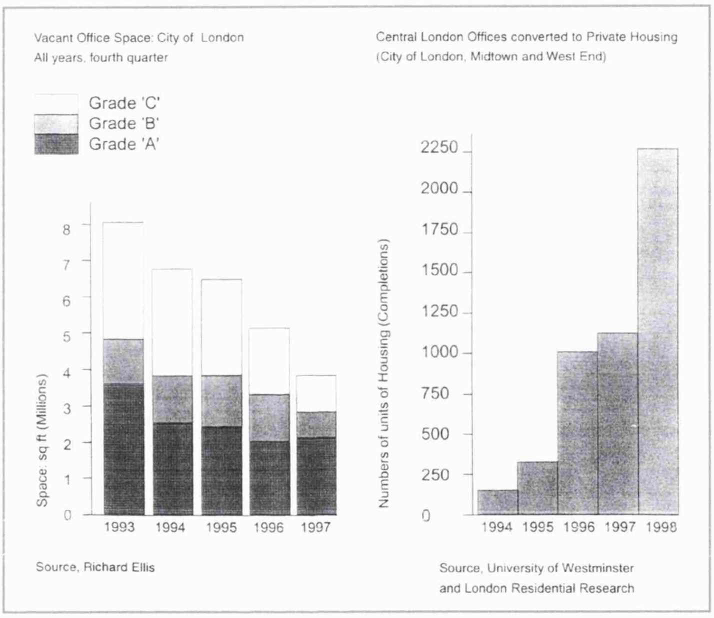

Fig.2.1*. Vacant office space in the City of London and Central London Offices converted to Private Housing (City of London, Midtown and West End). Source: RICS, 1998:14*

The result of conversion activity over the last 35 years has been that it has expanded from a simple restoration process as more creative approaches have taken hold. The significance of this idea has been that there was no longer the need to focus specifically on the architectural or historic value of buildings, instead focus was brought to the economic, social and environmental potential the whole existing building stock presented. The interest in only converting individual buildings like churches, country or town houses extended to the restoration of whole areas where other types of buildings existed, such as factories, mills, warehouses, market halls.

The development of this activity has led to the recognition that industrial, commercial, public and institutional buildings can be converted to virtually any type of new use and that the benefits of re-using buildings have proved important to society as a whole as a means towards building conservation, urban regeneration and "sustainability".

2.4 DEVELOPMENTS IN THE STUDY OF BUILDING CONVERSION

Although building conversion work is currently being carried out from and to a wide variety of new building uses, it is the conversion to residential use which has been the focus of the government and other organisations over the past decade. After the potential of office conversions was identified, several other studies in this area were carried out. These mainly focused on two aspects: first, the capacity for accommodating residential units in London and second, the identification of factors which influence conversion activity.

The first capacity study was produced by London Property Research (LPR) on behalf of LPAC in October 1996, in which two aspects were examined. First, the potential of converting surplus office space to housing and other uses; and second, the extent to which office land and buildings could increase London's housing capacity.

In 1998 the University of Westminster produced a report on behalf of the RICS. This report studied the phenomenon of office conversions to residential use in London and in other cities in the United Kingdom. The report presented an overview of the development of this activity and identified the factors that influenced developer's decisions to convert offices to residential property, (discussed in section 2.6). In addition, it identified the main problem encountered by surveyors as the difficulty in deciding between "different uses and market opportunities" (RICS, 1998).

In May 1999, the British Property Federation (BPF) published a report dealing with the conversion of commercial space to residential use. The study focused on examining the roles of commercial property owners and developers in the promotion of converting commercial space to residential use. In particular it focused on the review of possible links between redundancy, measures of under performance and the potential for conversion schemes. The study identified some of the barriers faced by developers and owner/investors in the property industry preventing the conversion of redundant commercial space to residential use. In both cases the main issue to resolve was the suitability of buildings.

In March 2000 DETR published a report dealing with the process and potential of conversion and redevelopment contributing to the housing needs. It offers a list of factors, identified through case studies, which influence conversion. These are related to the processes and factors at a strategic and local level that drive the changes in cost and value. In particular the main influence for conversion "is the interaction between the market for other uses and the market for the type of housing created by the conversion process" (DETR, 2000:32). In addition the study estimates the potential contribution conversion can make towards meeting housing needs up to 2016. Through numerous assumptions about the levels of development activity in the future and two scenarios the study concludes that the conversion activity could contribute approximately 5,600-9,500 households annually between 1999-2016.

Work completed at The Bartlett, University College London *"Adapting buildings for changing uses"* (Kincaid, 2002) takes a different perspective of adapting and re-using buildings. In this case the work does not focus on conversion to residential use, but is an important contribution to the area of re-use. The research points out the basic decision options for adapting and re-using buildings (demolish, strip out and maintain building shell, maintain building in vacant state, part demolish and adapt, modify, refurbish and adapt, part extend, let all or part, sell), decision criteria (robustness, risk, cost and value), and develops a computer based decision framework from which the change of use possibilities can be explored. Nutt (1997) speculates on the implications for future development in terms of design, flexibility, planning, management among others and argues for a dynamic (supply/demand) briefing framework to meet the changing requirements of clients and end users.

Today, the view of conversion, particularly to residential use, has once more evolved to take into account the sustainability issue, discussed further in section 2.6.1. In regard to construction, sustainability has been encouraged since 1998 by the Department of the Environment and the Regions (at the time of writing DTLR) through the *"Opportunities for Change"* report (DETR, 1998). The report considers sustainable development and its relation to construction with four main aims (DETR, 1998):

1. social progress, recognising the needs of everyone;
2. effective protection of the environment;
3. prudent use of natural resources;
4. maintenance of high and stable levels of economic growth and employment.

In reference to sustainable construction, rehabilitation of the existing building stock is one of many aspects which contributes to the sustainability issue. This is confirmed by DETR's (1998) statement: "it may be more sustainable, in environmental social and economic terms, to make better use of what we already have, by rehabilitation and refurbishment rather than building anew. The creation of sustainable communities, and vital and viable town centres, can be assisted by the conversion of property..."

The current concern with the improvement of the quality of towns and cities, and with the provision of 4 million additional households in the next 25 years has been the starting point for the Urban Task Force report, which among other issues highlights the importance of recycling land and buildings as a measure for achieving "an urban renaissance". The importance of this measure is noted by the "urban fact-file" contained in the report where four points stand out:

- Urban areas in England account for 90% of population, 91% of economic output and 89% of jobs.
- An estimated 3.8 million additional households will exist between 1996 and 2021; a 19% increase. And 600,000 new households are projected for London.
- More than 90% of urban buildings and infrastructure that will exist in 30 years time has already been built.
- Approximately 1.3 million residential and commercial buildings are currently empty.

All previously mentioned studies and reports deal with the specifics of either potential for accommodating residential units or identification of factors which influence the decision to convert. The majority of recent publications covering this subject present it in the form of before and after case examples with the repetition of aspects to be aware of when taking on a project of this nature. Latham (2000), Stratton (2000) and Highfield (2000) are examples of this, while Douglas (2002) although covers the fundamentals of building adaptation, it focuses mainly on the technological issues.

It is evident that once the potential of building conversion was grasped, studies focused on capacity estimations for accommodating residential units, followed by the identification of issues which can limit developers and/or owners decision to take on a conversion scheme. The development of a decision framework from which the possibilities of change of use can be identified and explored is a step forward in the study of this subject matter. Furthermore, the government's position for achieving housing targets, improving the quality of urban areas, promoting brownfield development and encouraging a better understanding of refurbishment processes, could potentially promote conversion as an even more viable business option.

2.5 THE PROCESS OF CONVERTING BUILDINGS

The activity of converting buildings is basically an exercise in property development. Property development is a process that involves carrying out work for changing or intensifying the use of land to produce and /or alter buildings for occupation (Cadman and Topping, 1995). It is a complicated process as it involves the input of many tasks, skills and resources all of which are required at different times and developed by different actors. Like any other property development, the conversion process must be seen in an economic context. The demand of a user for a particular space in a building in a particular location is a reflection of the changes that occur in this context. The economic context is important to consider for it helps to determine the market for individual schemes and in a general way the influence of the market's condition on the decisions of financiers, occupiers and developers (Cadman and Topping, 1995; Shutt, 1995). This issue is discussed further in section 2.6. The following subsections focus on the process of property conversion. The subject is presented by describing the basic requirements for a conversion project, the main stages in a conversion process and the actors involved in the process. Even though the complexity of a conversion process lies in the fact that it is influenced by a number of interrelated variables, it is well recognized that even in ordinary property developments there are basic factors that are more important than others. A well located site purchased at the right price, obtaining correct financing and experience in carrying out the development are four basic elements to a successful development (URBED, 1987). However it is useful to consider the estate agents' rule of thumb: "there are only three things that matter in property: location, location, location." This aspect is discussed further in section 2.6.4.

2.5.1 The Basic Requirements

Three basic requirements for a conversion project were identified by URBED (1987), which still stand true today; these are an appropriate development approach, a driver and a suitable building.

The *appropriate development approach* refers to the way or style in which the development will be taken forward. This could be carried out through a conventional/institutional or entrepreneurial approach. Both follow similar steps however, with a conventional/institutional approach the end product (the building) will be bought as an investment by a financial institution. The financial institution will require the product to meet with certain criteria in regards to its location, construction methods and flexibility (for use by a variety of users), as the investment must have the potential of being marketable in the future. The developer, is therefore obliged to produce the right product at the right time and place, efficiently, and within budget and programme. The developer focuses on getting all the resources together, detailing the scheme, establishing working relations so that once the development starts it can potentially be carried out quickly. The tasks required in a conventional/institutional approach are (URBED, 1987; HMSO, 1975:49):

1. perception and estimation of demand for new buildings;
2. identification and securing of sites;
3. design of scheme;
4. finance arrangements;
5. design and construction management;
6. letting of completed building;
7. disposal of property as an investment.

This approach is described in detail in *"The Pilcher Report"* (HMSO, 1975). It has tended to be used for new build projects, but several conversion schemes have found this approach to be appropriate. For example, housing associations have carried out conversions this way.

The entrepreneurial approach is carried out when the developer does not intend to sell or if an institution does not intend to buy the end product. The focus in this case is on the potential of success of the new use. In this sense it is like setting up and running a business. The developer therefore needs to be clear about the objectives, consider the risks involved and be flexible over how the objectives are to be met. The new use of the development needs to be in accordance with the demand for new space and the developer must look at novel ways of creating and maintaining adequate return on the investment. In London this has been the typical approach for conversion developments over the past decade. This study looks at conversion schemes developed through this type of approach.

A driver refers to the individual or group who carries out the vision and concept of the conversion, from beginning to completion. The driver is therefore the figurehead of the development, the one who is committed to the overall success of the conversion scheme. The skills of a driver include: ability to assemble actors into a team either temporarily or permanently; ability to divide the scheme into parallel projects; and pass responsibilities sequentially from one actor to another (URBED, 1987). The driver can be public, including local authorities; or private, including property development companies and other institutions.

A suitable building is considered to be as important as the location factor in property development. The main factors which need to be considered are location, form and physical condition. These are three basic characteristics, but there are still other factors that must be taken into account. Location not only refers to a part of a country or neighbourhood, but also to the attractiveness of the area to different uses. Issues like access, proximity to amenities and transportation must be considered. Buildings which are located far from an activity area are difficult to re-use, unless the new use serves to attract the users. The form of the building is important because it is the shape and size of the building which will determine how much of the building can be re-used and the potential amount of returns. It also determines the ease or difficulty with which the building can be matched to the new use. Issues like natural lighting, ventilation, means of escape, are to be considered for they must be provided without extreme and expensive modifications to the building. The principal physical building considerations are the depth, floor to ceiling heights and window location. The condition of the building is also very important for in most cases the highest costs are for the renovation of a building and not necessarily for the conversion. The aspects that must be taken into consideration are the condition of the structure, the technical requirements of new services, the type of building materials and the condition of the roof, floors and walls. The condition of the building will generally depend on the time it has been left vacant without maintenance. These issues of location, form, physical conditions and others are discussed further in section 2.6.4.

2.5.2 The stages in a conversion process

Once the main requirements are grasped consideration must be given to how to take the conversion project forward. In this instance the development process in a building conversion project differs from the development process for new build, most obviously because the end product, the building, exists throughout the conversion process. On account of this the financial appraisal and technical evaluations increase in importance and the strategic decisions are most often taken with limited time and information (Eley and Worthington, 1984; Douglas, 2002). Hence the process is more complex and key issues like the building's location, condition, potential uses, possible technical, economic, planning, managerial constraints, type of work required, viability of the scheme and so forth need to be considered initially and throughout its development, for changes may occur.

The process for conversion can be viewed from a refurbishment perspective, where a number of required stages and tasks need to be carried out by a variety of actors at particular points during the process. The main stages, explained below, are:

1. identification
2. feasibility
3. definition
4. implementation
5. operation
6. marketing

1. There are two starting points for a conversion project. First, there can be a building looking for occupiers or second, users looking for a building. In the former the purpose can be for conservation reasons, to obtain a return on the investment or to prevent the building and/or surrounding area from deterioration. In the latter case an individual or group look for a building to promote a new activity, be it commercial, retail or residential. Independent of the starting point the aspects that affect the decision for the new use are: that the characteristics of the building are compatible with the new use; that the new use is in accordance to the local planning authorities' objectives; that the local community benefits from the new use; that there is demand for new use and the location's characteristics are adequate for the new use.

2. During the feasibility stage an appraisal of the proposed scheme is conducted in order to give

an understanding of the advantages and disadvantages of the proposals. At this stage an evaluation of the market condition and a financial appraisal of the proposal are conducted. The feasibility study will determine whether the scheme is economically viable or not.

3. The definition stage is where the external resources required to carry out the conversion are obtained. These include the professional team (architects, surveyors, engineers, project managers, solicitors), planning permission and the financial resources.

4. The implementation stage is where the building work is carried out. A detailed design is produced and priced, and a procurement method and contractor selected. At this stage unexpected circumstances related to the building can arise, therefore the role of the project manager is most important for he/she needs to be efficient and capable of dealing with the problems.

5. The operation stage considers the continuous management and maintenance of the development. It is where the project's development is reviewed and any "snags" that arise are repaired.

6. The marketing stage is where the success or failure of the scheme comes to light. It is where the potential benefits of the scheme are communicated to the potential end users.

The tasks in table 2.1, overleaf (CIRIA, 1994), are allocated to managers, the principle decision taker and project team members. More detailed lists are given by Eley and Worthington (1984), and Green and Foley (1986).

URBED (1987) point to four important stages and success factors in a conversion process, these are:

Stage	**Success Factors**
Incubation:	Uses match the building, viable and exciting scheme and support from local authority
Negotiation:	Good property terms, flexible finance package, sound professional team and reliable contractor
Construction:	Efficient project management, flexible when necessary
Management:	Communication of excitement, committed to success

STAGES IN A CONVERSION PROCESS	
1. Identification Clarification of the need/understand demand Identification and preliminary rating of clients objectives Allocation of main type of solutions Preliminary global estimates of cost Preliminary global estimate of revenue from renewed asset Assessment of source of funding Assessment of taxation implications Preliminary investment viability analysis Short list type of solutions Comparative appraisal estimate of time and cost for each alternative solution Review investment viability analysis for each alternative solution **2. Feasibility** Preliminary examination: surveys, costing, existing drawings Review safety, environment, operation and other assessments for each operation Choose scheme for further development Consult planning and other local authorities **3. Definition** Find appropriate professionals Site investigation and data search Development of conceptual design Obtain planning permission/submission and approval of applications Prepare proposals for methods of construction Review investment viability analysis	**4. Implementation** *Detailed design* More detailed site inspection, structural survey and record search Develop detailed design Apply for building control and any remaining planning and other statutory approvals Contract packages Procurement/tendering Tender analysis Award of contracts *Procurement and construction* Site construction Management of building work/installation of equipment, quality control Management and administration of contracts Management of site discoveries and design variations *Commissioning* Engineering and performance test Acceptance and take over of renewed asset Provision of as built drawings and maintenance manual **5. Operation** Organise continuing management/training of operating and maintenance personnel Rectification of defects Project review/ data used in future project appraisal **6. Marketing** Market the scheme/ attract new users, create atmosphere of success.

Table 2.1. *Stages and some tasks in a conversion process. Source: CIRIA, 1994:75*

In this instance, the process stages and tasks were presented linearly giving the impression of a sequential process contextually isolated, but this is not how the process develops in a real life context. The process is iterative, dynamic, involving many more tasks, issues, and variables which are interrelated. Attempts have been made to represent the development process contextually. Although it is not the focus of this thesis it is important to be aware of models used to understand the development and construction process, table 2.2 provides a brief overview of development models, while table 2.3 presents work on construction process models, used to aid actors and other interested parties in the understanding and development of the process.

Table 2.2 Overview of development process models

Author	Description
Fisher (1966) ref. in Drewett (1973)	Conceives the process as a set of decision chains
Barrett et al. (1978)	Presents an event based model of the development process
Gore and Nicholson (1985)	Present an event based model of the public sector development process
Ambrose (1986)	Presents and agency based model
Healey (1991)	Identifies four types of development process models: equilibrium models, event sequence models, agency models and structure models
Healey (1992)	Presents an institutional model (events and agents) of the development process

Table 2.3 Overview of construction process frameworks and models

Author	Description
RIBA (1973)	RIBA plan of work in the UK protocol specifies phases in a construction process
Syal (1992)	Construction Project Planning (CPP) Model is a framework for accurate construction planning
Walker (1996)	Construction process model based on a systems approach
Cooper et al. (1998)	Development of a Generic Design and Construction Process Protocol

These studies are useful in providing a general understanding of the development process. The prescriptive models only focus on the construction process from a new build perspective, and so for refurbishment or conversion activity they are of limited -but useful nonetheless- application. Kurul's (forthcoming) study of understanding the process of re-using listed building through a mapping approach to suggest ways of improving its performance, is a step forward for the area of re-use. For this study the process is considered to be a series of steps or activities towards achieving a particular end (Pearsall, 1999). The study is less interested in the formal representation of the process as a model for prescriptive purposes and more interested in the elements that make the process dynamic, that is, the interaction and inter-relation between the actors, activities, key issues (social, technical, economic, political, environmental, location), the process of communication, decision taking, behaviour and management which affect the development of a project. The study will be observing a system, a complex whole, a set of things working together as an interconnecting network (Pearsall, 1999).

2.5.3 The actors in a conversion process

As mentioned earlier the stages in a conversion comprise many tasks and a variety of actors to carry them out at particular times during the process. Each actor performs a specific task within the process and each one may have different perspectives, objectives and expectations. This is one of the reasons why the decision making process in a conversion scheme can be complex. The list of actors which can be involved is taken from Cadman and Topping (1995):

- *Developers.* Their aim is to make a profit from the development. They are involved to varying degrees from the start to the finish of the scheme. They can also act as investors, building professionals or agents.
- *Planners.* Approve or reject a development plan in accordance with policy and ensure that the development meets with all legal requirements.
- *Financier.* The source of financial support required to develop the scheme. The investment capital can be obtained from the developer's own resources or that of a partner or from a financial institution (banks or building societies).
- *Building contractors and professional team.* Building contractors carry out specialist activity within the construction process; they are the ones that construct the scheme. The professional team is employed by developers with the objective of carrying out the necessary tasks to bring the project to construction phase and to advise during the development process. The professional team may include planning and economic consultants, architects, quantity surveyors, engineers, project managers, solicitors and accountants.
- *Agents.* Can serve as advisors to the developer with regard to the local market conditions for a particular space, can aid in developing a marketing strategy and/or serve as the connection between the potential user and the developer.
- *Occupiers.* The end user of the product. Their demand for accommodation activates the development process and influences land and rent prices to which developers respond.

These are the main actors that can be involved in a conversion process, however other organisations with particular interest in the proposed development may need to be involved as well, such as English Heritage, Port Authorities, English Partnerships, the Council of British Archaeology among others. The level of involvement of each actor and the nature of interaction will depend on the appointment and contractual arrangements; as well as personality, behavioural and managerial characteristics. Figure 2.2 based on a generic speculative approach, locates the main actors within the main stages of the conversion process.

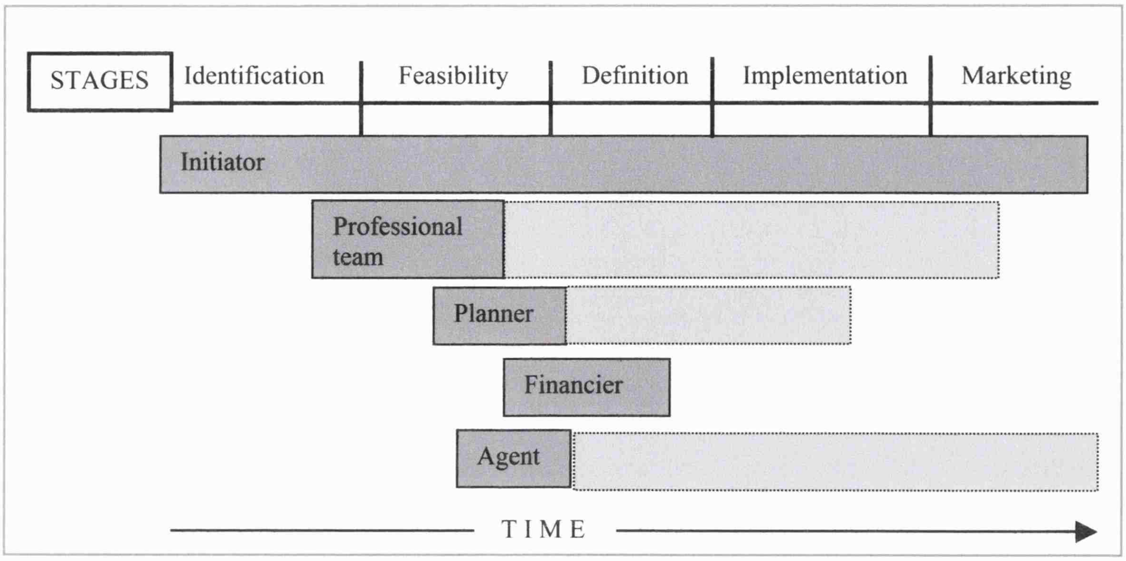

***Fig.2.2** Involvement of actors in a conversion process*

2.6 THE FACTORS THAT INFLUENCE BUILDING CONVERSION ACTIVITY

2.6.1 The Changing Context

The 20th –21st century has been characterised by the rate at which changes and development have been taking place. Changes have been influenced mainly by new technological developments, the acknowledgement of the importance of ecological awareness and social shifts. The effect these changes have made have influenced the way we see and use the built environment.

Castells (2000) considers that we have moved from an industrial era to an information era, where the majority of people work to make, transmit, manipulate and exchange information. New technological developments, such as information technology (IT), have allowed for communication to be made easier and faster; it has allowed for greater flexibility in terms of location for some office functions and employment arrangements; it has influenced the way in which business is conducted, organisations structured, working practices organised as well as changed the requirements for office, retail and leisure spaces (Nutt, 1996; Douglas, 2002). Hall (1999) reinforces this view, but considers that IT "will not drive, indeed has never driven, in any simple or deterministic way: new technology shapes new opportunities, to create new industries and transforms old ones, to present new ways of organising firms or entire societies, to transform the potential of living; but it does not compel these changes…" (Hall, 1999:943). In other words, it is what we do with knowledge and information, its application, which will be the driver. While there is much to be said on this subject the point is that new technologies have influenced the built environment in more ways than one (look at Graham and Marvin, 1996). In the construction sector for example, technological developments have allowed the use of automated building techniques and prefabrication. There is plenty of literature that explains the effects of technology, specifically IT, on particular aspects of life, such as Breheny's (1999) study on the effects of IT on working practices, DTZ (1999) research on the effects of electronic business on real estate, Schiller's (2001) chapter on the effects of IT on retail home shopping and problems of location and delivery; but without a doubt Hall and Castells (1994), Hall (1999) and Castells (2000) provide the best discourse on the effects new technology has had and has on society in terms of its culture, economy and urban order.

Emphasis on the importance of sustainable and environmentally friendly developments emerged in the 1970s from awareness of the pressure being put on the environment and resources by the combined effect of population growth and urbanisation (Rogers, 1995). The issue of sustainable development gained presence in 1974 with the United Nations Conference on the Human Environment in Stockholm, but is was not until 1987 when the concept of sustainable development got onto the international agenda. The importance of sustainability was stressed by the Brundtland Commission (1987) as development that satisfies the requirements of today without diminishing the ability of future generations to meet their own needs. This standpoint has encouraged the national government to put efforts towards sustainability. In the UK, sustainable development in relation to construction aims to respond to social needs, such as provision of houses, health, education, work and leisure facilities; and to reduce consumption and increase the re-use and recycling of materials. This is to be achieved through the integrated participation of all the construction industry sectors. Sustainable construction brings attention to the implications of environmental change on the design and management of existing and future buildings and infrastructure. It aims to understand the construction process decision making which can have a profound effect on sustainability. Sustainable construction focuses on minimising construction waste and pollution; energy efficiency in buildings; improved water management and rehabilitation of existing building stock. Although there is still a lot to be done in regard to this issue, it is gradually being addressed and implemented through policy, innovation and creativity.

Climate change has also had a significant effect on buildings in recent years and will most probably continue (Graves and Phillipson, 2000). In 1990 storms caused approximately £3 billion in damage and in 2000 repair costs for flooding and storm damage were estimated at £1 billion (Douglas, 2002).

Social changes have been reflected in changes in life patterns and new choices in lifestyle. Since 1900 average life expectancy has doubled[1] and working hours have decreased by half: this means people are dedicating more time to leisure, cultural and educational activities (UTF,

[1] This is due to lower death rates at birth, overall length of life remains unchanged.

1999). Population movement has also had a significant impact on urban areas. Although population has stayed relatively stable during most of the 20th century, there has been a loss of population from larger urban settlements through migration to suburbs or smaller towns encouraged by economic and housing policies. At the same time there has been an influx to urban centres from ethnic minority groups. It has only been during the last few years that population in urban centres has increased. This has been due to international migration, migration from northern cities and through urban regeneration projects which have brought back confidence in the property market in some areas (UTF, 1999). The increase in one person households from 17% in 1971 to 27% in 1996 out of which 59% were aged over 60; a decrease in the proportion of households consisting of married or cohabiting couples with dependant children from 31% in 1979 to 23% in 1996; an increase in households consisting of a lone parent with dependant children from 4% in 1979 to 7% in 1996; and an increase in divorce rate, all indicate a new growing consumer group (ONS, 1996). The *"Home Alone Report"* (Hooper, 1998) looks at the preferences of this new consumer group, one person households, and makes recommendations for housing policy and practitioners. Changing lifestyles, household trends and life expectancy indicate a new set of demands being put on the built environment; the scale at which the effects of these tendencies are sustained is very important, but it depends largely on the way housing demands are met.

The growth in economy, linked with globalisation and the process of urbanisation are important aspects that influence change in developed countries. The interaction of all these factors can bring about the focus on urban regeneration projects and programmes, of which the re-use of buildings can form an integral part. In addition, these factors can also influence the decision of owners to improve their property holdings. The re-use and conversion of buildings is a response to the changes in both supply and demand for property.

2.6.2 The supply and demand for residential space

The changing context has influenced the supply and demand for space, in particular the demand and need for residential space. In 1997 the DETR projected that there would a be strong demand for additional new housing in London and the South East, with relatively low demand in regions such as the North West and the North East. Household projections estimated that 3.8 million additional households would be needed between 1996 and 2021, with 600,000 in London alone. The projections in 2000 estimated that 4.3 additional new households were needed between 1996-2021, 750,000 in the South East and 700,000 in London (Holmas et al., 2000); while currently in the North East of England one in five homes (210,000) is at risk of being abandoned or affected by a high turnover of tenants moving in and out (Weaver, 2002).

At the time of writing, the current trend in the country's housing market was one of sustained house price inflation, with prices up nearly 21% on an annualised basis since July 2001, which made the past year (to July 2002) the strongest in price growth since 1989 (Nationwide, 2002). Between January 2002 and July 2002 the price of an average UK property rose 11% (£12,063), with an average house now costing £109,667 (BBC, 2002) (Fig.2 3). The strong performance was not only experienced in London and the South East, but in all regions except Scotland and Northern Ireland.

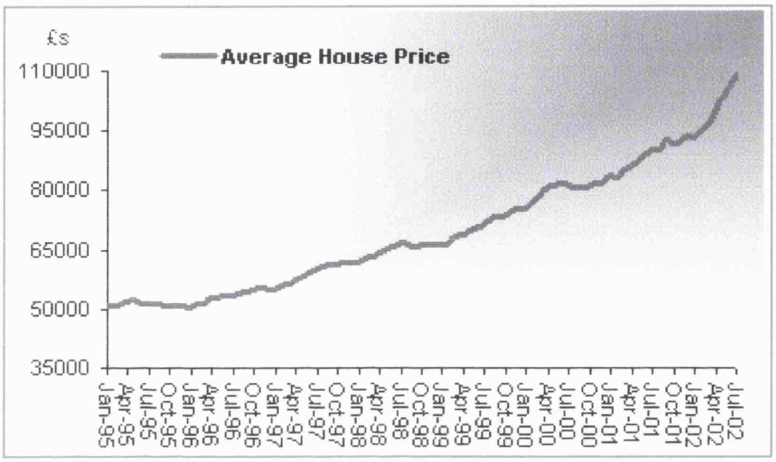

Fig.2.3 *Average house prices January 1995-July 2002. Source: Nationwide Summer2002 Review*

Although house price inflation is largely influenced by the housing market in London, lack of proper supply, low interest rates and rapid income growth among others; East Anglia saw prices rise by 23.3% during July 2001-2002 making it the fastest growing region (Nationwide, 2002). And while London's prices grew 14.8%, down in the growth league, prices have more than doubled in the last five years. Despite the growth in most of the regions, prices are so much higher in the South that the North/ South divide has continued to widen. To illustrate, prices in the North would need to increase 194% to eliminate the price differential. In London, Boroughs such as Harrow, Harringay, Ealing and the City of London saw the highest rises, averaging 3% in the second quarter of 2002. Activity levels have also increased, house sales increased by 16% compared with the first quarter of 2001 and remortgaging increased around 30% for the same period.

The demand and the need (affordable housing) (Holmas, 2001) for residential space must be met with a proper supply. It is suggested (UTF, 1999; Hooper, 1998; Holmas, 2001) that the supply could come from the development of urban greenfield or brownfield sites. Greenfield sites are increasingly being seen as resources that should be protected and as a result, the development for housing has been pushed to other categories such as brownfield sites. However in 1998, estimates indicated that 23% of the projected needed households for 2021 had already been built, granted planning permission or had been allocated for residential development on greenfield sites. According to the *"Urban Task Force Report"* (1999), and as was pointed out earlier, more than 90% of urban buildings and infrastructure that will exist in the next 28 years has already been built and approximately 1.3 million residential and commercial buildings are empty. This situation has led the government to highlight the potential of developing housing on brownfield sites, as indicated through its most recent report, *"Building Conversion; Processes and Potential"* (2000). The government estimates that 2.3 million extra households could be accommodated on previously developed sites, derelict land, vacant land and buildings (UTF, 1999).

The response of government and other organisations, BPF and RICS, to the changes in the supply and demand of property has been to bring more focus towards the improvement and management of the existing building stock. And conversion has and still is seen as an important balancing tool between this axis, as showed by Nutt's (1996) study.

In May 2002 the Government announced that the 60% national target of building new housing on brownfield sites by 2008 had been achieved, however, there was the acknowledgment that tougher targets needed to be set as "there are still hundreds of thousands of empty and abandoned homes, vast acreages of derelict and contaminated land" (DTLR, 2002). And although there is still much that local authorities can do to promote the reuse of land and buildings for housing, house building activity still needs to increase to meet housing demands. Demand for new homes has helped boost construction, as the Chartered Institute of Purchasing and Supply construction purchasing manager's index showed: the activity in the sector rose to 56.6, the strongest reading since July 2001. However, the decline in public house building over the past 20 years, and the downfall of Parker Morris house standards has had a significant impact on the supply of housing. This has resulted in a lack of appropriate housing in many areas in the UK, London and the South East for example. The fact remains that house building completion during the past 18 months (until May 2002) has been the lowest in any peace time year since 1924 (NAEA, 2002).

The aspect of housing land supply and house prices form a dynamic relation and are also affected by location and planning aspects among others (see section 2.6.4). Several studies (Monk, 1991; Gerald Eve, 1992; Mean, 1997) have been carried out to study the relationship between land supply and house prices. Gerald Eve (1992) for example, investigated the extent to which land supply and the planning system have affected house prices since the 1970s. The study concludes that house prices are not only determined by demand. Land supply responds to market pressures and in turn affect housing supply and house prices. Land supply is constrained by the operation of the planning system and house prices are increased as a consequence. Monk's (1991) study supports this view. While Mean (1997) looked at the ripple effect of house prices.

In essence the demand and need for housing, and the supply of vacant/under utilised buildings and land has resulted in the focus on the re-use of buildings and continues to be encouraged by government and other organizations as a way of promoting sustainable communities and developments. However, the promotion and development of this activity must be seen against a wider background, that of the property market and the state of the building.

2.6.3 The market related to space

The market related to space is influenced by external factors that can cause shifts in the balance of the supply and demand of space in buildings. They can either be acting on their own or in combination and are forces for which we have little or no control over (Boom and Robertson, 1990). According to Boom and Robertson (1990) and RICS (1998) these can be the following:

a) Growth and decline in the economy. The level of economic activity affects the demand for space in buildings. A favourable economic climate (low interest rates, low inflation, high level of employment and growing GDP) results in the government increasing its public expenditure on construction activities (HMSO, 1975; Boom & Robertson, 1990; RICS, 1998; Douglas, 2002). On the other hand, in a recession period the opposite occurs; there is a need for conservation of resources which means growth in refurbishment and conversion activities (Egbu, 1994).

b) Industrial shifts/labour market change. Changes in the relative importance in a type of industry over time affect the demand for various types of buildings. For example, in London the increase of professional and managerial employment and a decrease in the number of skilled manual jobs led to industrial buildings becoming redundant and an increase in office space demand which led to changes in the social structure of some London boroughs during the 1980s (Boom and Robertson, 1990; RICS, 1998).

c) Demographic shifts. Increases in population tends to mean an increase in demand for space, and the opposite when there is a decrease in population. In London some boroughs have been observing that more young adults are moving to inner London which means an increase in demand for residential accommodation. There is also a trend of the falling size of the average household (mentioned in section 2.6.2.) which is related to an increase in one person households and an increase in the divorce rate (Boom and Robertson, 1990; Champion, 1989; Champion 1994; RICS, 1998; Schiller, 2001).

d) Urban decay. As a result of a restructuring in the economy, there can be a decline in old forms of manufacturing activity, which can and has led to the redundancy of industrial buildings. The result of many buildings being under-utilized is that their surrounding areas can become run down and consequently present social problems, such as vandalism or crime. This affects the demand for space in that particular area (Boom and Robertson, 1990).

e) Changing level of building development. Commercial building development typically goes through cyclical "boom" or "bust" periods that vary in intensity. The "boom" phase tends to result in an oversupply of space; this in turn is followed by a "bust" phase while the excess supply is consumed. At the end of the "bust" phase an under supply of space usually exists (RICS, 1998).

f) Social Factors. These are factors that are important but cannot be judged or quantified simply for example, the desire for clean air and water and the concern with the overall environment. These factors are influenced by changes in values, attitudes and lifestyles. For instance, during the 1960s and 1970s the increased awareness of the importance of the built environment as a resource and the significance of the relationship of a building with its community led to the preservationist movement. English Heritage has contributed by pushing for conversion of buildings instead of their demolition (HMSO, 1993). In addition, according to the Town and Planning Act 1990, the Department of the Environment is allowed to put buildings which have an architectural or historical value on lists: these listed buildings are protected from demolition or intensive alteration work so that they can be preserved as part of the country's architectural heritage (Highfield, 1987, 2000). Society has learned that buildings are resources and as such should be conserved and maintained. When conversion activity was just starting social issues were more widely considered, but today with a substantial experience in conversion activity, and as the community has experienced the benefits in urban regeneration, these issues are less limiting (Cantacuzino,1989; Cunnington,1988; Shopsin,1986).

g) Changing consumer attitudes/changing level of demand for housing. The increase in the amount of remortgaging activity; an increase in internal migration; an increased interest in living in the city centre of London; and the changes in lifestyle and spatial preferences of one person households have increased the demand for residential space (RICS, 1998; Schiller, 2001).

h) Changed legislation on letting. Short-hold tenancies have given landlords the opportunity to acquire property with little difficulty. It has permitted investors to obtain property and get a return on their investment should they decide not to occupy it (RICS,1998). Buy to let activity has been on an increase, while there is high demand, supply remains low. This has meant that house prices have gone up and rents down.

i) Overseas investors. The preference from oversea investors in the London property market has influenced the rise in prices in some areas. For example Kensington and Chelsea (RICS, 1998).

j) Demand for existing or other potential uses. The demand for convertible spaces from existing or alternative uses or for redevelopment may affect the decision to convert. If there is a decrease in poor quality space that can de converted, then potential occupiers would have to pay higher prices, which means that refurbishment becomes more viable. Therefore the prices of converted flats must be competitive with new build (RICS,1998).

These are just a few macro factors that can affect the market for residential space and the conversion market. They are external uncontrollable influences which can have a significant effect on the owner/developers perception towards conversion activity in a specific area, and on local and regional policy development as well.

2.6.4 The state of the existing building

The state of the building can be influenced by several issues which affect individual buildings in various ways. The issues are briefly explained here, but are discussed further by Markus (1979), Marsh (1983), Barlow and Gann (1993), Highfield (1987), Cadman and Topping (1995), RICS (1998), DETR (2000) and Latham (2000).

a) Location. The demand for space for a specific use, be it for office, commercial, residential or industrial, is determined by this key factor (see section 2.6.2). The location of a building can increase the prestige of a building due to the quality of redevelopment work or decrease in significance due to the effects of urban decay. The location can influence the revenue that can be obtained from the conversion project. It also determines the cost of the site which in turn affects the overall cost of the conversion scheme (RICS, 1998; Boom and Robertson, 1990; Highfield, 1987, 2000). The issues which are generally considered are closeness to amenities, transport links, access, perception of safety and quality of other services. So the location factor has both an economic and social value.

Schiller (2001), although dealing with commercial property, points out that there are two forces at work which influence the dynamics of property location: the desire to cluster and the desire to disperse. And three factors which determine how the two forces affect what actually appears on the ground: density, value and access. Density refers to the building height, the number of floors and the proportion of site that is covered by the building. Value is representative of the location forces, it is a measure of the competitive demand for land. Access can be considered the urban arteries which make possible the location process work.

In relation to residential property location, Schiller (2001) makes the point that there is a conflict between the desire for space and the need for job and service access. This results in trade offs being made between space and accessibility. The increase in personal mobility, car ownership, home telephone and developments in IT have influenced the move towards dispersed low density location. In terms of land use in a city context, residential use has to compete with other uses which can have more financial strength. This has influenced the move towards high density residential developments on high value land, which in turn can achieve very high prices. Cultural differences however are more evident in small towns and cities, where very few towns outside London have high income housing in their central areas (Schiller, 2001).

b) Political Statutory Factors. As with any new construction work, the conversion of a building must also comply with legal and legislative requirements which can have an effect on the cost and viability of the project. The statutory requirements which affect the re-use of buildings are:

- The Town and Country Planning Act 1990.
- The Town and Country Planning Use Class Order 1987 (UCO)
- The Town and Country Planning General Permitted Development Order 1995 (GPDO)
- CDM regulations

In brief, planning permission is not required for a change of use of a building, provided the old and new use fall under the same use class order, as defined in the Town and Country Planning (Use Class) Order 1987. However, if building operations (demolition, rebuilding, structural alteration or additions) are required which materially affect the exterior of the building and are not classed as "permitted development"[2], then planning permission will be required. Planning permission will be required where a material change[3] of use is made to a building.

[2] maintenance, improvement or other alteration work which affects only the interior of a building, or which does not materially affect its exterior; enlargement of industrial buildings by up to 20% of the original cubic content, provided the floor area does not exceed 750 square metres, and the height of the original building is not exceeded.

[3] A material change in use is when the new use is substantially different in character to the old use (Hope, 1992).

Under section 53 of the Town and Country Planning Act 1990, applications can be made to the local planning authority to see whether the scheme has the potential for development and if planning permission is required (in regard to the provisions of the GPDO).

Section I of the Planning Act 1990 requires the Secretary of State for the Environment to compile lists of buildings of special architectural or historic interest concerning listed buildings and conservation areas.

Section 72 of the Act is concerned with preserving or enhancing. With this in mind local authorities can put constraints on the proposed developments on buildings in the conservation area whether or not they are listed. Any alteration to a building which detracts from the character or appearance of the area will not be permitted.

The regulations in addition contain the detailed requirements with regard to listed buildings. Comprehensive guidance is given in the DoE's Planning and the Historic Environment (PPG 15) 1994. In the majority of cases it is possible to execute sensible rehabilitation or alteration work, as long as the features for which the building was listed are maintained. The extent of the alteration work will depend on the grade of the building. Grade I buildings represent 2% of the total, they are considered of "exceptional" and "national" interest and have both interior and exterior characteristics worth retaining; therefore alteration would be very limited (Highfield, 2000). The majority (96%) of listed buildings are Grade II; these have external features that are worth retaining, its street façade for example. In this case the whole interior can be replaced with new structure, leaving only the façade for which it was listed (Highfield, 2000); although listed building consent is needed. Grade II* important buildings with more than special interests.

- Building Regulations

The change of use must comply with Schedule 1, which contains the main technical requirements of the Regulations[4]: A. Structure; B. Fire; C. Site preparation and resistance to moisture; D. Toxic substances; E. Resistance to the passage of sound; F. Ventilation; G. Hygiene; H. Drainage and waste disposal; J. Heat producing appliances; K. Stairways, ramps and guards; L. Conservation of fuel and power; M. Disabled Access; N. Glazing safety. In the case of change of use as defined in Regulation 5 when the building is used for the purpose of a dwelling, where previously it was not and where the change of use is carried out to the whole of the building then the whole of the building must comply with the following requirements: B1 (means of escape); B2 (internal fire spread surfaces); B3 (internal fire spread structure); B4 (2)

[4] All of the requirements contained in part A. to L. of Schedule 1 do not apply fully to every building type.

(External fire spread roofs); B5 (access etc, for fire services); F1 and F2 (Ventilation); G1 (Food storage), G2 (Bathrooms), G4 (Sanitary conveniences); H4 (Solid waste storage); J1 to J3 (Heat producing appliances) and L1 (Conservation of fuel and power).

However, it is possible to obtain relaxation of building regulations requirements. Section 8 of the Building Act 1984 and Regulation 10 of the Building Regulations 1991 allows local authorities to dispense with or relax any requirement of the regulations. In the case of conversion work circumstances can arise when relaxation of certain requirements of the Regulations can be an advantage for the scheme (Highfield, 1987; Powell-Smith and Billington, 1995; Stephenson, 2000). However, there is a current problem in the lack both of skill and knowledge from building control personnel to assess adequately, in terms of health and safety, the solutions presented. While there is also a lack of consistency in their decisions about similar requirements between different schemes.

- The Fire Precautions Act

The Act states that a Fire Certificate issued by the fire authority is required for all premises covered by the Act. The Act requires reasonable standards on 3 points:

- means of escape and their safe and effective use;
- means of fire fighting;
- means of giving warning in case of fire.

- Party Wall Act 1996

This act is applicable to where work is being proposed to a party or boundary wall. It applies when there is a need to excavate below the level of adjoining buildings or structure that is within 6metres of the boundary; or when there are proposed openings which may affect neighbouring buildings.

In addition to the compliance with the statutory requirements, certain policies or issues may influence the level of conversion activity, such as local authority controls and the governments' position towards VAT.

- Local Authority Control: Unitary Development Plan (UDP)

Local authorities approach towards conversions may sometimes limit a development. In a London context some authorities are gradually willing or encouraging conversion, but there has been a great deal of consideration to retain and protect employment (B1) space. As a result, authorities can apply conditions designed to protect certain types of employment use. Despite these policies, they have not prevented any significant volume of conversion activity in certain areas, although in others it appears that the conversion market has been dampened. Other policies consider the sustainability of the development in its environmental context, for example issues relating to density, dwelling size, mix of dwelling types, access, parking, lighting and design. These policies do not seem to be an issue in areas where the market is buoyant, but where the returns are more balanced these issues could be the ones that influence the decision not to convert. Other problems that developers face is meeting planning requirements regarding environmental improvements, affordable housing or listed building control. In some local authorities a great deal of the built stock is listed or in a conservation area. Islington is one such area; it is covered by 35 conservation areas, and 4000 listed buildings and structures, which means a greater chance of listed buildings being converted particularly with the current property market condition (RICS,1998).

- Value Added Tax (VAT)

Conversion of non residential buildings to housing is zero rated. And VAT for alteration work on listed buildings can be reclaimed. After being on the governments' agenda for a couple of years and under pressure from campaigners, the government's position on VAT changed from refurbishment being levelled in full (17.5%) while new build schemes were exempt, to levelling VAT at 5% for both refurbishment and new build. This is less of an issue where the market is buoyant, because VAT is included in the final costs; again this can be a balancing issue in unknown or untested areas.

c) Technical Factors. All types of buildings considered for conversion require some degree of physical changes to be made to them to meet with the new use and current standards. The changes can be relatively minor, such as upgrading the fabric, to major changes, which can involve structural work, such as insertion of floors or removal of load bearing elements. Partial demolition has been seen as an important strategy to increase the potential of a conversion scheme (Kincaid, 2002). Maintenance and repair will also be necessary if the building has been neglected for a long time. All modifications and improvements must meet with current regulations and will contribute to establishing the cost of the work (Shopsin, 1986; Highfield, 1987; Douglas, 2001). The consideration of technical aspects of conversion lies in the state or condition of the building. The type and age of the building determines the ease or difficulty of the conversion, for some are easier to convert than others. The ease with which these buildings can be converted depends on the size, height and depth of the building; the physical condition of the structure, envelope and cladding; the condition of the building services and/or service installation; the internal space layout, acoustic separation, the existence or inclusion of fire safety measures and access. These aspects largely determine the feasibility of taking on a conversion project, as generally the majority of the costs is absorbed by the necessary refurbishment work. Although today most technical problems have solutions, their cost must still be considered for they might affect the financial viability of the project (Barlow and Gann, 1993; RICS,1998). There are several guides available to aid with this issues such as, BRE's Good Building Guides (GBG), Good Repair Guides (GRG), Information Paper's (IP) and Reports (BR); BRESCU's Good Practice Guide (GPG) publications relating to energy efficiency in building and British Standards.

d) Economic Factors. The economic aspect is an important one. Building conversion can generally costs less than new build because many of the elements of the building already exists. This was the case in many office conversions of the 1990s, for they were generally in good condition. But, as mentioned previously, the condition of the building elements and the quantity of repair and alteration required will influence the cost of the conversion and therefore the financial viability of the scheme. Douglas (2002) points to a basic rule of thumb, if conversion costs are more than 2/3 of redevelopment cost one must opt for the latter. In the case where the costs are to be greater than new build then other factors such as environmental or social benefits have to considered closely. For instance, the building's architectural/historic value, its absolute financial value and the social benefits to the community. In this case financial aid can be obtained and, this is discussed further in section *d1*. So the decision to take on a conversion project revolves around the economic argument. Douglas (2002) mentions three feasibility factors that need to be considered: Viability (economic feasibility), practicality (physical feasibility) and utility (functional feasibility). While according to Highfield (1987) the most important factors that determine the decision to rehabilitate and re-use are:

- The expected profits. These will depend on several factors, such as: the proposed new use, the location of the building, the "attractiveness" of the surrounding area, its accessibility, the quality of accommodation and services to be provided, the level of demand for such accommodation and the availability of similar accommodations in the area.
- The estimated cost of the project. This will depend on the proposed new use, the standard of repairs and improvements considered, the age of the building and the technical issues (section c) associated with the building.
- The cost of obtaining the site or leasehold. The proper value of the site is determined by the location of the site, which determines the potential new users of the converted building; the uses for which planning permission can be obtained; the expected profits that will be gained from the scheme; and the total cost of the conversion work.

- The cost of the finance. This will depend on the cost of the work, the duration of the project and the level of interest rates present at the time.

d1) Availability of financial aid. When the conversion costs are greater than new build and the decision to carry on with the conversion is based on a conservation argument for example, then there is a possibility that financial aid might be obtained. Grants are available from several sources such as; central government sources (DTLR); local government sources (local authorities, county or district councils); and private and voluntary sources (Architectural Heritage Fund, Churches Conservation Trust, English Heritage). When less emphasis is made on the historic or architectural value of the building and in order to attract the interest of private investors, government programmes have been implemented. Urban Regional or European programmes can assist local authorities in regenerating certain inner city areas with problems of economic decline and physical decay; this is the role of English Partnerships or London Development Agency for example. Urban development grant schemes give similar assistance to private companies working with local authorities. Their work involves the conversion of old redundant buildings to provide housing, employment and other social facilities. Tourist boards give grants to promote tourism. And the Department of Trade and Industry under the regional development grant scheme may provide grants which will create employment space (Cantacuzino, 1989; Cunnington, 1988; Shopsin, 1986; Latham, 2000; Stratton, 2000).

The previous two sections have indicated that the extent to which buildings are converted and the pace in which this activity is taken on is highly dependant on the level of demand. While the availability of a particular space, its allocation and its appropriateness and the quality of the existing building stock are just a few supply aspects that also influence conversion.

2.6.5. Decision and choices

As mentioned throughout section 2.6 a range of social, technological, economic, environmental, political and location (STEEPL) factors can influence the built environment and therefore conversion activity. The level of influence of each varies; in combination they can present opportunities for creating new developments, for improving the surrounding environment, contributing to the housing shortage, and so on. However, they do not force the activity, rather it is the amount of information and quality of alternative choices that they bring to the actors involved; their understanding of issues and decisions made which affect both the initiation and the development of conversion projects in addition to the supply and demand factors.

Most of the current literature dealing with conversion mention the importance of the decision making process, but focus on the identification stage only. That is, focus is brought on the decision of individual owner/developer of whether or not to convert. Six factors have been identified by the RICS (1998) to influence such decision:

1. demand for continued use of space;
2. the nature of the building stock;
3. the changing level of demand for housing in a particular location;
4. the cost of conversion compared to the value of the converted space;
5. the valued of alternative uses for the building;
6. the effects of local planning policy on the possibility of conversion.

From these six influencing factors one can begin to appreciate their relation with the factors mentioned in section 2.6.3 and 2.6.4.The decision of whether or not to convert is very important though not an easy one, and so are the subsequent decisions to be taken in the development of the conversion project. A decision suggests a choice, and the only reason a choice has to be taken is because there are several options available. Any decision making implies a process, for various facts, information and data have to be collected and processed, and finally one option selected.

A decision process is a series of events and activities where resources are assigned by a decision maker. The decisions are taken in order to pursue an objective which is expected to be achieved. The decision maker will make a decision based on a set of values (those aspects that are important to the individual) which are relevant to that particular decision, such as economic, social and personal values. A decision maker might use decision analysis (Clemen, 1996), a way to structure thinking, to see how an action in a decision situation would lead to a result. Dickson (1995) suggests that the key to a successful analysis of decisions is the decomposition of problems. A decision may be structured as follows:

a) a problem is recognized and defined;
b) objectives are established;
c) alternatives are listed;
d) a means of measuring satisfaction is sought;
e) a judgement is taken.

Decision analysis might be used to structure the way of thinking about how an action could lead to a result. During this process three characteristics can be pointed out: the decision that needs to me made, the unknown events which can affect the result, and the result. The analysis can then produce a model, logical/mental or mathematical, where the relationship within and between these three characteristics can be identified. This then allows the decision maker to assess the potential areas of concern that might arise from the action taken (Spradlin, 1997).

A decision situation presents three characteristics; alternatives, uncertainties and outcome. An alternative is the available course of action; uncertainties are uncontrollable elements; and outcome, itself uncertain, is the result of the combination of alternatives and uncertainties and is measured against a scale of the decision maker's values. A decision situation might also allow for the decision maker to take on an option, that is, an alternative which permits a future decision to be taken in the light of new information. While the possible outcomes are considered the risks, the possibility of unwanted results, are often thought of, though the attitudes towards risk may vary between decision makers and even for a specific decision maker they may vary over time and with projects (Spradlin, 1997).

In the refurbishment sector the decision making process is not straight forward, uncertainty and risk are at the centre of the main actors' perceptions of the activity. Although these two areas are of importance for they form the peripheral context of the area of study they are not within the scope of this thesis, but are touched upon in chapter three. For, as Adams (1995) pointed out, uncertainty and risk are very complex concepts to define, explore and measure and so merit a study in themselves.

According to Egbu et al. (1996), there is a lack in knowledge and understanding of construction refurbishment processes, in particular in the management of these works, which have implications in decision making and taking. And although there is substantial literature on general areas of decision making (Jennings, 1998; Kleindorfer, 1993; March, 1994, 1988; Witte, 1972; Simon, 1987) dealing with aspects such as, decision theories, models, process, diagnosis and context, there is hardly any methodical research on decision making in refurbishment projects, which are highly relevant to the management side. Egbu's et al. (1996) comparative study of the refurbishment and shipbuilding sectors, examines the planning, control and decision making functions and concludes that the decision making process in the refurbishment sector "is complex, inter-related and dynamic. It involves more than one decision maker, various objectives, many tasks in series that depend on prior events in addition to a series of inter-dependent variables" (Egbu et al., 1996:335). In this study, the identified factors that affected the perceived effectiveness of decision making were:

- the uncertainty and complexity of the project;
- time and cost limitations; and
- the experience of the decision maker.

The complexity of a decision making process lies in the uncertainty and in the number of different issues and sub-issues within a single decision. This means that there is a quantity of information that has to be considered in order to make a choice and a series of subsequent ones, which will lead to the achieved desired objective. Hence, in a conversion process decision makers have to consider a number of STEEPL factors that could potentially threaten or benefit a scheme. The effects of surrounding influences related to the state of the market for space and the state of the building change through time and at different rates, resulting in their understanding and considerations as complex. This is one of the reasons why the conversion activity is typically approached in an ad-hoc manner. From this standpoint a better understanding of how decisions are taken during the process development is important if we are to make recommendations on how to improve it. Figure 2.4 illustrates one of many possible ways actors can interact in a project, the influencing STEEPL factors delimited by a decision boundary.

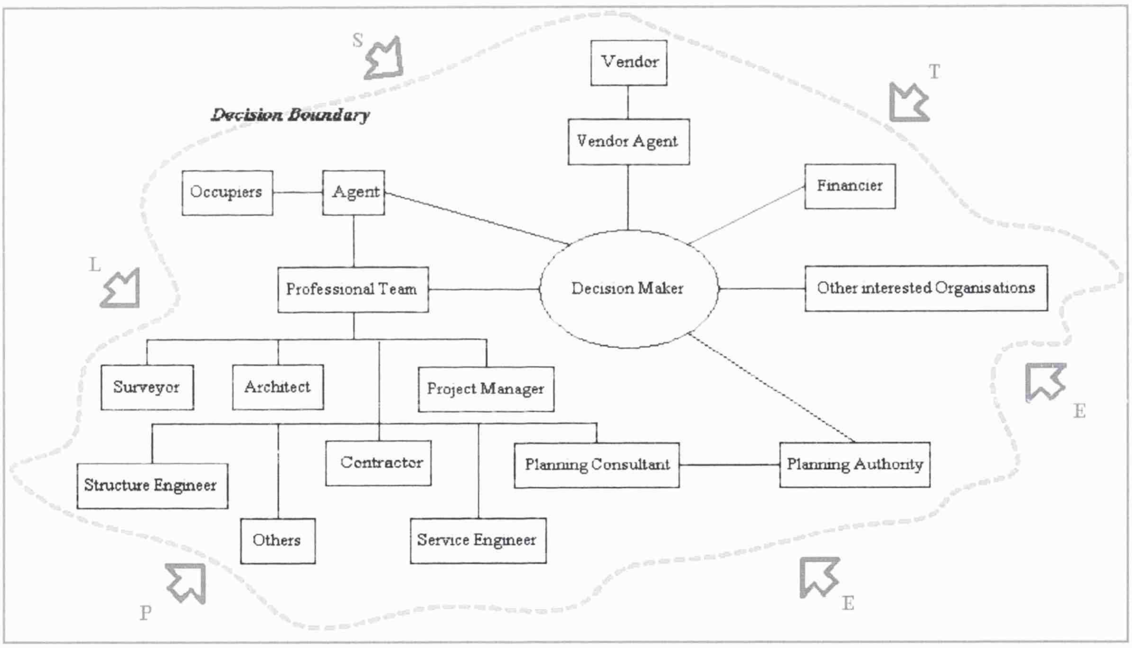

***Fig. 2.4** Actor/STEEPL factor interaction diagram*

2.7 DISCUSSION

This review has showed that there is limited information available on how individuals involved in this activity make sense of the numerous factors and issues, how these influence decisions and how these decisions affect the development of the process.

The purpose of this chapter was to illustrate the range, scale and complexity of the subject of building conversion by presenting: the approaches taken towards the activity; the trends in new use that have been experienced; the most recent studies of the activity; a description of what the process involves and; the factors and issues that influence this activity. The studies referenced reflect the particular concern with this topic over the last decade and records its emergence as an important tool for contributing to important policy related issues such as conservation, regeneration, housing demands and needs and, some may argue, for sustainability.

Although the re-use and conversion of buildings has been experienced for many centuries, it has only been a significant growing activity for the past 30-35 years. The arguments presented to explain this phenomenon have evolved from a purely economic argument to a more socio-economic and environmental one. The changes in context experienced during this period, influenced by socio-economic, political and technical developments, and which affected the balance between the supply and demand of space, influenced the trends in the new uses to which buildings were put. For example, artists studios, galleries, museums, markets, workshops, offices, retail, leisure and residential use.

The process of conversion has been described within a property development context with the main difference being the existence of the building in conversion. Conversion, like any other property development, has to have certain pre-conditions that must be right from the beginning in order to increase the potential of success, such as the building's location, condition, purchase price, and local potential market. The existence of the building increases the economic, technical, political and environmental risks and uncertainties associated with property development. The understanding of how both macro and micro STEEPL factors influence the activity become critical as they could potentially benefit or threaten the scheme. However, the potential effects of the macro and micro influences change over time and the issues associates with them can also change at different rates. The combination of all these factors and issues influence the decisions in a conversion project; and their understanding and consideration become increasingly difficult, which then affects the way building conversion projects are approached and developed. These aspects, in addition to the various tasks, skills, resources and their management give a clue to the scale of complexity of such an activity.

As conversion activity increased more and more reports covering it were produced. During the past decade these studies have mainly focused on conversion to residential use as a mean to contributing to the current housing demands and needs. Each study addresses the activity through a particular perspective, such as looking at potential and capacity aspects; presenting the activity through stages and tasks; listing factors to consider when taking on a project; and the role of owners and developers in the promotion of this activity. Even though each one makes its own particular contribution to the field of study, none provide a complete and comprehensive coverage of it. It is clear however, that the subject matter is complex and the studies referenced in this chapter demonstrate just how far this area of research has developed. There is no doubt there have been shifts in the policy related issues considered as potential drivers for conversion (conservation, regeneration, meeting housing demands and needs or sustainability) but what has been less certain is how critical factors and issues influence the decision maker's choices to take on and develop a conversion project. Little attention has been paid to understanding the process of conversion through an actor/project-level analysis. That is, how individuals involved in this activity understand the process dynamics, how do they make sense of the numerous issues and how are they taken into consideration at various decision stages of the project: in short how the system develops.

These questions will be addressed in the subsequent chapters, but before we can answer them we must look more closely at how projects are managed and understood.

Chapter Three

Modern project management practice

3.1 INTRODUCTION

The previous chapter described the development, approaches and macro and micro factors influencing building conversion activity. It pointed out the need to further the understanding of this activity by looking at it at an actor-project level. This chapter provides an overview of the emergence and development of modern project management practices. It considers how project management practice has been implemented specifically in the construction sector and the minimum impact it has had due to the narrow view of project management as a set of tools and skills used to design, plan and control. A response to this narrow view of projects has been the development of a framework which illustrates the principal elements that need to be considered and managed for a project to develop successfully.

3.2 AN OVERVIEW OF PROJECT MANAGEMENT PRACTICE

While Kerzner's work (2000, 2001) provides an overview of the practical application of project management theory, this section brings focus to the origin and evolution of modern project management practice. Therefore this section is based on the work of Morris (1994) and Edkins (1998) who provide a comprehensive coverage of how modern project management practice came to be.

According to Morris (1994) modern project management practice started in the 1930s and evolved through the following two decades. Its development has been related to four areas: the US aerospace and defence programme; engineering management practices; organisational design and team building theories; and the development of computer software and hardware (Morris, 1994).

Writings on project management were first published in Ulrich's 1937 Papers on Science of Administration, where Gulick first proposed the appointment of a person to bring together the administration of tasks related to several functional areas (Morris, 1994).

Before this work however, management theories suggesting simple ways of administration and organisation had been developing in the United States. Such as Taylor's (principles of scientific management), Gilberth's (time and motion study) and Gantt's (bar chart) scientific management theories which proposed to scientifically analyse and structure tasks to improve their efficiency (Taylor, 1947). In addition, planning techniques were developed such as the Harmonygraph and the Gantt bar chart. The former, developed by Adamiecki from his 1896 work in Theory of Work Harmonisation, with Wright's 1918 path analysis became the precursors of the Programme Evaluation Review Technique (PERT) and Critical Path Method (CPM) which became popular in the 1960s. The latter was developed in 1917 for the scheduling of production (Morris, 1994).

By the mid 1920s Procter and Gamble had introduced product management to their process, an innovation that gave a manager responsibility for planning, marketing and product control (Morris, 1994).

In response to the scientific school views, the behavioural approach looked at how people behaved and related in their organisation. Among the most significant works were the Hawthorn experiments carried out by the Harvard Business School between 1927-1937 (Mayo, 1933); McGregor's X and Y Theory (McGregor, 1960); Argyris's learning organisation (Argyris, 1957, 1965; Argyris and Schon, 1978); Belbin's team building and early works on leadership (Belbin, 1981 and 1993) among others[1].

Nevertheless, the coming of the Second World War pushed project management practice to the centre of military operations, with project-like characteristics, and process engineering industries. Out of all the military operations (development of advertisement campaigns, strategic war plans, communication and intelligence systems) the development of weapons seems to have contributed the to most the modern practice of project management. The most classic example of a project in project management terms in that it displayed organisation, planning, direction, clear objectives, project life cycle and experienced cost overruns, is the Manhattan Project 1942-1945, conceived and established in the US to develop the first atomic bomb before Germany (Morris, 1994; Edkins, 1997). Even though project costs overrun and critical scheduling problems were experienced, the Manhattan Project achieved its objectives and was

[1] Pugh (1990a and b) provides readings of people who have contributed to the study of organisations and Clutterbuck et. al. (1990) provides a history of the people who have developed management ideas.

considered a success. According to General Groves (1983) director of the project, five factors contributed to the success of the project: first, the clear and specific objective of bringing "the war to a successful end more quickly than otherwise would be the case and thus save American lives"; second, the separation of tasks per project and their close supervision; third, clear and unquestioned direction at all levels of the project; fourth, maximum use of existing resources, facilities and services; finally, complete support from the government.

The 1950s saw the development of project techniques such as PERT; CPM; Systems Management and Engineering; and Program and Project Management (PPM) (Morris, 1994). The concept of systems management applied to the Atlas rocket programme in the US came from the successful experience of the Air Research and Development Command (ARDC) during the development of the first jet aircraft in the early 1950s, where a total system was specified and components were designed to operate within the system's requirements (Morris, 1994). The assumptions of this approach, essential to modern project management practice were (Morris, 1994):

- Specification of the system's performance requirements;
- Elimination of subsequent configuration and engineering changes if preplanning is carried out;
- Selection of the best contractor could maximise speed and efficiency of development.

Although systems management contains basic elements of good project management practice, the approach gradually became less than ideal when organisational separation occurred between the people specifying the system and those engineering and building the system. This lack of integration led to unrealistic standards being established (Morris, 1994).

Even though the Atlas programme made significant advances, the US Navy's ICBM Polaris programme was of key importance to the development of project and programme management, as it raised the authority of the programme within the organisation rather than maintaining a functional operation, and it introduced PERT as a management control procedure, which was to become over the following 20 years an important basis for many project planning and control systems (Morris, 1994). PERT looks at decision making, progress and costs in relation to the performance of the programme (Morris, 1994).

CPM was another network scheduling technique developed almost at the same time as PERT. Both are based on networks, they use arrows to represent activities, and sequences of activities are diagrammatically represented. While PERT was developed in the military research and development programme, CPM was developed for the construction sector by Du Pont engineers in the United States (Morris, 1994). Here work processes, techniques and duration of each activity could be calculated with accuracy and cost could be dealt with. The difference between PERT and CPM is that PERT focused, until 1962, on the probability of an activity happening while CPM focuses on the duration of an activity (Morris, 1994; Calvert et. al., 2001).

Project management gained international attention through the NASA Apollo programme in the 1960s. During this decade the development and use of project planning tools increased and a theoretical base for the practice of integrated management was developed. The Apollo programme led the development and implementation of numerous practices such as the Planning, Programming, Budgeting System (PPBS); Systems Analysis; Life Cycle Costing; Cost Analysis; Quality Assurance; Value Engineering; Work Breakdown Structure; Technical Data Management and Configuration Management; and Scheduling, all of which where to become central tools for project management (Morris, 1994). However, Phased Project Planning and Configuration Control are considered the most significant as they are still essential elements to project management practice today (Morris, 1994).

After the mid 1960s the promotion and awareness of management techniques increased as did the number of project based organisations using project management practice, such as those related to the construction and civil engineering industry, aerospace, transport and process engineering industries. Universities and research institute's views and interests in the need for a holistic approach to project management supported the development of a theoretical component based on General Systems Theory (Morris, 1994). Writings on project management rose with diverse coverage of areas such as organisational; cost and scheduling; systems management; planning and control; and environmental and social issues.

A widespread use of project based work also brought forth the everyday difficulties of implementation and with it the awareness that project management was not a universal remedy for all management problems (Edkins, 1998). Projects of different scales and types still experienced delays, cost overruns, low level of performance and quality in addition to the effects of external influences (Morris, 1994). Addressing these issues became of central importance throughout the 1980s. For example, Build Own Operate Transfer (BOOT) project management approach within the construction sector, gave importance to the long term success of a project; focus was brought on analysing projects and their causes for success or failure on the one hand, and success analysis on management aspects on the other (Morris, 1994).

Publications during the 1980s ranged from tools for strategy making and information systems management; to risk management; quality and safety; and organisational change among many others. Project Management societies who began to provide professional forums in the 1960s and 1970s continued with these activities until the mid 1980s when the Project Management Institute (PMI) and Association of Project Management (APM) (UK based) initiated programmes to test the standards of project management professionalism. The relevant literature by the late 1980s was significant, however not all dealt with the problem of implementation adequately.

Publications increased during the 1990s, best practice guides were developed; the APM developed its own Body of Knowledge (BoK); proposals for more integrated management approaches presented; strategy making and risk management interest grew; and there was an increase in the acceptance of looking at the management of projects within its broader context. By the late 1990s PMI and APM acknowledged that their BoK needed updating to reflect current project management practices. The PMI's PMBoK (2000) contents are presented in table 3.1, while APM's PMBoK contents are presented in table 3.2. Morris (2001) provides an overview of these two bodies of knowledge. According to Morris (2001) PMI's BoK contains general "accepted project management practice" represented by 37 component processes, defines a project management framework, defines terms, describes general management skills and introduces the concept of project management process models. While APM's BoK is organised in four "key competencies". The model influenced by research carried out on the issues which influence the delivery of project success showed that the PM BoK factors were not enough to deliver successful projects, but attention needed to be made to design management; technology, environmental and business issues; and that the definition of the project was critical for success (Morris, 2001).

Table 3.1 *PMI PM BoK Areas*

PMI PM BoK Area
Project management framework
Project management context
Project management process
Project integration management
Project scope management
Project time management
Project cost management
Project quality management
Project human resource management
Project communication management
Project risk management
Project procurement management

Table 3.2 *APM PM BoK Area*

APM PM BoK Area
General project management
Strategic project management
Control project management
Technical project management
Commercial project management
Organisational project management
People project management

There is no doubt that the area for project management has widened and new technological and computer software developments have allowed for cost, scheduling and planning techniques to be used more easily. However, for all these developments project management is generally seen as sets of tools and techniques used to meet the project's objectives within budget, schedule and to specifications even though projects continually experience problems in these areas (Morris, 1994; Edkins, 1998). As Morris (1994) and recently the APM PM BoK confirmed the scope is broader than this. The set and combination of internal and external issues affect a project's development and success level and these need to be considered integrally. But before developing this point further, we need to look at how project management practice has developed and been implemented in the construction sector.

3.3 PROJECT MANAGEMENT IN CONSTRUCTION

The management of construction projects is an age old activity, traditionally carried out by the "master of the works" (Winch, 2002). However, as we saw in section 3.2 the conception of modern project management emerged in the twentieth century.

The effects of the second World War placed great demands on the construction industry as rebuilding was the current need. New structures were required to meet with new planning specifications and changing occupier demands. However, these shifts in demand did not alter the way construction projects were carried out. The building and civil engineering industries continued to work as they did at the end of the 19th century, where no one person or group was managing the project from the top; instead the architect or engineer was administrating the contract between the client and the contractor, even though at the same time oil, gas and petrochemical industries were emphasizing an integrated approach to project identification and development (Morris, 1994). The situation led to a series of reports commissioned to look at key aspects of the construction industry with a view to making recommendations which would help improve the industry. In 1944 *"The Simon Report"* (HSMO, 1944) recommended the use of open or negotiated tendering, but public authorities were reluctant to adopt the recommendations. *"The Phillips Report"* (HSMO, 1950) also made the same recommendation and pointed out the need for a more integrated collaborative approach between disciplines in the construction process (Walker, 1996).

During the 1950s the interest of the UK construction industry was towards Operational Research and Work Study techniques (Time Measurement and Method Study) (Morris, 1994). Two techniques were developed which were to be precursors of CPM: the ICI's technique developed to control the duration of a sequence; and the Central Electricity Generating Board's (CEGB) technique "to identify the longest irreducible sequence of events" (Morris, 1994:32). Neither technique had much publicity and so had a minor effect on management practice. However, CMP (explained in section 3.2) developed by Du Pont was the principal scheduling technique used by the construction industry by the late 1960s.

In the 1960s the practice of project management was carried out generally in the process industries. However, the problems of managing design and site works, along with poor industrial relations, were also evident in the building industry. The main difficulty was that the building sector did not have an integrated approach between design and production, nor did its structure allow for one person or group to manage the overall project. The results were that there was no balance between cost, schedule and design. Construction skills and knowledge were introduced too late in the process, after the completion of the design, and teamwork practice was weak (Morris, 1994). The situation led to the creation of two separate committees The Emmerson Committee (HMSO, 1962) and The Banwell Committee (HMSO, 1964) to look at the current situation. Both reports' conclusions reconfirmed the findings of the Phillips and Simon Reports: the need to improve the links between design and production. In addition, the Tavistock Institute of London carried out research on communication in the building industry between 1963 and 1965. The study concluded with three points: first, the need for "more efficient forms of organisation and contractual arrangements" (Morris, 1994:73); second, improvement of the decision making process could be made if looked at from a "systems design" position; third, review of the process efficiency from the "client/user/community" perspective (Morris, 1994:73). The Tavistock Institute's work led to the awareness of many issues and contributed to the development of systems theory and its application to business organisations and the construction industry. In 1968 the British Research Station published a report that noted the need to bring focus to the management of the entire building process rather than only focussing on the management of the site works. The reports published in this decade were significant to the construction industry as they highlighted the need to change the way construction projects were structured.

Despite all these recommendations, the structure of the industry in the 1970s had not changed very much since the 1950s. As Bowley (1966) pointed out, the UK construction context was regulated by "the contracting system". In general roles and responsibilities were divided: a design team developed the design, structural engineers developed the structural design and the quantity surveyor developed the bill of quantities. Generally, construction works were still carried out by contractors selected through competitive tender. This resulted in the constructor's skill and knowledge being excluded from the design phase, which sometimes led to inefficient designs in construction terms. This issue was discussed in the National Economic Development Office (NEDO) reports published in 1975, 1976 and 1978, which pointed to the importance of re-structuring and managing the projects in order to promote cooperation between team members. In addition, there was greater recognition that project management concepts and techniques were applicable to the construction industry. This however resulted in each profession in the construction sector developing their own approach to project management and not seeing that specific role for any one single profession (Walker, 1996).

The changes to the project structure came through the introduction of standard forms of contract (management contracting, design and build and construction management) which sought to integrate the professional team, in particular the contractor.

In the early 1980s there was a move from published government reports to private sector contributions. The private sector contributions reflected the rapid changing political and economic context, which the government was failing to address adequately. The government's response was to produce "guides" either to procurement (DI, 1982; NEDO, 1985) or to different development approaches (NEDO, 1983 and 1987). By the mid 1980s an increase in construction work was being experienced, due to the boom of the property market. This put pressure on the supply side of the construction industry for faster delivery in construction work and improvement in value for money (Morris, 1994). The shortening of a project's schedule and the need for integration were seen as critical aspects. The Coordinated Project Information reports of 1987 for example, sought to improve the coordination of drawings, specifications and bills of quantities. However, the move towards a more integrated project came through the implementation of construction management and BOO(T) (Morris, 1994). Both methods take a "top down" stance and look at achieving a balance between time, cost and quality through the use of a professional team. While construction management is concerned with the efficiency of the project, BOO(T) is concerned with the effectiveness of the project, that is, it considers the long term success (Morris, 1994). By the late 1980s attention shifted to measuring a project's long term success (Pinto and Slevin, 1989; Baker et al, 1986; Morris, 1986).

The property market recovery led to the production of *"The Latham Report"* (1994). This made a number of recommendations for improving the competitiveness and efficiency of the construction industry. It covered a range of issues, from contractual and procurement aspects and their impact on payment and cash flow; to project management. Recommendations were made on the need for a clear and defined role of project managers; the need for greater efficiency and cost reduction; the need for coordinated project information to be a contractual requirement; the need to change the structure of standard forms of contract; and the importance of the client role among many others. In addition, the report reinforces the need for integration of the professional team during the construction process as much as the Emmerson (HMSO, 1962) and Phillips Reports (HMSO, 1950).

The *"Egan Report"* (1998) addresses the issues of quality and efficiency in the construction industry. By looking at manufacturing and services industries the report identifies key drivers of change that can be applied in the construction sector such as, committed leadership, customer focus, a quality driven approach, commitment to people and once again it reinforces the importance of an integrated process and team.

Most recently, the *"Fairclough Report"* (2002) takes forward the Egan Report's ideas in terms of research and development (R&D). It recommends an increase in government investment in construction related R&D to support productivity, value for public sector clients and strategic issues. In addition, it emphasises "key competitiveness and productivity issues and their relation to achieving sustainability" and argues that government funded R&D will have a strategy unifying practitioners, professional and academic institutions, and independent research organisations. Although these reports, publications and case experiences are useful, it seems that progress has been minimal.

3.3.1. Management of building refurbishment

While research on construction management has been plentiful over the past 50 years, research on refurbishment work has been lacking by comparison. Although refurbishment work has grown over the past 30 years, research on it has not been comparable. There is still a lack of understanding of the process and management issues (Egbu, 1995). Research carried out illustrates the range of areas of concern: education and the training (Egbu, 1994, 1997); estimating and tendering process (CIoB, 1987; Quah, 1988, 1992); procurement approaches (Robinson, 1990; Weaver, 1993; McCloy, 1999); risk analysis and management systems (Teo, 1990; Mansfield and Reyers, 2000); planning and control (Rahmat, 1997); decision support systems (Okoroh, 1992); management approaches and strategies (Koehn, 1982; Hanley 1987; Douglas, 1988; CIRIA, 1994; Egbu, 1995, 1996, 1997; Crous, 1999); and most recently whole life thinking (CAP, 2000). According to CIRIA (1994) the key issues towards the management of refurbishment work are:

- The decision to refurbish or not;
- Need for an intimate and continuous client involvement;
- Collaborative approach between parties;
- Appointment of a client representative;
- Appointment of a project manager;
- Dealing with neighbours;
- Design with flexibility;
- Involvement of construction team early on in the process;
- Handover and after;
- Control of time and cost.

The existing literature on management of refurbishment work and in particular conversion has not been overwhelming. The focus on specific issues illustrates the increasing awareness of the need to approach refurbishment work differently than new build, as refurbishment has increasingly been accepted to be more difficult than new build with higher levels of risk and uncertainty.

The numerous construction related reports published to date for example the Fairclough, Egan, and Latham reports, provide an idea of the complex context in which construction projects develop. Winch (2002) provides an interesting contextual framework for the management of construction projects; in which he states that construction project management practices are constrained by the institutional context (national and sectoral components) where it develops and how that context forms construction project management practice. Technological developments; economic, political and business conditions; and social and environmental pressures have led to an increase in demands on project performance in terms of their organisation, management and operation. This in turn has motivated the construction industry to be more competitive and efficient. Competitiveness has contributed over the years to the construction industry's professional specialisation, offering specific skills to projects and creating "greater interdependency" between specialised firms and consequently a greater need for integration of these skills in the construction process (Walker, 1996 p:2). The influence of a variety of external (political, economic, social, technological, environmental, business) and internal (strategic, organisational, managerial, behavioural, commercial and technical) factors and issues and their understanding is one of the challenges for successful project management practice.

3.4 TRADITIONAL PROJECT MANAGEMENT APPROACH

Although Dr. Martin Barnes's writings have mostly concentrated on the financial control of projects (1990, 1992) he has perhaps been most influential through his consultancy work and by demonstrating "the value of integrating the project control areas of time, cost and quality making the classic triangular model of project control universally known today" (APM, 2003), which is here discussed. Turner (1999) provides a good introduction to project-based management by presenting a structured approach to project management through three dimensions: the project defined, the process of managing the project and the levels of management (fig. 3.1).

The first dimension considers that there are five functions that must be managed throughout the process (fig.3.2), these are: the scope of work, human resources, quality, cost and time in conjunction with the risk associated with each one. The second dimension, is the life cycle of the project and considers four basic stages: proposal and initiation, design and appraisal, execution and control, finalisation and close out. Although there are different forms of project life cycle representations, Turner (1999) points out that each one of these stages needs to be planned, organised, implemented, controlled and conducted, based on Fayol's (1949) definitions of managerial activity. And the planning stage can be approached through a ten step problem solving cycle for example. The basic ideas of project life cycle representations are that there are processes involved in different levels to take the initial idea forward, that is, it is not possible to take the idea to the completed work in one simple step. The third dimension considers three levels of project management: integrative, strategic and operational.

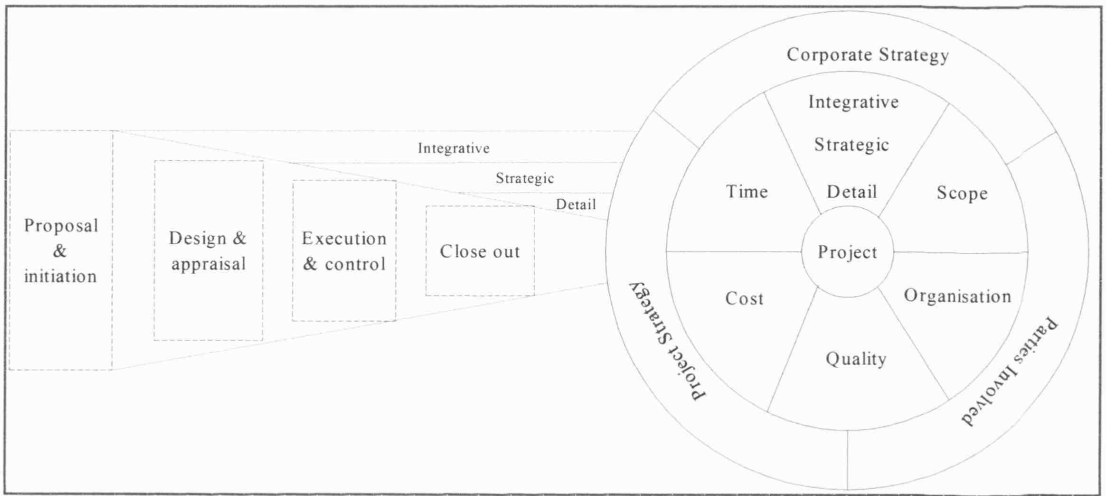

Fig. 3.1 *Turner's structured approach to project management. Source: Turner, 1999:22*

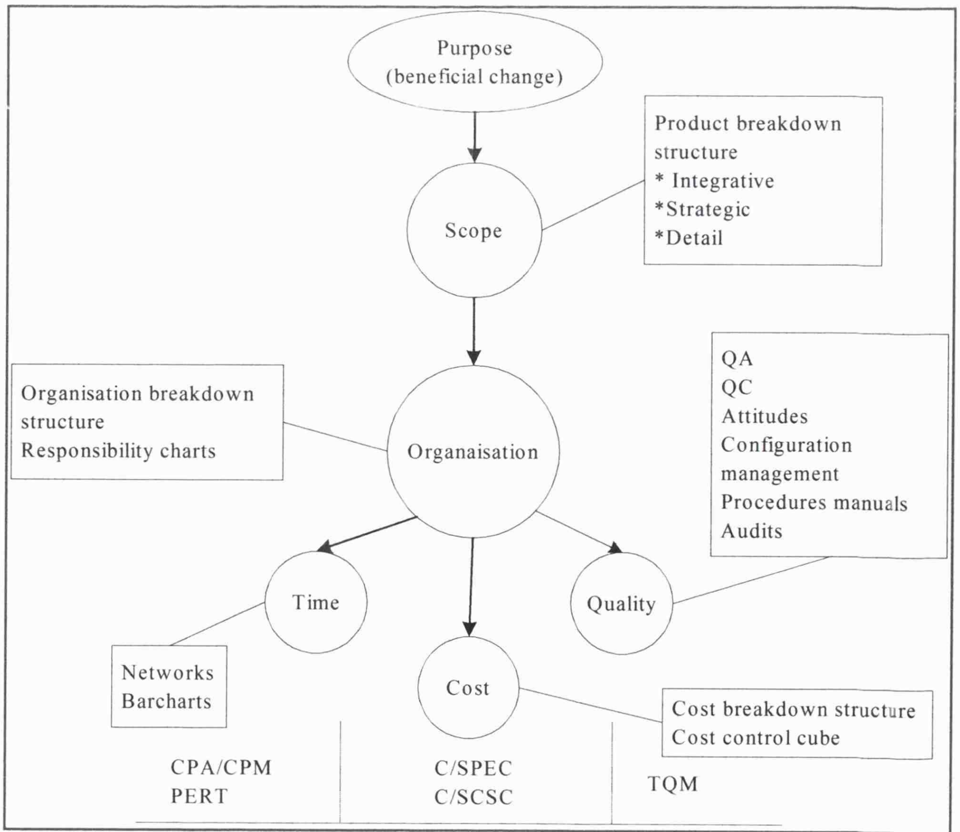

Fig.3.2 *Tools and techniques of project based management. Source: Turner,1999:9*

The traditional view of project management has been that a project must be completed within three basic criteria: on time, within budgeted cost and with quality performance (Lester, 2000; Reiss, 1995). To accomplish the various performance requirements of a project, a great part of the management literature is either taken from the scientific (hard systems view) or human relation (soft systems view) schools which consider issues of planning and organising; motivating and controlling through the implementation of tools and techniques.

The common language from a hard systems view is plan, design and control, illustrated in figure 3.3. While figure 3.2 illustrates the tools and techniques used to manage the six functions of project based management. PERT, CPM, histograms, trend charts and time analysis software are commonly used to manage time (Reiss, 1995; Lester, 2000). Site Man-hour and Cost (SMAC), Earned Value Analysis (EVA), Work Breakdown Structure (WBS) are used to manage cost, and these can be linked to the project's schedule. The criteria of quality or performance can be divided into Quality Assurance (QA), Quality Control (QC) and Quality Standards (QS). QA is the process that makes sure the adequate systems and procedures are in place to meet the quality criteria set by management. Established and monitored Quality Management Systems (QMS) ensure quality processes are in place. Guidelines for these can be found in the ISO 9000, 9001, 9004 series of standards. QC is the process of measuring the current level of performance of a process through various testing and checking methods. For example, testing methods in construction would include accurate levelling and soil stabilisation tests (Calvert, 2001).

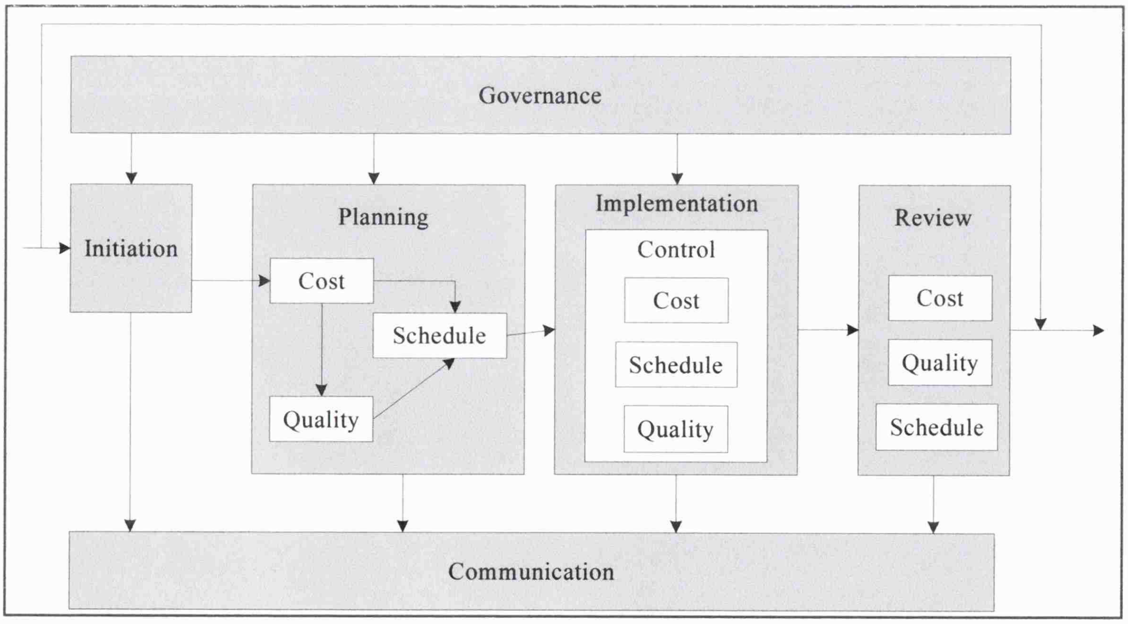

***Fig. 3.3** Hard systems view of project management. Source: www.ChrisFoxInc.com*

The development of project management practice has been closely related to the development of tools and techniques, and these have highly influenced the way projects are managed. Project management textbooks consider that under performance in any of the previously mentioned criteria would deem a project unsuccessful. However, for all the available information on approaches and techniques to project management, projects still fail in terms of time, cost and quality. This is confirmed by Winch et al. (1998) and Morris (1986) who notes "The classically accepted definition of project management is the accomplishment of a project within its defined technical, budgetary and schedule specifications...studies of project schedule and cost performance indicate that overruns are the norm". Edkins (1998) makes the point that these traditional considerations of project management's objectives have "been challenged as being too narrow", as the criteria for success filters outside time, cost and quality boundaries. For example, it is accepted that satisfaction of key actors involved in the project with both the product and process are important factors to consider towards classifying a project successful (Edkins, 1998). Winch (2002) considers that the definition of project success needs to take into account the interests of the stakeholders and locate the project mission at the centre; and presents a framework for product integrity along three lines: quality of conception, quality of specification and quality of realisation. In addition, Morris (1994) points to the importance of "soft" factors contribution to success, such as the type of client, the experience and training of other key players, the original configuration of the project and the established patterns of relationships and communication. It is clear that there is a need to go beyond the use of tools and techniques in managing projects and understand the context in which a project develops and the issues (organisational, managerial, operational) that may contribute to its level of success or failure in terms of the process and product.

3.5 Understanding Project Development and Context

We can now begin to appreciate that the scope for managing projects is vast and challenging to study. As Morris (1994) points out projects are difficult to study for "they are generally multi-organisational, they involve sensitive issues that many people are reluctant to publicly discuss, they are often of long duration; and the multiplicity of topics they raise requires researchers to be based more broadly than normally fits comfortably in our educational system" (Morris, 1994: 217).

With the consideration of the variety of issues and topics related to project management, Morris (1994) developed a framework where he illustrates the principle elements that must be managed for a project to be successful (figure 3.4). These include project definition, external environment, finance, timing and organisational issues.

Correct definition of a project is crucial if problems are to be avoided during a project's development. This requires clear objectives, which link with stakeholders' interest, re-examination of objectives if necessary; a worked-out plan designed to achieve the specified aim;

clearly defined levels of quality or performance in terms of finance, safety, technical and environmental issues and teamwork; assessment of technological development, although not so much a challenge today; and balance between design, schedule, technical and budgetary requirements (Morris, 1994).

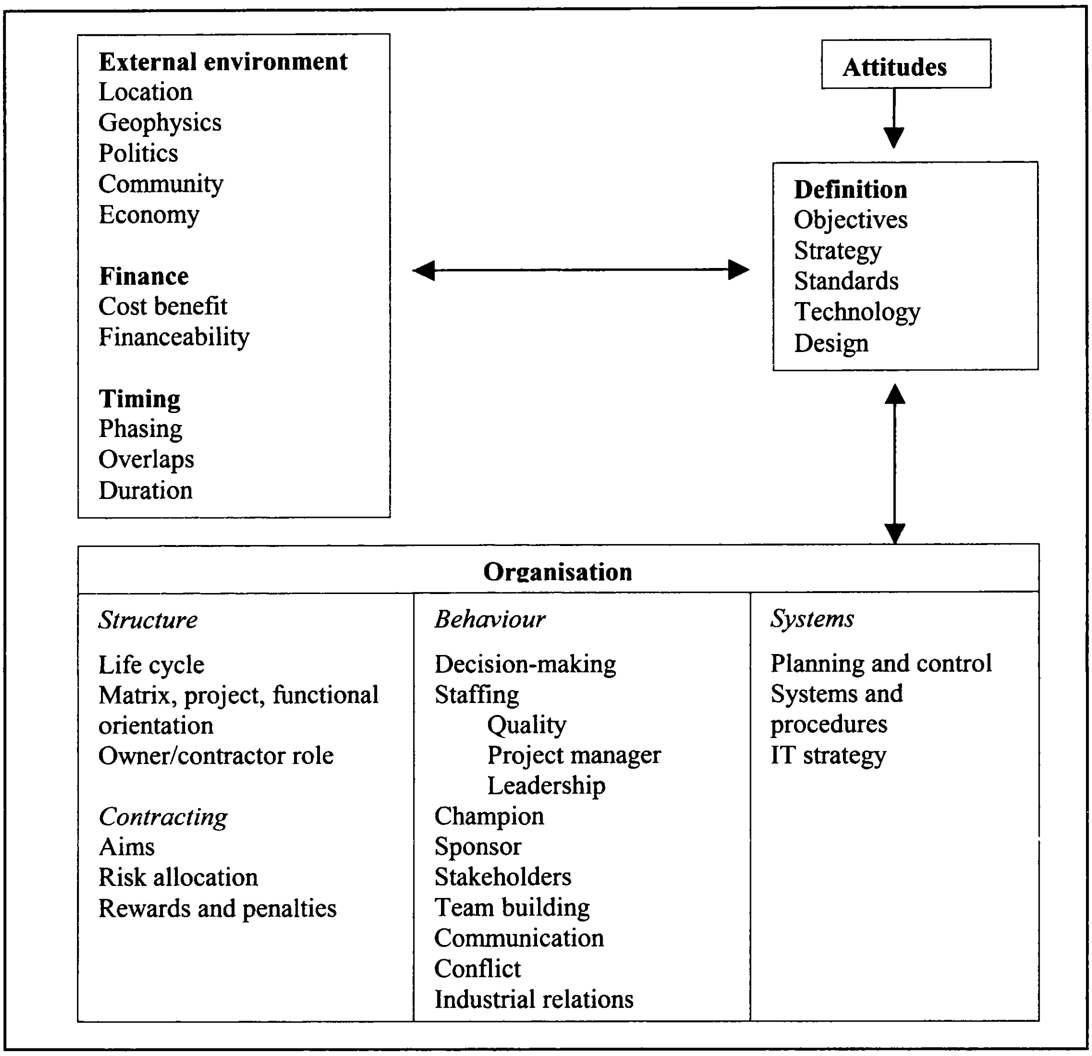

***Fig.3.4** Principal items to be managed for a project to be successful. Source: Morris 1994:218*

The adequate assessment and management of the dynamic effects of external influences is equally important. The location of a project may have an influence on its design; the essence of the project may affect either negatively or positively the local community and policy procedures; poor consideration of environmental issues may restrict and/or delay the project; and shifts in the economic condition may have effects on the project's cost, budget and viability. Proper assessment of financial ability and risks in terms of market, politics, technology and operation is also important as these may affect the schedule of the project. Finally, the appropriate time needs to be allocated for each stage of the project and the degree of difficulty of each will influence its time allocation and its management (Morris, 1994).

The degree of ease or difficulty of implementing and managing a project will depend on the project definition and the interaction of influences and effects of external, financial and scheduling factors, as well as on the attitudes of actors involved in the project.

An actor's positive, committed and supportive outlook to the project is key to the project's success. Support and commitment must come from all sides of the project organisation, and especially from the top. In addition, clear lines of communication must be set up. These aspects run closely with organisational issues such as team work, leadership, decision making and behavioural responses.

Morris (1994) considers organisational issues that are linked to organisational structure, staffing and systems. The structuring of the organisation has to take account of four aspects: first, a manager that takes the project from one stage to the next at an adequate pace all the way through the development of the project; second, the project has to be organised in such a way that it allows integration from elements within the project and between internal and external actors; third, a balance between the client's role and the actors implementing the project; fourth, the form of contract should be based on the project's objectives and should consider the risks involved and how these may affect all actors taking part in the project. Staffing refers to getting experienced actors, as well as a leader who can give direction, take decisions, organise, delegate and motivate; these two elements can drive the project forward through a team approach. Systems are the application of tools and techniques used to plan and monitor the performance of a project such as those described in section 3.4, risk analysis and a Total Quality Management (TQM) approach.

Morris's diagram provides a supporting structure for the study of projects. Although other frameworks have been developed for the understanding of projects and their management, for example Mintzberg's (1979) structure of organisations, Calvert's (2001) management process, Walker's (1996) project management process, Dawson's (1996) formation of attitudes and most recently Winch's (2000 and 2002) work on management of projects as a business process; Morris's framework integrates a myriad of relevant factors and issues of key importance for a project's success.

3.6 Discussion

The background presented in the previous sections has demonstrated that traditional and new approaches towards managing projects have tried to cope with increasing complexity and uncertainty. For a small scale project the array of internal and external variables and their dynamic relationships can be of great complexity. It follows that the perspective in which projects are considered becomes of central importance. For example, a narrow view point of a project limits the understanding of factors and issues which may contribute to its success or failure. It is clear that the gamut of factors and issues influencing projects and their management are significant. The understanding of these numerous elements and their effects on a project's development and level of success therefore requires a clear and holistic approach.

In a construction context different actors involved in a project will have different views on the most important factors. For example, the architect may see the design layout and aesthetics as the most important aspects; the client may consider the operation the most important while the contractor will consider controlling the construction process as the most significant. Each of these viewpoints has an influence on how the project evolves, as it is the actors' decisions and choices which are driving the project process.

Looking at individual actors perception or understanding of a live project development process, we will be able to identify the important factors and issues per stage per actor, and in combination with the macro (external environmental) and micro (building related) influencing factors presented in chapter two will allow us to view the conversion project as a whole and sift the most significant factors contributing to the process level of success.

Chapter Four

Methodology

4.1 INTRODUCTION

The review of the related literature brought forth a series of issues related to the research problem. The most recent reports on conversion (section 2.4) confirmed the narrow focus with which the subject area has been approached. Some of the factors and issues which influence conversion activity were identified (see section 2.6), however not all of these are considered throughout the conversion project process and other factors come into play (section 3.5) which affect the choices and decisions actors make throughout the project development. Although progress has been made with the development of a decision framework from where the possibilities of change of use can be identified and explored; there has been no in depth study of what happens after the decision to convert has been taken. There is still a lack of understanding and knowledge on what are the pivotal factors and issues that affect actor's decisions during a project's development process. This chapter sets how this problems is to be explored.

4.2 PRELIMINARY STUDY

Preliminary interviews were carried out with two aims; first, to develop further the ideas gathered in the literature review (described in section 2.6); second, to aid in the redefinition of the methodological approach, in particular the definition of the sampling strategy. A total of nine preliminary semi-structured interviews were carried out with developers, architects, planning consultants and financiers between March and June 2000, i.e. during the methodological exploration. A topic guide (annex 8) was developed based on the existing literature covering the following themes:

- nature of business;
- views and/or experiences with conversion work;
- views on STEEPL factor and issues;
- views on the decision making process in conversion work;
- risks;

- prospects.

Organisations were identified through London Residential Research's (LRR) database, and contacts with the Town and Country Planning Association (TCPA) and Space Syntax. In total twenty-three letters were sent to potential interviewees out of which only nine responded positively to participating. Interviews took between 45 minutes up to 2 hours. Interviews were transcribed in full and analysis consisted in the review of transcripts and identification of new emerging issues. The findings highlighted the following points:

- Social, Technical, Economic, Environmental, Political, and Location issues identified in literature review as influential to decision-making were reinforced by interviewees;
- economic and political factors played a greater role in decision making, followed by location, technological and social factors;
- environmental issues were related with meeting building regulations and codes only;
- provision of affordable housing seen as a barrier for converting to residential use. However, the degree in which it effects decision seems to be dependant on the organisational approach to development, size of scheme, planning authority's flexibility and the potential occupier;
- location factor perceived as important for large scale developers, and less of an issue for small scale firms;
- decision-making process is a cyclical one, based on a network of individuals approached at different stages and at varying levels of intensity;
- time availability is an issue that pushed decisions being taken;
- focus on themes were determined by the interviewee's discipline;
- discussion of themes evolved around the human aspect, in particular on difference in perceptions and understanding of the issues identified.

The findings not only corroborate the existing literature on the factors and issues which influence decision makers involved in conversion activity, but most significantly point to the human aspect as an emerging new issue. Specifically to the significance of individual's perception and sense making of the relevant factors and issues, and their effects on the conversion process. It is these findings in combination with the literature review in chapter two and three which provided the focus to the main research questions.

4.3 Methodological Approach

For this research to be of value it is necessary that the methodological approach selected be appropriate for both addressing the research question and for the collection of data. Since essentially we are interested in studying the nature and structure of the actors' way of understanding (their mental impressions) of the forces which they consider drive the key decisions taken in the various stages of a building conversion process, it is clear that the enquiry is located within the area of social science and its purpose is mainly exploratory. Specifically we are exploring within a construction-organisational cognition context.

The nature of the research question raises the issue of which research methodology to select. This is confirmed by Manstead and Semin (1988), who observe that the type of research question will largely determine the strategies and tactics selected to carry out a research. Within the social sciences there is a debate between the use of quantitative and qualitative techniques. Their differences are many, and there exists extensive literature covering this debate (Glassner, 1989; Robinson, 1998; Robson, 1993). This debate has also extended to the construction management discipline (Seymour and Rooke, 1995; Seymour et al., 1997, 1998; Raftery et al., 1997; Harriss, 1998; Wing, 1998) where the concern is in terms of the role of theory versus pragmatism. Although the debate continues, the tendency has been to approach research in construction management in a pragmatic way as construction management is a practical subject, and findings should therefore be of practical use.

Quantitative techniques are used to test hypotheses, to confirm theories and to measure associations by using data either in the form of numbers or which can easily be turned into numbers so they can be analysed through statistical measures or methods (paths, regression, log-linear analysis and so forth). The results are expressed in the form of statistical models, graphs and tables. In principle most parameters allow for quantification, but in other cases the parameters are not sufficiently clear to do this. While some observational data can be quantified, there can be the risk that results have no significance. There is also the danger that quantitative measures on data can distort the material. Even though quantitative techniques are widely used in the area of social science there has been the concern that this technique can sometimes ignore and separate empirical facts from their context; hence the statistical results can be subject to questioning. This issue was identified by Kuhn who noted that "overwhelming concern with paradigm-directed research... may lead the scientist to neglect pressing social problems" (Young, 1979:207)

On the other hand, qualitative techniques are used to study things in their natural settings, when researchers are attempting to make sense of or interpret a phenomena in terms of the meanings people bring to them (Lincoln and Denzin, 1994). While in quantitative data the language is mainly numbers, in qualitative data it is the words that contain the knowledge, and it is with words that researchers work with. The analysis of this type of material is useful for gaining in depth insight and understanding of complex problems. The value of using a qualitative technique is expressed by Walker (1985) who argues that the nature of qualitative research lies ultimately in the value placed upon it by the end user.

A review of the literature (Robinson, 1998; Lincoln and Denzin, 1994; Robson, 1993; Gummersson, 1991; Glassner and Moreno, 1989; Smith, 1989) indicated that the selection between quantitative and qualitative methods depends not only on the research question but on the awareness of two things: first, knowing when to measure and quantify; and second, knowing it is not always useful to measure and quantify (Smith, 1989). With this in mind, it is clear that for this research to address the question of how the different actors involved in the activity of converting buildings understand the influence of social, technological, economic, environmental, political and location (STEEPL) factors and how these affect their decisions, a qualitative approach was more appropriate. In addition, a qualitative analysis allows emphasis to be placed on the processes and meanings embedded in the activity which have not been rigorously examined in previous research.

4.4 ENQUIRY DESIGN

Having distinguished and defined a qualitative orientation for this study, we continue with the definition of the research design. Based on the suggestions made by Robson (1993) and Leedy (1997) on how to conduct and develop research, the research methodology is divided into two parts:

1. the research strategy
2. the research tactics

The ***research strategy*** refers to the orientation taken in addressing the question and ***research tactics*** refers to the data collection methods (see section 4.6). Research strategies are classified in various ways, however, three main strategies can be distinguished: experiments, surveys and case studies. Each one presents advantages and disadvantages depending on three aspects: first, the type of research question; second, the control an investigator has over the events and finally, the degree of focus on a contemporary phenomenon (Robson,1993). Each one of these conditions is explained further by Yin (1994) and was carefully thought through for the selection of this study's strategy. As this research is mainly exploratory and is interested in knowing how a number of factors and issues influence the actors' decisions and views during the conversion process, it was considered that the most appropriate strategy for addressing the research question was a case study strategy. This is supported by Yin (1994) who advises: "In general, case studies are the preferred strategy when "how" or "why" questions are being posed, then the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context" (Yin, 1994:1).

Although case study research has been around for some time now, there have been some concerns by research investigators regarding its use as a research strategy. Three main concerns can be pointed out and are discussed further by Robson (1993) and Yin (1994). First is the concern over the lack of discipline while conducting case study research and how sometimes the results can be manipulated in favour of the research; however for this last point, the same can be said of some scientific studies (Glassner and Moreno, 1989). Second, the fact that case study results are difficult to generalise to a population; instead, generalisation is done to theoretical propositions. And third, the time scale in which a case study is carried out is generally too long, and the results are usually presented in a lengthy form, though this does not need to be the case for all studies. Even though these are important concerns they can be dealt with and managed.

A Case study is defined by Robson (1993:52) as " ...a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence." In this definition Robson (1993) points out three important aspects:

- It is a strategy or approach and not a method;
- It is empirical in the sense that evidence is collected about what is going on;
- The study is done within its real life context when the boundary between the phenomenon and its context is not clear.

Thus, it can be seen that case study research is a strategy with its own particular design. In this research, because there was no clear, single result, a case study was used to explore the particular situation of actor's decision-choices in a building conversion project. The advantages of using a case study strategy are that we can study a current phenomenon within its context and maintain a holistic and meaningful view, and it allows for the analysis of non-linear and multi-causal links.

4.5 Case Study Strategy

In order to carry out case study research attention needs to be paid to issues of design, data collection, analysis, interpretation and reporting (Robson,1993). The purpose of a research design is to help identify the data which is relevant to the research question. According to Robson (1993) the research design will provide the link between:

1.The research question 2.The data that is collected 3.The results and conclusions

Due to the exploratory nature of this research it was difficult to have a tight pre-structured case study design to start off with; still there were initial ideas and interests to work with gathered from the literature review and preliminary interviews. As a result of the findings a looser case study design was selected. One of the advantages of a looser design was that it allowed one to be less selective in which data was collected, for anything could have been important; and it also allowed for flexibility, an important feature in research of an exploratory nature.

Yin (1994) distinguishes two types of case study designs, single and multiple. Within these they can be, depending on the units of analysis, either holistic (single unit) or embedded (multiple units). Single case study designs are used when the case is used to test an existing theory, when the case is unique or exceptional and when the case is used to reveal new concepts. Multiple case study designs on the other hand, are used when the same study requires the use of more than a single case. The cases in a multiple design are selected based on the idea that either the same results will be acquired or that differences will occur in the results.

The choice between single or multiple design was made based on the consideration of two aspects: first, decision-choices in building conversion context are very complex and not enough evidence could be gathered from a single case to provide a clear and detailed understanding of the project's process. Second, the decision-choices made were expected to vary according to the project and actors involved.

The concept of existing differences in the perception or views on factors which influence actors decisions between conversions projects; the difference in approach from development organisations, in conjunction with the need for robust and compelling data contributed to the selection of a multiple case study design. The following case study design was developed based on the work of Miles and Huberman (1984) and Yin (1994), who state the need for:

- A conceptual framework
- Units of analysis
- A sampling strategy
- Methods and instruments for data collection (research tactics)
- Criteria for data analysis

4.5.1 Conceptual Framework

The elaboration of a conceptual framework allowed the researcher to be clear about what was going to be done. It aided the selection of features which were most important, and which data should be collected and analysed (Robson, 1993).

The framework, figure 4.1 illustrates the influence of STEEPL factors and issues on the decisions and choices during the various stages of a building conversion project. The process of decision making is a series of events or actions where resources are allocated by a decision-maker, who is himself influenced by the interaction of issues and actors/issues. The understanding of this process is the objective of this study. To reach this objective the process had to be analysed with appropriate techniques. The output of the analysis will be a clearer understanding of the key mechanisms involved in decision-taking in projects of this nature.

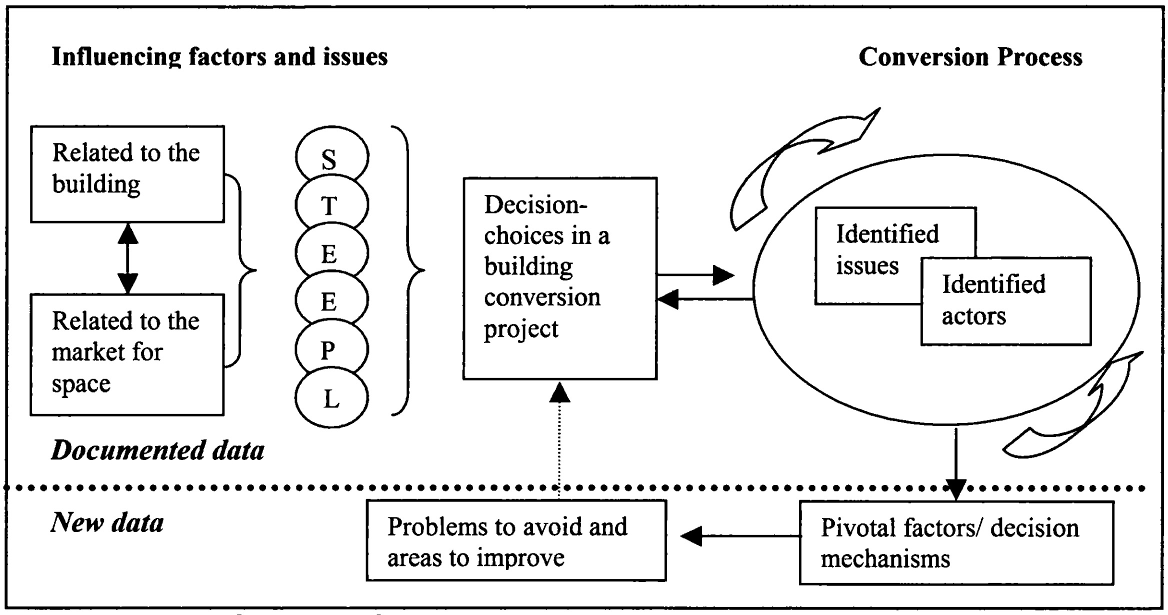

Fig.4.1 Conceptual Framework

4.5.2 Units of analysis and Sampling Strategy

The units of analysis for this research were the groups of actors and main decision-takers, who participated in a recent conversion to residential use project in Central London. The actors included the developer, architect, project manager, contractor, structural engineer, services engineer, planning consultant, cost consultant and local planning authority officer. These were identified through London Residential Research (LRR) database. This contained information related to schemes completed or under construction, their location, actors/companies involved, construction start and end date, planning authority, number of units created and in some cases cost of units.

The dataset obtained contained 265 schemes completed between January 1997 to September 1999, with 5 or more units created, from any previous use other than residential, and within the 11 main boroughs of London. This dataset was filtered further using the following parameters:

- Completed schemes in 1999: from January to September 1999;
- Number of units created: 5-15, 15-50, more than 50;
- Previous land use other than residential: industrial, office, light industrial, education, storage;
- The location of the scheme: by planning authority;
- Schemes that provide private accommodation.

To deal with the issues of actor's recollection of events the selected schemes had to be recently completed, for it was vital to obtain an accurate account of the conversion project's process.

The size of the scheme in terms of number of units reflects two important issues: first, the housing policy aspect, for schemes in inner London with more than 15 units were, at the time of development, required to provide affordable housing, up to 25% of the scheme (government circular 6/98); second, the size of the scheme also largely determines the company/individual approach to the conversion. And so developments with more than 15 units would most likely be taken up by development companies rather than individuals.

Previous land use reflects a planning aspect, the local authorities views on change of use applications and its potential effects either positive or negative to the surrounding area. On the positive side is the potential for regenerating the area, contributing to the local housing needs, and to the sustainability argument. On the negative side is the concern for the loss of employment space for example. The location aspect responds to two issues: the local market conditions for residential space which vary across location; and the planning authorities views towards conversion.

This filtering process identified 83 schemes completed and available between January and September 1999. Seventy three schemes created private units and 10 schemes created social units only. From these 73 schemes only 4 schemes contained additional affordable units all located in the borough of Tower Hamlets (Appendix 1).

Results from preliminary interviews indicated that the location was of the key importance for identifying sites, both for potential of the residential market in that area and for the local planning authority's positive views on conversion. Administrative boroughs were selected based on three main aspects:

1) had the three ranges of units created;
2) had schemes of a diversity of previous uses;
3) had shown a gradual increase in activity from 1997 to 1999

Table 4.1 shows the sample size in relation to the principal dimensions: number of units created (5-15, 15-50, 50 or more), and location of schemes (11 main boroughs in London). It identifies Hackney, Islington, Southwark and Tower Hamlets for having the most number of conversion schemes across the three bands of units. Table 4.2 shows the secondary dimensions: diversity in previous land use.

***Table 4.1**. Quota Matrix1. Principal dimensions: number of units and location*

Borough	5-15 units	16-50 units	> 50 units	Schemes
Camden	6	5	0	11
City of London	4	4	0	8
Hackney	6	3	1	10
Hammersmith	0	1	0	1
Islington	4	4	2	10
Kensington	3	0	0	3
Lambeth	4	0	0	4
Southwark	4	6	2	12
Tower Hamlets	7	6	4	17
Wandsworth	0	1	0	1
Westminster	5	2	0	7
Total schemes	**43**	**32**	**9**	**84**

***Table 4.2**.Quota Matrix 2. Secondary dimensions: diversity in previous land use*

Previous Land Use	Hackney	Islington	Southwark	Tower Hamlets
% office	10	**60**	33.3	**64.7**
% industrial	**50**	10	33.3	17.6
% storage	10	10	**25**	0
% education	10	10	0	0
% leisure	10	0	0	0
% retail	10	0	0	0
% religious	0	0	0	5.9
% light industrial	0	0	0	**11.7**
% police station	0	10	0	0
% hospital	0	0	8.3	0

Having identified the boroughs of Hackney, Islington, Southwark and Tower Hamlets as having the most number of conversion schemes (table 4.1) it was then necessary to select potential case studies by determining the percentage of conversion schemes carried out from the variety of previous land uses (table 4.2). Consequently, industrial conversion schemes could be obtained from Hackney, storage conversions from Southwark, light industrial from Tower Hamlets, and office from both Islington and Tower Hamlets.

In total three case studies, with an average of eight key actors per project (table 4.3) were selected and carried out: industrial conversion in Hackney, storage conversion from Southwark and Tower Hamlets. The selection was influenced by the need for cases to be diverse to generate a range of opinions and experiences and the need to provide a representative map of conversions schemes that had taken place. However, the final selection of case studies was largely determined by the co-operation of the group of actors and their organisation. A background of each interviewee is provided within each case study chapter (five, six and seven).

Table 4.3. *List of interviewees*

Indigo Loft side and Newington Place Mews	Old Aberdeen Wharf	Wheat Wharf
AL: developer	PH: developer	KL: developer
LK: architect	AW: planning consultant	JD: architect
GM: project manager	TM: residential agent	RP: structure engineer
HB: planning consultant	EH: construction project manager	SW: service engineer
AC: structure engineer	PC: officer, English Heritage	PS: quantity surveyor
RJ: cost consultant	Tower Hamlets planning authority	TM: contractor
AS: officer, English Partnership	BH: quantity surveyor	PC: officer, English Heritage
Hackney planning authority	DA: vendor	Southwark planning authority
		TM: residential agent
		CD: vendor

4.6 DATA COLLECTION

The ***research tactics*** are the second aspect to consider when carrying out research, and they refer to the methods for collecting data. The research question once again determines which is the most appropriate technique. Chapter two presented a number of issues which have been identified as influencing conversion activity. These are mainly related to the market for residential space or to the building. These are indeed influential in the main decision of taking on a conversion project, but they do not relate fully to the conversion project process itself. It is clear that a straightforward answer cannot be given as this study aims to identify and understand the influence of pivotal factors and issues on the actors' decisions during a conversion project. It is important therefore to study and explore in detail individual attitudes, experiences and views on how they have arrived at the key decisions during a conversion process.

The exploratory nature of the research led to the selection of interviews as the method for gathering data. Interviews can be structured, semi-structured and unstructured. Structured interviews are a series of pre-established questions with a limited set of classified responses (Fontana, 1994). In semi-structured interviews open-ended questions and their sequence are established in advance. Unstructured interviews are open-ended questions aimed at exploring the research problem.

The need for flexibility and an enabler of exploration led to in-depth unstructured interviews being used as the selected data collection technique. The selection is reinforced by the National Centre for Social Research (NCSR, 2000) who mention that "in-depth interviews are ideal when the study involves a detailed exploration of individual attitudes/behaviours or experiences and/or detailed evaluation of process…when participants have diverse characteristics/views or experiences…"

In conjunction with interview data, information was also gathered through supportive documents such as local authority planning files, unitary development plans and reports produced by developers where available. The combination of interview and archival data resulted in the information being multidimensional and unstructured in content. Consequently the data analysis techniques needed to provide a systematic content analysis.

4.7 Data Analysis Criteria

The information gathered through the interviews was rich in both quantity and quality and it was necessary to make sense of it in order to come to a final conclusion and recommendations. Two sets of criteria for analysis were considered: first, standard approaches to qualitative data analysis and second, Managerial and Organisational Cognition Methodologies.

A standard approach to qualitative data analysis aims to bring order to the vast amount of unstructured information through three stages:

- labelling, ordering, sifting and synthesising, for which a range of tools are available, for example, software packages NUDIST and ATLAS/ti (Barry,1998);
- classifying and categorising, to portray and display the evidence;
- interpretation and abstraction, to address questions of meaning.

Each of these analytical tools differs in approach. Five approaches are identified:

1. Case-based, which looks at one individual or unit. However, its disadvantage is that it is difficult to compare between cases.
2. Theme based, looks at data thematically, gives a clear feeling of patterns in data, but loses the individual detail.
3. Content analysis, looks at how language is used.
4. Matrices, looks at both the individuality of cases and the whole.
5. Computer assisted analysis is used as a database manager for descriptive/interpretative analysis, structural analysis and theory building. Its advantage is that it facilitates sorting, coding, text retrieval and allows for comprehensive and systematic searches.

The outputs from this form of qualitative analysis can include conceptual definitions, descriptions of the nature and form of phenomena, creation of typologies, the provision of explanations and finding associations. Although this type of analysis is valid, it was considered that this research needed to go further than just telling interesting accounts and experiences.

Because this research is interested in a detailed understanding of the individual *cognitive* (mental action of acquiring knowledge) understanding of decision-choices on a building conversion project, the problem of making sense of such a complex and dynamic process is not simple. The analysis method needs to be capable of providing rigorous analysis of complex data.

This interest places the inquiry in the area of cognitive science. Cognitive science aims to "understand the processes and representations underlying intelligent action in the world" (Green, 1996:2), that is, the study of thought, learning and mental organisation. Simon and Kaplan (1989:2) describe cognitive science as the study of intelligence and its computational processes in three strands: 1) in humans, 2) in computers, and 3) in the abstract. It is in the abstract intelligence strand where the theories of decision-making seem to be of relevance. However, its contribution to cognitive science has been limited compared to other areas such as, psychology, philosophy, linguistics and artificial intelligence.

Therefore, the second approach for data analysis looked at lies within the field of Managerial and Organisational Cognition (MOC). It was established in 1991 and has been a field of growing interest. The field developed "out of the rejection of the presupposition that managerial decisions can be analysed adequately by using hyper-rational ideas of complete data, well defined objective functions and rigorously logical choice processes" (Eden and Spender, 1998:2). MOC argues that individuals form "personal models" of a particular situation, which are different to abstract models (stochastic, deterministic, bayesian) constructed from formal choice theories (decision theory, game theory, social choice theory). MOC intends to go beyond behavioural and statistical studies of decision-making, which emerge from limited (or bounded) rationality. MOC acknowledges that in practice decision-makers make their decisions with certain amounts of information, often insufficient, and different types of uncertainty. It is this interest in uncertainty which delimits the field of MOC. At this point MOC detaches from traditional managerial decision-making literature, which if dealing with uncertainty, conceives it as a quantifiable risk. Consequently, the decision maker is no longer a quantifiable variable, he/she is defined as a "key actor" who builds a limited field of decision possibilities which is explored in the "process of choice". Therefore, MOC is interested in the limits and structure of the "personal model" and the process of content exploration through which the decision-maker goes when making a decision. Individual mental models "compensate for an individual's limited brain processing capacity. They simplify complex reality by constructing mental models of that reality in which data are classified in loose categories" (Stacey, 2000:170).

With this in mind the methodological approaches used in MOC research were considered for this research. The methodologies have developed from the application of cognition theories in the management context; these seek to explain how individuals make sense of their world. The methodologies applied consist of mapping techniques; these basically depict and explore the cognitive structure of individuals.

Within the mapping methods there exist three phases: surfacing, mapping and analysis. *"Surfacing"* is concerned with the collection of raw data. *"Mapping"* is where the raw data is combined to create a map through a particular transformation process. This can be concerned with converting the language into a mathematical matrix, assessing the respondents or a structured coding process. The final *analysis* phase is where the map is read and interpreted. The output can provide additional ideas into the thought process of an individual or it can be used to make comparisons between maps (Jenkins, 1998).

Maps have been classified by Huff (1990) into five "families" according to their purpose and potential relationships. Figure 4.2 shows this idea based on Huff's classification. The maps lie in a continuum where at one extreme are the maps that manifest content; these regard verbal expression as being equal to mental activity. At the other extreme, are the ones that also manifest content but need further analysis before a cognitive structure can be identified.

Within these five families there exist several mapping methodologies such as content analysis, repertory grids, causal mapping, self-Q technique and argument mapping among others (see Huff, 1990; Eden and Spender, 1998) these are briefly explained in the following sub-sections.

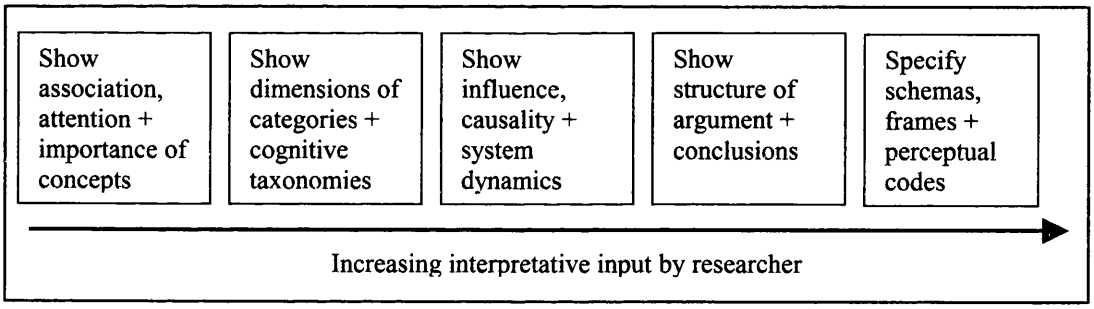

***Fig. 4.2** Classification of maps according to Huff (1990)*

Content Analysis is a research method used to analyse written communication and has been widely used in the social science area. In the area of management the use of content analysis has produced insights that would be difficult to obtain from other methods (Erdener and Dunn, 1990). Its advantages are that it:

- Allows for a systematic interpretation of textual material based on an objective criteria;
- Allows distillation of large quantities of information down to a manageable size;
- Converts qualitative material into quantitative data;
- Does not need large amounts of data;
- Is an unobtrusive measure;
- Can be used in combination with other methods.

Its limitations are related to its reliability and validity and the difficulty of identifying theory-in-use. Within the first level of analysis, manifest content focuses on various characteristics of the words used such as, frequency of words and relation of key words with other words. The validity is questioned when there is an assumption that these key words relate to concepts within the research question. Within the second level of analysis, latent content focuses on capturing an underlying meaning in the text. Here again the concern with validity is present; since it depends on subjective interpretation and judgement there is "a trade-off in terms of the reliability" compared to manifest content (Erdener and Dunn, 1990:293). In general terms content analysis has the potential for allowing "interesting and significant results when appropriately used and properly carried out" (Erdener and Dunn, 1990:299). And it is a powerful tool when used in combination with other methods.

Repertory grids is a technique first developed by George Kelly (1955) as a practical tool used to reflect his Personal Construct Theory. Repertory grids were devised to help elicit the system of constructs that a person uses to make sense of a repertoire of elements in a situation. In other words, it was developed to give an insight about how a person understands the world around him/her. A repertory grid is a matrix that relates a repertoire of elements (those aspects we treat as objects: people, products, companies in a particular situation) to a set of constructs (dimensions the respondent uses to make sense of the elements identified). Repertory grids are used to facilitate problem construction, they are valuable at giving insight into the nature of choices which a person is uncertain about. In a team atmosphere grids are useful for increasing the probability of creativity, identifying significantly different constructions to a problem and identifying similar interpretations (Eden, 1984).

The repertory grid is thus considered to have advantages over structured and unstructured questionnaires and interviews. With repertory grid techniques the researcher does not make judgements about the important or unimportant aspects of a phenomenon, as would otherwise be done with the elaboration and selection of questions. Therefore, the researcher does not impose his/her own cognitive form of a phenomenon. Compared with unstructured interviews, repertory grids provide a structured way of reliably eliciting the cognitive structure of the respondents by giving their perceptions within their own frame. In addition, repertory grid data can be analysed using both quantitative and qualitative methods.

Among its limitations are that the most appropriate level of analysis is that of the individual (Reger, 1990). Even though grids can be compared across individuals, it is not completely justified by personal construct theory, so caution is required, and cross-referencing has to be carried out. A grid is also constraining in the degree of richness that can be captured. Much larger than a 12 x 12 matrix becomes unmanageable to elicit and confusing to analyse (Eden, 1988).

There are several ***cause (cognitive) mapping***[1] methods which vary in their coding between researchers and purpose, such as, Bougon's self-Q technique (Bougon, 1983), Laukkanen's cause mapping (Laukkanen, 1990, 1998), Eden's cognitive mapping (Eden, 1988) and others (see Jenkins, 1998). Cognitive mapping methods of analysis have been developed based on two approaches: first, Axelrod's (1976) method for coding the causal association of concepts (Huff et al., 1990). Axelrod's mapping technique was based on coding written documents to analyse the decision making process of "political elites". And second, Eden's (1979) technique developed to reflect Kelly's (1955) Personal Construct Theory (Eden et al.,1992).

The ***self-Q technique*** (Bougon, 1983, 1990) is a developed method for eliciting cause maps. This technique sets out a structured approach to interviewing research subjects. The method emerged from strategic theory as a more dynamic holistic approach for directing strategic change in organisations. The interview process initially consisted of 4 stages (Bougon, 1983) reduced to 3 individual stages (Bougon, 1990), these are:

1) collect concepts from respondent;
2) respondents personal identification of the importance and influence of concepts;
3) collect the respondents perception of the relationships among their concepts.

The advantages of this technique are that it allows the respondent to draw out their own mental concepts in an unstructured manner. The structure comes from a ranking by importance and influence exercise. It also reduces the bias introduced by the interviewer, therefore increasing reliability.

The technique's limitations are at the third stage where the relations between concepts or "nodes" are made only between concepts elicited in stages one and two. Each interview stage is estimated to take approximately 1 hour, but if more than 10 nodes exist the duration of stage three increases. It is intended for the study of limited or small scale problem areas.

Laukkanen's (1990) ***cause mapping*** technique has been developed to describe and compare causal maps. The process consists of conducting interviews, coding the data and feeding it into a software programme (CMAP2) to produce the maps. The interviews are carried out in three sessions per respondent, each estimated to last between 1-3 hours (9 hours maximum). The first interview is an unstructured interview, but based on a protocol in order to draw out general and behavioural information the respondent uses to make sense of a particular situation. The

[1] Usage of the terms *cause map* and *cognitive map* varies. Some authors (Eden et al., 1979; Klein and Newman, 1980; Bougon, 1983) have used them synonymously. A cause map usually indicates causal relations. A cognitive map is more general and can present a variety of "relations occurring in patterns of concepts" (Bougon, 1983:177). Usage of the term "cognitive mapping" in this study is based on Huff's suggestion that it "should be reserved to identify the full range of mental representations that can be mapped" (Huff, 1990:28). A cognitive map is thus a graphical representation "that locates people in relation to their information environments" (Fiol and Huff, 1992:267). See also Eden (1992).

following two interviews are carried out with the aim of extracting concepts and causal beliefs around base themes (10-12 themes per interview). In-putting concepts and cause-effect relations into CMAP2 to produce text-based cause maps for subsequent analysis reduces the data.

The advantages are that CMAP2 allows for the analysis of content and structure of the generated maps. It facilitates the comparison of content between maps and introduces the idea that maps generated for the purpose of comparison will be different from those generated for the purpose of representing a particular mental constitution (Bood, 1998; Jenkins, 1998).

Among its limitations are that an overview can be easily lost. It generates only text-based maps, however it can be combined with Decision Explorer software to produce graphical maps. The focus of analysis is in the cause-effect structure as opposed to the analysis being the individual and the context in which the concepts are used (Jenkins, 1998).

Eden's ***cognitive mapping*** is a graphic model of the "system of concepts" used by an individual to communicate the "nature of a problem" (Eden, 1989). The model represents the meaning of concepts by its relationship to other concepts. Eden's (1988) Cognitive Mapping approach is based on Kelly's Personal Construct Theory (Kelly, 1955), which provides a comprehensive basis for understanding sense-making. This particular theory derives from an area of psychology known as cognitive theory. Its foundation lies in the argument that individuals are continually striving to "make sense" of the world around them in order to control and manage it (Eden, 1989). According to Kelly individuals construct theories, which consist of a finite set of constructs and with these, individuals make sense of their world by at the same time assigning a "similarity" or "contrast" pole to the various elements they see. The elements can be anything, people, events and processes (Bood,1998).

This type of mapping process is designed to be used as an interactive tool to analyse complex processes through which decisions emerge (Eden, 1989). It is a well-founded methodology with a usable analysis package that allows for a detail analysis of individual maps. The software package Decision Explorer (previously known as COPE) has strong graphical facilities for visually displaying the causal maps in such a way that allows for multiple analysis and assessment. It builds cognitive maps out of concepts linked to each other by arrows that indicate the nature of the linkage. Each concept can have two poles, one is the emergent pole and the other the contrasting pole. A cognitive map is built up by linking several concepts together in a hierarchical form. From this the structure of the map has the potential of being analysed in a number of ways; such as listing concepts, following argumentation or clustering concepts (Bood, 1998). It disadvantage is that it does not allow for content analysis to be carried out easily, however it can be used in combination with NUD*IST (qualitative data analysis software) for this purpose.

Argument mapping (Fletcher and Huff, 1990) is based on Toulmin's (1958) idea that by taking as a model the discipline of jurisprudence one can understand the "logic practice". Toulmin's interest in decision-making emerged from his focus on the practical problems of creating understanding. The method is basically a replicable method of content analysis, which can be applied to many written documents produced by decision-makers. The documents are divided into blocks, these are then subdivided into arguments where its components (key claim, grounded data, warrants, qualifiers) are identified. The components are then coded and transferred to a diagram i.e. a flow chart. Its strength lies in that "it can reflect more complex cognitive process" compared to other mapping techniques (Fletcher and Huff, 1990:368).

These are just a few among a number of mapping techniques used in the area of managerial cognition. The most widely developed and adopted are briefly explained and compared by Bood (1998), Eden and Spender (1998), Huff (1990) and Jenkins (1998). Most of the techniques have common aspects: for instance they provide clear procedures for collecting data, they allow for a systematic analysis of that data and are supported by a software package which increases the reliability of the analysis.

The selection of a mapping methodology was carried out based on the suggestions made by Jenkins (1998), illustrated in figure 4.3. He establishes criteria for the selection of mapping methodologies based on a framework where the mapping method lies between two dimensions: the methodological issues and the research context. These two dimensions overlap through the concept of practicality, which serves as a mediator between the two dimension's influences on the final selection of the mapping method.

This study is interested in maps that represent influences, causalities and system dynamics (third in Huff's classification fig.4.2). And these type of maps are the ones which provide a higher level of potential of procedural knowledge in a decision-making context (Jenkins,1998).

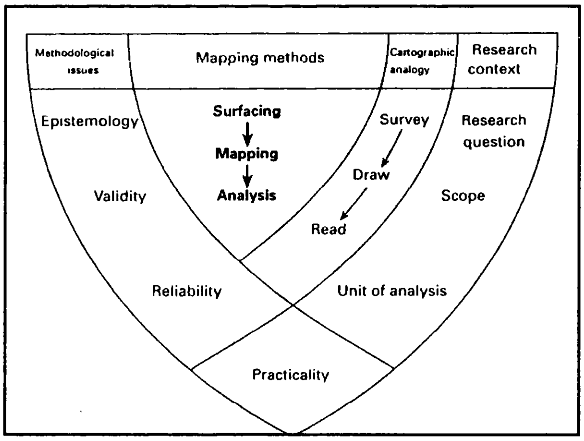

Fig.4.3 Conceptual shield for considering mapping methodologies (Jenkins, 1998:233)

It was considered therefore that cognitive mapping developed by Eden (1988) was the most appropriate approach for the research enquiry since it is concerned with drawing out the underlying sense making of individuals or groups. It has the advantage of having a theoretical base, software package that facilitates the analysis, generates graphical and text-based maps, analysis is carried out at individual and context level, and there is only one interview session with the informer. Comparison between maps can be carried out based on the suggestions of Eden and Ackerman (1998). Signs of learning can be identified by changes in concepts and changes in centrality. Construction of maps can be carried out interactively. Its disadvantage is that the comparison of content is difficult, however this can be carried out in combination with NUD*IST (qualitative data analysis software).

In addition, this approach has been used successfully within the area of management by Edkins (1998) who explored the management of the design process and by Barrett (1999) in the area of construction briefing. Therefore, creating a base for further research in the area.

The use of Eden's "cognitive mapping" as a tool for data gathering on how the decisions are reached not only addresses the research question but offers the potential of opening new lines of enquiry. Individual maps can be created, analysed and compared with the aim of creating a final map of a conversion project process.

4.8 Cognitive Mapping Implemented

Eden's (1989) suggestion that the mapping process be run in parallel with the interview is due to the technique's development as a method for working on complex problems in organisations. However, this requires the interviewer to have previous experience and knowledge in mapping, otherwise the exercise can become time consuming and probably frustrating for the interviewee.

As the decision-choice context and process was seen as complex it was considered that using this approach would be inappropriate given the author's inexperience in mapping live.

The alternative approach was the use of in-depth unstructured interviews, explained in section 4.5. This allowed the collection of information as freely as possible, with minimum intervention from the interviewer, and allowed the study and exploration in detail of the individual's experiences and views on how decisions were taken during the conversion project process. Tape recording during the interviews and hand written notes served as a means of recording the information, which could be returned to when required.

Interviews were started by giving the interviewee a brief explanation of the research, followed by asking the interviewee when he/she first got involved in the project and the role that he/she played. This gave the opportunity to the interviewee to go back and give an almost chronological description of events. In most cases it was easier to give a general overview of the project followed by a detailed explanation of issues and events. The direction of the interview was dictated by the explanations given by the interviewee in combination with the researcher's prompting when it was considered necessary. Prompting was used when more detailed explanation of why and how certain events occurred was needed. This was necessary to ensure that all aspects of the area of enquiry were covered and that the issues mentioned by the interviewee were sifted thoroughly. In some instances it was necessary to cross reference from other interview information and question specific areas that the interviewer knew had occurred and which involved the interviewee. In these cases it served as a memory trigger, as the responses were generally that it was an important area or issue. Interviews took an average of two hours with those who were heavily involved in the project, for example the developer and project manager. And, one hour or less for those who were involved for only a particular stage in the process. In most cases the developer, manager and architect were the most eager to discuss in detail every aspect. While those carrying out a certain task, for example structural and service engineer focussed on that particular area.

The interviews were transcribed, forming the primary source of data for mapping. This process took some time. With the transcriptions it was possible to proceed with the construction of the maps. This is described in the following section (4.9).

The method for data collection worked extremely well, all interviewees acknowledged the use of a tape recorder. However, in the cases where interviews could not be arranged, for example with local authority case officers, mapping was carried out from the planning documents. The disadvantage was that only what was written in the documents could be mapped, resulting in less detail. However, in all cases contents of the planning file were confirmed and cross referenced by interviewed actors. Even these types of maps were important as they represented the planning side's point of view. In all Eden (1990) mentions that the same guidelines apply for mapping through interviews or provided in documentary form. In addition, Axelrod (1976) supports this approach as he mapped how politicians made decisions by using documentary evidence.

4.9 Construction of Individual Maps

Individual cognitive maps were built based on the guidelines of Eden, Ackerman and Cropper (1990). First, the transcribed interview was separated into distinct phrases (concepts), retaining the language of the interviewee. Starting at the beginning of the transcripts, the concepts were entered into Decision Explorer and linked to represent the explanation in graphical form. Concepts were linked according to their relation. Relations could be causal (leads to or affects the other concept), temporal (concepts follow in time) or connotative (concepts are associated). Initial linkages came directly from the interviews, for example, the interviewee's explanation of consequences and outcomes would mean a causal link; or the explanation of an issue through external examples would be a connotative link. The map also reflects where the lines of explanation end and a different one begins, no link exists between the two groups of concepts. Linkages were also put in the cases where the links were not clearly mentioned but apparent to exist due to cross referencing interviews. In this situation there is a danger of misinterpretation on part of the researcher, but careful consideration and review of the data was carried out. In addition, corroboration from the interviewee was sought. A certain level of interpretation was required from the researcher when mapping from the transcripts, as in most cases interviews were not a continual string of arguments. Meaning however, is considered to be retained through the context. Figure 4.4 provides an overall view of a constructed individual map with its numerous concepts (between 100-300) and links.

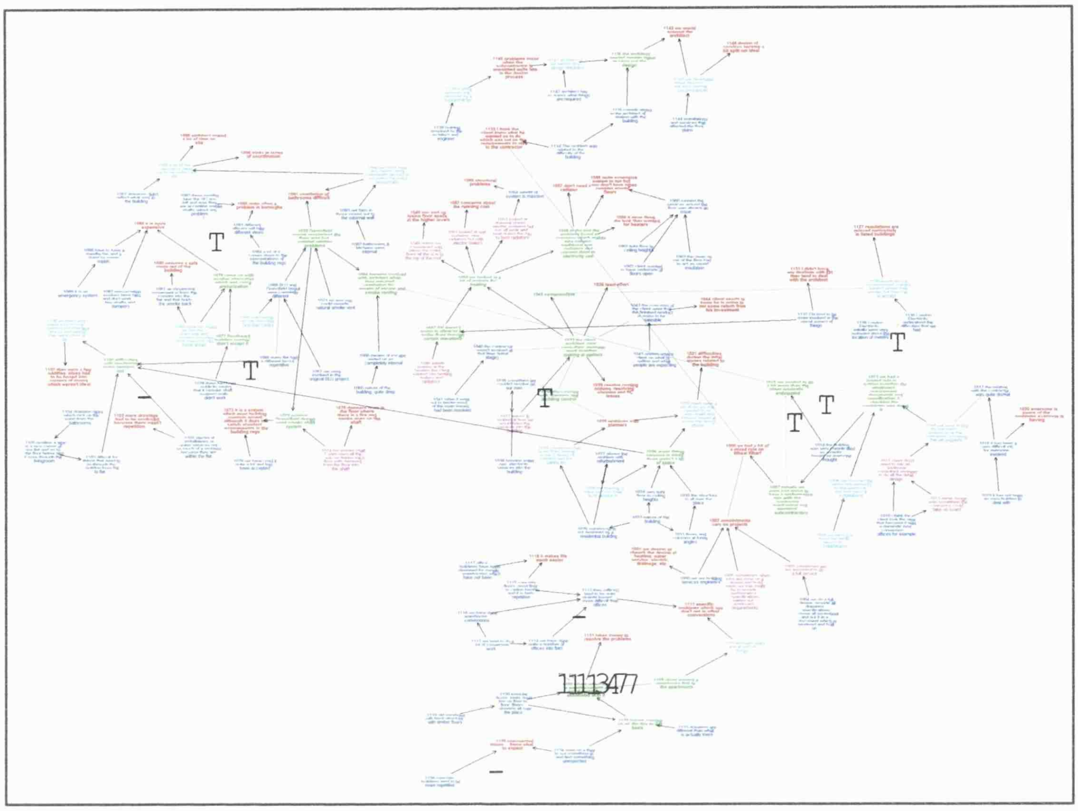

Fig.4.4 Individual map example

4.10 TIDYING UP THE MAP

After the maps are built and before formal analysis can begin it is necessary to revise the constituent elements of the map as well as make sure the information is mapped correctly. This is done using some of Decision Explorer's analysis commands such as: size, listing heads and tails, orphan, loop, central and domain analysis (fig.4.5).

The *size* command indicates the complexity of an individual's sense making by providing the number of concepts in the map. A map with more than 70 concepts is generally considered to be complex. The *size* command also permits the carrying out a link-to-concept ratio (1.15-1.2 expected) to verify if there are too few or too many links. Listing *heads* gives an indication of concepts that represent the end of the interviewee's line of argument. These are usually consequences, outcomes and/or goals. *Tails* are located at the bottom of the map and represent the starting point for a line of argument or explanation. *Orphan* command indicates concepts that are not linked to any other concept. These isolated concepts were looked at and either linked or deleted according to information in transcripts. *Loop* analysis is used to indicate a circular argument. Loops can indicate two things: first the occurrence of a coding accident, in which case it needs to be reviewed. Second, the existence of a dynamic argument; which would lead to further analysis.

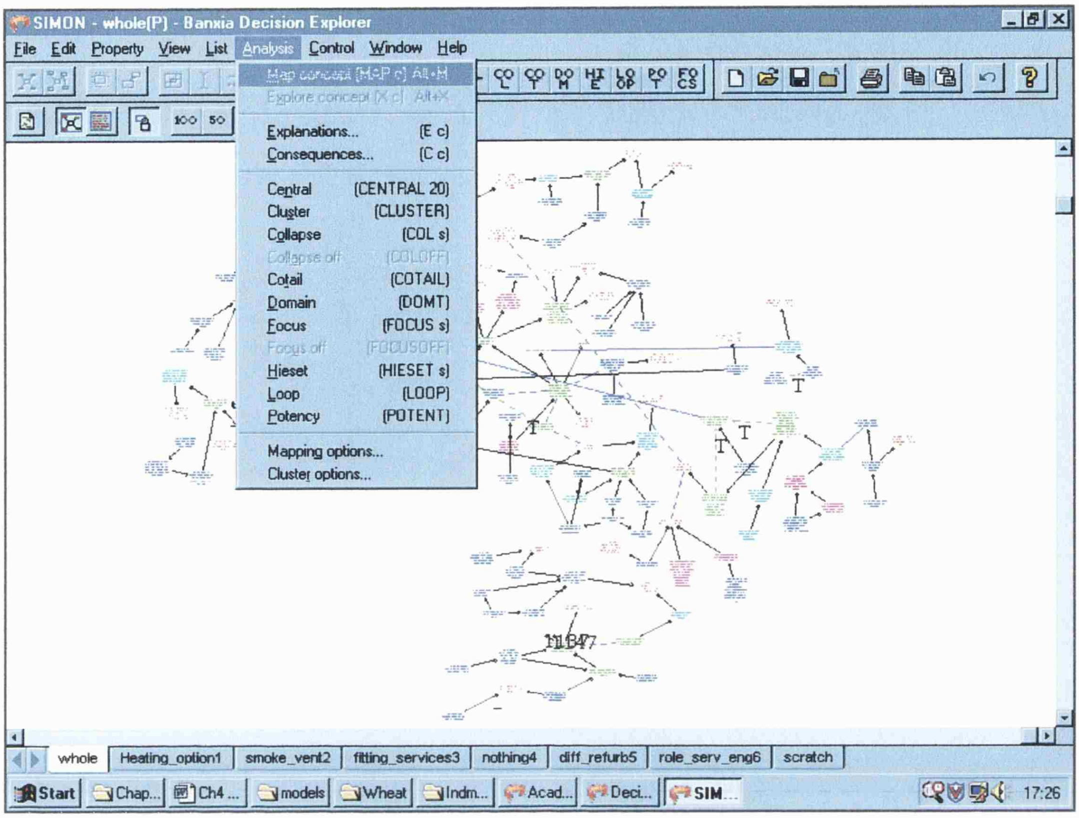

Fig.4.5 Decision Explorer's analysis commands

Finally, *central* and *domain* analysis were carried out. Here the top 20 concepts of each analysis result were compared to see if they made sense being identified as key concepts. Generally the top concepts from each analysis were the same, verifying and confirming the key concepts. When this was not the case it was necessary to go back to the model and explore those identified concepts and reference them back to the interview transcripts.

4.11 ANALYSIS OF COGNITIVE MAPS

Eden et al (1992) mention that there is no general approach to cause map analysis. The interpretation and meaning of the analysis can only be carried out in relation to the purpose of the research and the theoretical basis of the form of representation to be analysed. However, Eden et al (1992) do make some recommendations for analysing complexity and these were taken as a starting point for this analysis.

First, consideration of the number of concepts, heads, and tails were important. For example, as mentioned in the previous section the number of concepts is indicative of the complexity of an individual's way of making sense of complex situations. In the majority of the cases maps had a minimum of 100 concepts, highly connected. Indicating high level of complexity.

A map with a small number of heads for example, indicates an "idealised" way of thinking; while a map with large number of heads indicates a recognition of and concern for meeting multiple and conflicting objectives. The content of the head concepts is significant, as they gave an indication of consequences, outcomes, targets or objectives of an individual.

A simple way of analysing complexity was to run *central* and *domain* analysis. *Domain* analysis calculates the number of in and out arrows from each concept, indicating its immediate domain. Concepts with an immediate domain are most complex and are the most cognitively central, giving an idea of which concepts are key issues (Eden et. al, 1992). However, by attending only to the immediate domain of a concept the analysis completely ignores the wider context of a concept. Therefore, *central* analysis was run in parallel. This analysis calculates how central a concept is in a model, taking into account a wider context, that is, links of concepts within the three closest levels (fig. 4.6).

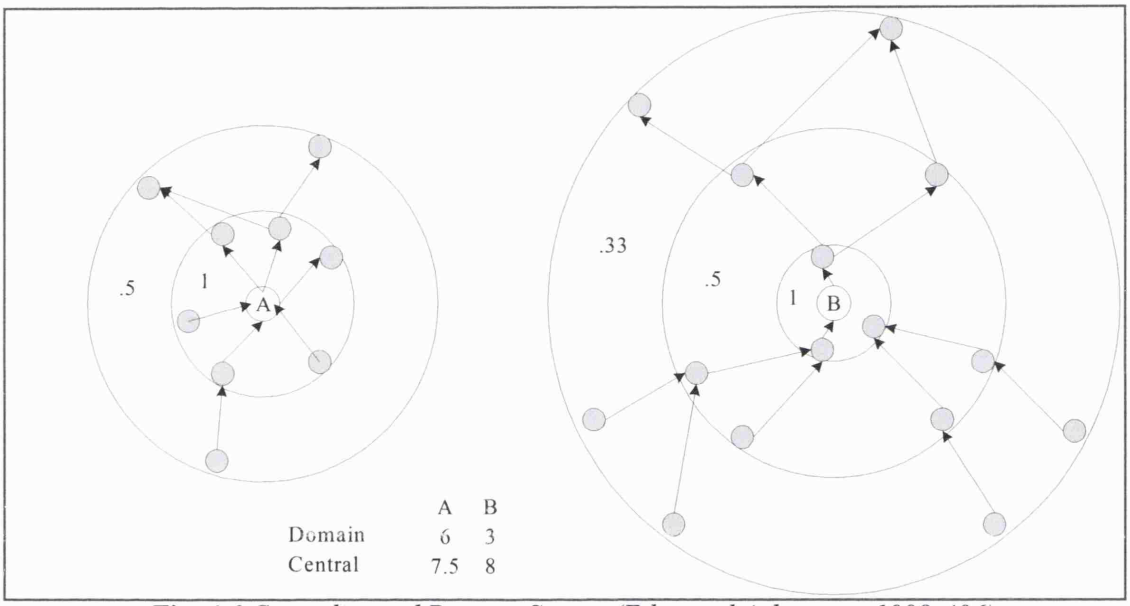

***Fig. 4.6** Centrality and Domain Scores (Eden and Ackerman, 1998:406)*

Cluster analysis allowed the analysis of emergent features of a map, that is, the main themes of a map. This analyses the model on the similarity of links between concepts. This forms a "natural" set of *Clusters*, which do not overlap (fig. 4.7). Cluster analysis splits a large model into related sections, which produces an overview of the model. Several options for clustering were carried out. However, it was found that a target size of 30 concepts and a minimum of 10 concepts, and an *operation mode* of direct-all explanations gave the most meaningful sets. Each cluster was then assigned a title representing the contents or theme of the cluster.

By clustering the model it was possible to identify the structural properties of hierarchies and linkages. Clusters fall between two extremes: first, a map can compromise several clusters of nodes and links that are disconnected from one another, that is, the map may contain no links between nodes. Second, a map can be highly interconnected, that is, like a connected cluster of nodes. This is significant as the degree of fragmentation of clusters and strengths of links between them is a basis for analysing complexity (Eden et al., 1992). *Cluster* analysis suggested whether or not, or to what extent, a form of categorisation simplified the world.

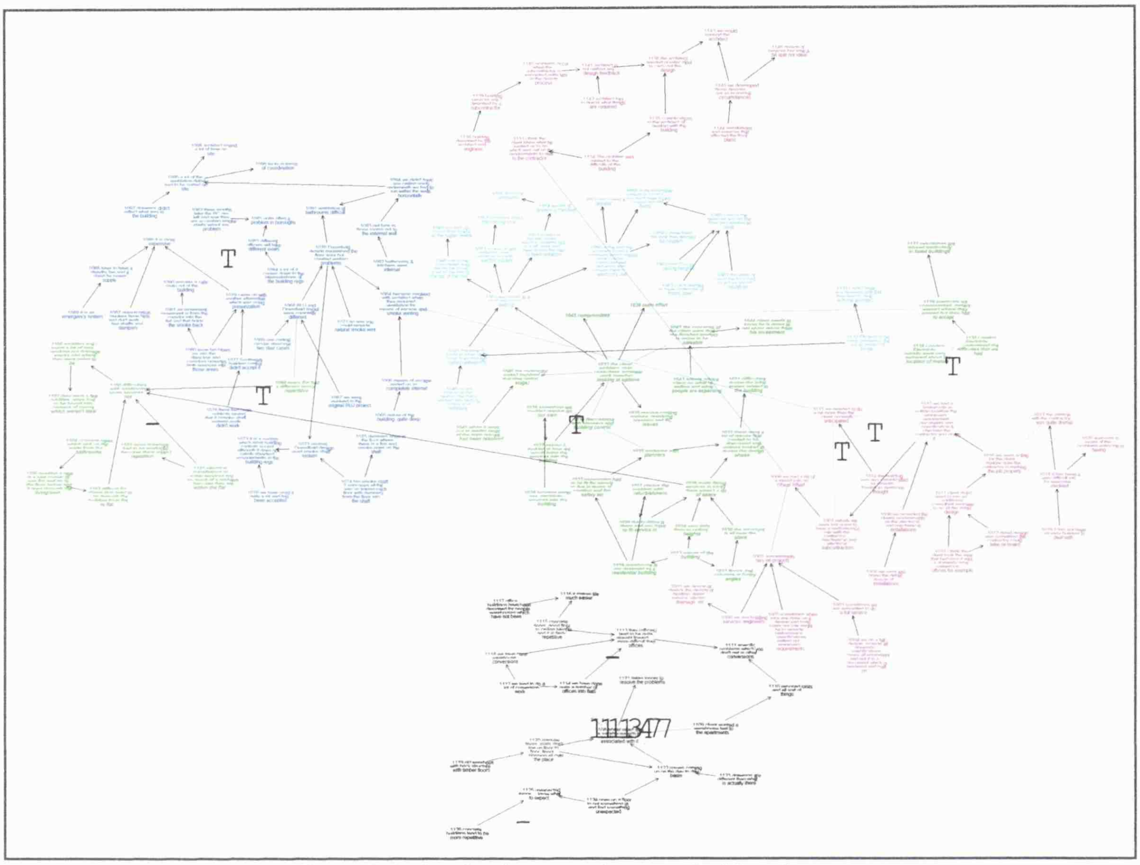

***Fig. 4.7** Individual map colour coded by cluster*

In the cases where *loops* were found, which indicated a true dynamic argument, it was possible to search and identify the nature of the feedback.

All these exercises (*central, domain, cluster* and *loop*) were carried out at two levels. First on the whole map, as the map represents an individual's reflective thinking of the process and his/her role it was important to identify the key issues in the actor's view during the process. Second, on individual clusters, as clusters were themes identified as stages within the process, it was important to identify the key issues in those instances. This allowed understanding of the changing objectives and outcomes through out the process.

By selecting the first five concepts of both central and domain analysis results, the key issues within clusters were identified. This is verified by Edkins (1998) who mentions that "5/30 gave the most important concepts". However, in clusters with fewer concepts, 15 concepts for example, the first three concepts were the most significant. The results from this analysis were then assigned a style (key element) as well as the rest of the concepts within the clusters. Table 4.4 shows the assigned style properties of the concepts.

Key element identified through analysis as most central and influential at a wider context. Note that key elements can be options, alternatives or heads	*Guide price was very low*
Background concept to the cluster	Incredibly run down estate
Head concept is an outcome, consequence or objective in a cluster. Generally located at the end of a line of argument	**We are very proud of the scheme**
Alternative concept is a course of action considered by a decision maker	Move from traditional to design and build
Option concept is an alternative that allows a future decision following the revelation of information	Already talking to planners about live work
Standard concept does not offer any additional valuable information to the cluster. It is usually more detailed concepts	Uncertainty of findings when tearing buildings apart

Table 4.4 *Cognitive map style properties*

4.12 Presentation of individual data

As clusters are represented as isolated groups, it was necessary to indicate the links between them. Therefore, concepts linked to other concepts in clusters were assigned a memo card (facility used to store information) containing the concept number, concept and cluster to which it was linked to. This information was entered as a separate concept and renumbered. A separate link style was created to indicate the links between clusters. This type of presentation can be viewed in appendices 2, 3 and 4.

As individual maps contained between 100 and 400 concepts it was necessary to produce a summary map to present the data. These were produced in Visio software programme. Cluster titles were entered and linked accordingly in a summary map. Linkages were assigned different widths according to the strength of the relationship between clusters.

Links can represent a causal relationship (arrow), an association (dotted lines) and loops. Central themes (key clusters) are circled in grey. Analysis results are described based on these central themes, key elements and loops. Figure 4.8 overleaf shows an example of an individual summary map (Indigo Mews project, GM's summary map).

4.13 Aggregated Summary Project Maps

The actor's perception of key pivotal factors during the conversion process and subsequent analysis highlighted numerous individual issues. In chapter eight it was necessary to bring all that information together in a manageable form which represented a view of the whole project's issues and process. In order to address issues of incommensurability two approaches were considered and explored: first, continue using Decision Explorer to reduce complexity and/or second, create matrices of themes and actors to identify the key themes within a project level.

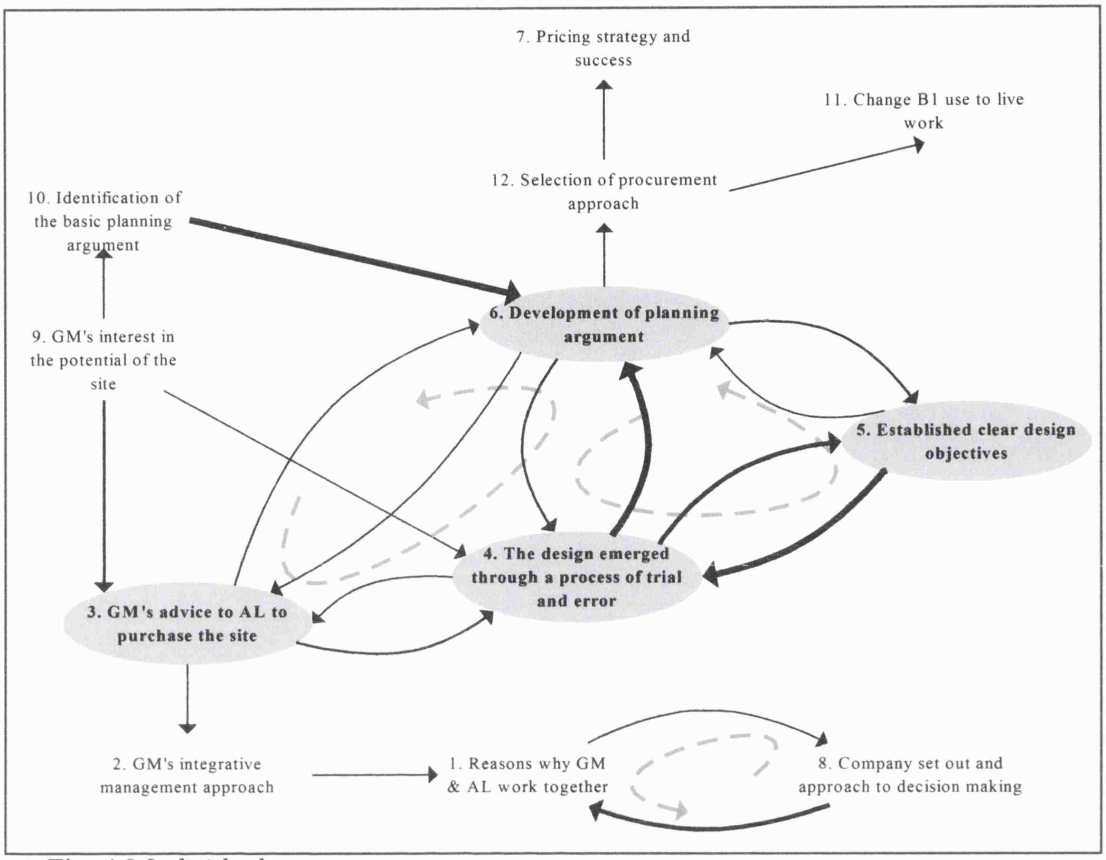

***Fig. 4.8** Individual summary map*

For the first approach three ideas were explored: first, the idea of creating an aggregate map (Bougon, 1992) by merging individual cognitive maps through concepts resembling meaning. This would result in a "super map" of the process but not a cognitive map as it contains all the actor's views, so idiosyncracy would be lost. At this stage this option was seen as a step backwards as the map representation would be too complex. In response the second idea explored was the creation of a congregated map (Bougon, 1992) by linking through a label individual actor's summary maps of key elements. Neither the congregated nor aggregated map allowed for simplification; on the contrary it resulted in more complex representations of the same issues. Therefore, the third option was to create an aggregated map from all individual summary maps as presented in individual case chapters (five, six and seven). The key aspects per project would then be identified through the same analysis process described previously in section 4.10. This option presented a simplified representation of the project without meaning being lost, as themes, concepts and links could be traced back to the original transcripts. This reinforces Decision Explorer's strength as an analysis tool. However the validity of this approach was uncertain, although a similar procedure was carried out by Edkins (1998).

Overwhelmed by the complexity of the process through the elaboration of congregated and aggregated maps, explained above, and the validity issues, it was decided to move away from Decision Explorer and use matrices in order to sift the information further. Matrices are a well known tool in the social science area used to categorise and classify qualitative information (see section 4.7). Miles and Huberman (1994) give a detail explanation of their application. Matrices allow the analysis of interview data at both an individual and project level, and it is a project perspective that was required. Therefore, matrices per projects were created. These contained general identified themes and individual actor's views within those themes. This option allowed for the views of actors within and between projects to be compared and permitted the identification and corroboration of the key themes within and between projects. A disadvantage however was the loss of linkage and visibility of the dynamics involved in the process, which Decision Explorer's graphic facilities offers.

It was decided therefore, to use the best of both approaches; matrices (table 5.1, 6.1 and 7.1) and aggregated maps from individual summary maps for all the projects were created. The identification of the key themes through the matrices was corroborated through the analysis of each project summary map in Decision Explorer. This resulted in a simplified representation of the process dynamics, the identification and corroboration of key issues and their relation through out the projects process. Project summary maps can be viewed in chapter eight. With the combination of these two techniques it was possible to triangulate between the different data sets –summary maps and matrices, and thus ensure consistency in the data.

4.14 Discussion

This chapter considered the methodological aspects to be implemented in this research. A qualitative approach was selected for it provides the opportunity of exploring the current phenomenon of conversion through individual actor's understanding of its project process. A case study strategy was adopted as it permits us to explore the particular situation of decision-choices actors face within its real life context allowing for the analysis of non-linear and multi-causal links. Three case studies were identified and selected through a filtering process. The criteria of which responded to issues presented in chapter two, but mainly to the results of preliminary interviews. Unstructured interviews as a means to data collection allowed for in-depth exploration of individuals attitudes, views and experiences about the conversion project process. The data analysis of such rich and complex information needed to be rigorous. Traditional qualitative analysis methods were looked at these offered techniques of managing information but needed to go further than just telling interesting accounts and experiences. The research question of how do individuals involved in the activity make sense of the influencing issues, and how can we understand an individual's cognitive understanding of a decision-choice process, place the enquiry within the cognitive science area. Which aims to study thought, learning and mental organisation. Therefore, methodologies in the area of Managerial and Organisational Cognition were considered, as the subject is interested in exploring the limits and structure of an individual's mental model used during the process of choice. Mapping methodologies were described and Eden's Cognitive Mapping technique was identified and selected as the most appropriate for this research as it is concerned with drawing out the underlying sense making of individuals. We shall see how these techniques are applied to the research problem and this is explored in the following three case study projects.

Chapter Five

Indigo Loft-side and Newington Place Mews

5.1 Introduction

The project considered is Indigo Loft-side and Newington Place Mews located in the London borough of Hackney. The development consists of the conversion of a light industrial estate into residential and business use. It comprises 6 new build houses, 18 loft apartments, 20 live/work lofts and 340 m^2 of B1 space. This chapter describes this conversion process in three sections: first, with an overview of the project; second, a description of the actor's involved and their role; third, analysis of individual actor's perception, bringing focus to identification of key elements or concepts. Finally, we review the project's process in terms of the key elements identified.

5.2 Site Background

The property is located in the area of Stoke Newington very close to Islington and Canonbury. The site of 34,664 sqft is located on Carysfort Road, 250 meters off Green Lanes at the road junction with Stoke Newington Church Street. It is just south of Clissold park, a substantial open space with recreational facilities. The location of the property offers easy access to the City and West End through a number of bus routes which can be reached within 10 minutes walking distance.

Carysfort road originally developed in late Victorian early Edwardian period and comprises large, mainly three storey terrace houses which limit the south-western side of a large industrial area. During at least the last 60 years, the industrial buildings in this area have been used as warehouses, toy, button, film, clothing, wireless components, piano and food factories among others.

The site on 95 Carysfort Road (marked within the bold contour in Fig.5.1) which was to be developed in 1997, comprised 6 either one or two storey buildings. These have themselves seen a number of uses over the past 60 years. Building A for example, had been used as a garage between 1931 and 1974, followed by a Chinese noodle factory until the mid 1990s. Three storey building's F and B, of which the latter housed 3 factories were both used as printing works; by 1960 building B was used as a mirror factory, and thirteen years later in 1973 it was used as a furniture factory, and by the mid 1990s it was used for cloth manufacturing. Building C, a two storey building was used as a tin box factory from 1959 onwards. Building D also a two storey building had been used as a canteen, a kitchen and an office. And finally building G was used as a carbon store and then as a boiler house.

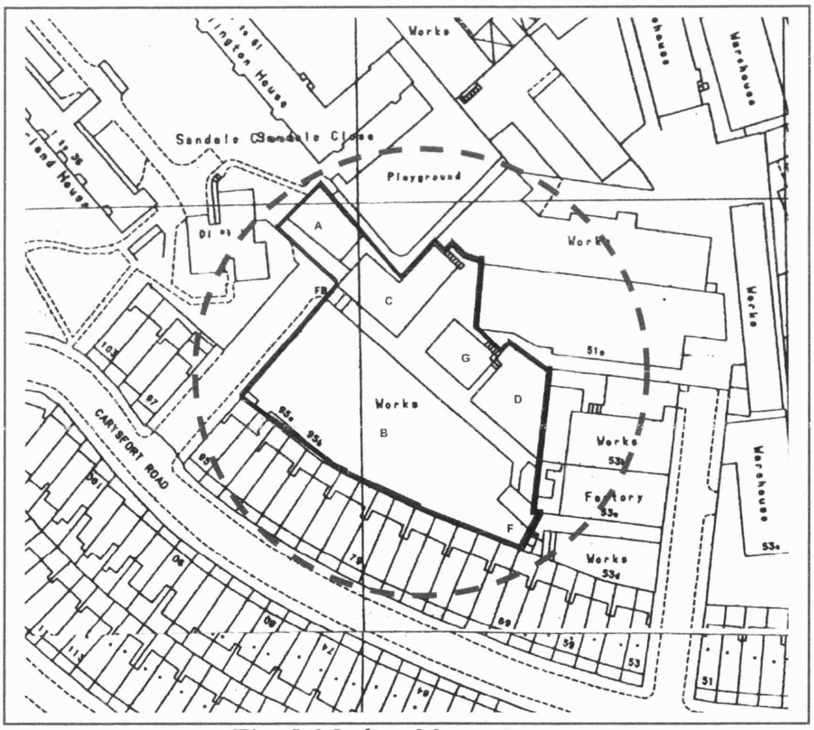

Fig. 5.1 *Indigo Mews site map*

By the early 1990s the decline of industrial activity in the area was very evident, many industrial works relocated to outer areas leaving buildings empty or semi-occupied. In 1993 a valuer's report indicated that the site on Carysfort Road failed to meet industrial requirements. The property was in very poor condition. The buildings had been vacant for 2 or 3 years and were dilapidating, there was a lack of standard services, potential problems with access and with adjoining residential occupants. In addition, the demand for industrial space in this particular area was stagnant or non-existent. Taking all these things into consideration it was recommended un-economically viable for the site to be redeveloped as B1, B2 or B8 use.

Although in 1994 part of the estate was occupied by Turkish clothing manufacturers and a Chinese noodle factory the whole industrial estate on 95 Carysfort Road was put up for auction by the owners. The original owners of the estate were a private family who had acquired the site as an investment in the 1950s. But by the 1990s with the site half full of tenants and the lack of proper management pushed the owners to put the site up for auction.

5.3 Project Overview

The background of the site, the project life cycle, the sceptical views from the Local Authority towards development fro residential use and the market period of its development (end of bust period in the residential market) provide an indication of the contextual complexity encountered during the development process of this project. Indigo Loft-side and Newington Place Mews project began in January 1995 with the purchase of the property, and finished with the completion and sale of Newington place mews and Indigo Loft-side in December 1997 and February 1999 respectively. Appendix 2 presents the time line of the project.

The search or chance encounters with opportunities is the way many developments initiate. In this case the opportunity was a chance encounter by the managing director of Dorrington Properties browsing through an auction catalogue in December 1994. The opportunity was immediately perceived by developer as he knew the area very well.

His interest for the property came from two aspects: First, the development company's previous experience during the 1980s in converting buildings, mainly to office use, resulting in a developed concept for converting and a developed interest in bringing old building back into economic use, improving their value and their surrounding area. Second, the low guide price for the property at £8 per square foot. Before a decision to purchase was made the developer sought the advice of a two man development firm with experience in conversion. On seeing the potential of the site GM (project manager) encouraged the developer to bid at the auction.

No preliminary investigation, site or development appraisal was carried out prior to the site acquisition. From visiting the site it was deduced that there might be some land contamination as it contained an old industrial estate; there was a problem of noise generated from an adjoining wood frame factory, which was thought at that stage could be solved by buying the owner a new generator; while the planning attitude and the market for that area was unknown by these two actors. With this initial knowledge the decision to purchase was made on the basis that for ≤8 a square foot "you couldn't go too far wrong" (AL, 24/08/00). In other words, it was a real speculation. In February 1995 the industrial estate of 51,560 square feet of existing built area was purchased for approximately £330,000.

After the site was acquired the next step was to select the professional team. The selection of the professional team was based mainly on their experience in similar conversion projects, that the type and quality of their work was in accordance to the developer's vision of the scheme, similarity in views on the potential of the site, buildings and scheme. The initial team was composed of the developer, project manager, architect, structure engineer, cost consultant, planning consultant and estate agent.

The brief was elaborated as design discussions progressed, for the site was bought with only a vision that the site could be used for residential and business use. Initial discussions focused on the options, potential uses for the buildings, potential mix of buildings, and technical issues to be dealt with the planning authority. It was decided to retain buildings that were in good structural condition and easily convertible. The concept was to create a mews-like neighbourhood with a central courtyard. The mix of use was decided in terms of the natural split of the buildings and also on the identification that residential use would bring most economic benefits. However, the site being within a Defined Employment Area (DEA) meant that planning consent for a change of use from an employment generating activity to residential use was going to be very difficult to obtain.

The concept was for the estate to be regenerated as both business and residential use. And focus was made on the business side of the development as it could potentially generate 100 new jobs in the area. Hackney Planning Authority was dismissive of the idea of losing employment area in a DEA as it was against policy.

A case was developed further by the team and presented to the Head Planner of Hackney. The case was made based on two arguments: first, the value of the architecture/design and second, the value of regeneration. The regeneration argument put forward was that the buildings were beyond their current economic use and it was required to invest large amounts of money in order to regenerate the estate. Regeneration would improve the lives, outlook and value of properties and the general environment of that area. To do this required a greater value to be generated out of the scheme. This could only be achieved if some residential use was granted. The architecture/design argument was presented with the view to rehabilitate and maintain the form and character of the buildings. There was a limited need for demolition and an intention of creating attractive internal spaces and additional new floor space. Buildings would be selected according to their position and suitability for conversion so that two distinct neighbourhoods could be created. The design of the courtyard would allow for the creation of residential neighbourhood offering identity and security.

With this argument the scheme proposal was supported on the condition that it met all other planning requirements and some conditions: mix use 50% residential and 50% business use, consideration of live/work accommodation, response to proximity of intrusive uses, response to proximity of new residential spaces, daylight considerations and identification of market demand.

The first planning application and design report was submitted two months after the initial approach to Planning Authority had been made. One month later the application for a change of use and development was refused based on three points: first, loss of land destined for employment purposes; second, the development might prejudice the future range of employment uses which could be accommodated in a DEA by introducing residential immediately adjacent to existing employment uses; and third, the setting of a precedent for allowing residential development within DEA's.

The Environment and Health Service Unit of Hackney also recommended planning permission be refused based on three grounds: first, land contamination concerns, as the land had been in industrial use for more than 60 years; second, air pollution concerns from adjoining factories meant that the new residential development would be within 250 meters of chemical pollution source and development might disturb the dispersion of emissions from process; third, noise pollution from neighbouring factory.

The developer sought to solve the problems of pollution, noise and land contamination. Solution for the latter were easily found with the recommendations of an external consultant. Discussions and negotiations initiated with the owner of neighbouring wood frame factory to solve the pollution and noise problems. After the first fallen negotiation in July 1995, discussions progressed until November 1995 when an agreement for payment of £100,000 to vacate the site was signed.

The fallen negotiation in July contributed to the second planning application being refused with more observations such as: provision of space for existing tenants, proof of site being marketed for industrial use, evidence of developers experience in developing similar type of projects, parking provision, confirmation over rights of service road for parking allocation, over development of site (UDP required 250 habitable rooms/hectare), 3 bedroom units unacceptable.

The development of the design progressed for the following four months taking on board the Planning Authorities recommendations. During this period local residents opposed the development on the grounds that it would increase the demand for parking space which was already limited, and the effects of noise and pollution from increased traffic. However, the Civil Engineer Division Traffic and Transport Department of Hackney accepted the parking provision within the development. As the proposed development met with all technicalities permission for change of use and development was granted in December 1995.

As the design progressed into more detail it became apparent that the scheme was becoming uneconomic. This was mainly due to the additional unexpected cost of dealing with noise and pollution from neighbouring factory and the indication that tender prices were going to be higher than expected, as the cost of refurbishment became clearer. In response the developer appointed an external consultant to deal with the application process for an English Partnership grant. The two stage application process was passed through successfully and a grant of £600,000 was offered and accepted on the agreement that full re-payment would be made within 12 months after completion if the project made considerable profit. The grant benefited the development tremendously. It gave the developer and team the confidence to continue with the project, it was an insurance against the project making a loss and it was an interest free loan.

Even though the cost control was run in parallel with the design and planning phase the production of the tender package indicated that the tender return was going to be over budget, as variation in prices had occurred and architect stepped away from the cost planning suggestions. This was due to a difference in views on what the scheme and specifications could be, a compromise between expectations and quality of finishes was difficult to compromise. Nonetheless, the tender process was used to select and negotiate with the contractor alternative specifications. The successful contractor was selected based on their experience in similar projects in terms of market and type of work, low price, and an established working relationship.

As tender prices were still higher than expected the decision to change the form of contract from traditional to design and build was taken. The cost consultants negotiated with the contractor and went through a cost saving exercise to find alternative solutions and prices for particular items. The contractor reduced his price and an element of the developer's contingency was given to the contractor in exchange for technical risk.

From the moment the scheme went into construction phase the involvement of the architect, cost consultant, structure engineer and service engineer reduced to on a advisory level. The construction of the scheme was carried out in two phases. Construction of the first phase (December 1996-December 1997) consisted in developing the residential units (building A,C,D,E,F). Construction of the second phase (April 1998-February 1999) consisted in the development of the business space later changed to live/work units (building B).

During the construction phase the project manager took a more active role making sure the whole construction process was running according to schedule. Which meant supervising the other actors delivered the designs to the right people at the right time, and dealing with day to day issues on site. The interviews suggest that there were no major issues during this phase. The unexpected things were dealt with on site with no major delays.

During construction of the second phase the developer, project manager and estate agent, realised that there was no demand for B1 use in that area. They decided to ask for a change of use from B1 to live/work, which at that time was increasingly being accepted. This caused disruption to the construction process and it became critical to keep people motivated and information flowing. At first instance the planning officer was not supportive. However the second time around a different planning officer took on the project and supported the idea. Planning application for change of use was submitted end of 1997 and granted early 1998. The re-application process caused the process to slow down, as gas central heating had to be re-introduced for residential use. The effect that these delays had were on the marketing period, for the scheme was marketed in the autumn instead of summer. In this case it positively affected the project, for the market in that area had been tested with the sale of Newington Place Mews (phase 1). Therefore, more profits were obtained out of the second phase.

There were no tax issues involved with the development of phase 1, as VAT did not apply for conversion work of non-residential to residential. However, there were two tax issues involved with the live/work development: First, VAT does apply to the conversion of commercial to commercial. This was related to that part of the live/work which was commercial. Second, was the issue related to rates. In theory the rating authority should apply a residential council tax to the live space and a business rate to the work space. However, the local authority gave consent for live/work generally, that is, spaces were unspecified. Therefore, VAT costumes and rating authority regarded the whole development as residential which was of benefit for the development.

The marketing strategy was to get a cash flow advantage with the sale of the units, that is sell as quickly as possible. This would reduce the amount of interest to be paid and would cut the risk involved in the last phase of the project. Due to the lack of similar residential developments in the area the pricing of the units was critical. The price of £125 per square foot advised by the agent was increased to £140 per square foot by the developer and project manager as they were confident of the product and market. The strategy included promotion and advertisement, pre-valuation of the units prior to the sale and a mortgage information centre within the development. Phase 1 sold within 4 weeks. Phase 2 also sold quickly, initial sale prices were higher, for the market had been tested with phase 1 and the ground floor allocated to B1 was sold off.

In the end the scheme was regarded as a success by all the interviewed actors involved in the project. Each of them achieved their goal and regard the process as a learning experience. A profit was made in a scheme which could potentially lose. Relations were forged which gave new work opportunities for the future. All member of the professional team are proud and satisfied with the end product. Residents enjoy living there, and their investment has increased as the property values have doubled since the initial purchase.

5.4 KEY ACTORS IN THE PROJECT

The key actors of the project were initially identified through LRR database and subsequently by the developer. This section gives a description of the role each actor played in the project. Note that the contractor and estate agent were unable to participate in this study.

a) The Developer

Dorrington Properties Plc. is part of a larger private group called the Hanover Acceptances Group whose principal sectors of focus are real estate, food manufacture and agribusiness. Dorrington has been established since 1936 and is a well known property investor and developer with a portfolio of residential and commercial assets. Although initially a residential company their niche operation today is related to the purchase and sale of regulated tenancies, multi-tenant office buildings and investment in emerging markets. Dorrington's area of interest are residential investment and commercial investment activity. AL concentrates on the commercial and development activity. The development operation sits between their commercial and residential investment activities; that is, development is not a main stream activity for them. Unlike the majority of development companies Dorrington does not have the need to do one development after another, this means that development and decision process can be considered more thoroughly than others. The role of AL in this particular project was as the *driver* of the project. His role varied from the usual image we have of developers; as he did not get involved in every single detail of the project as most developers do. Instead he hired another developer MacDonald to take on the role of project manager. AL was aware of what was going on through discussions with the project manager and other team members. And only got heavily involved when the project was at a turning point. His strong features were that he was very thorough and cautious of every single issue that arose. He was respectful and trustful of team members views and opinions.

b) The architect

LK of Koski Solomon Ruthven (KSR) were appointed as architects by AL immediately after LK's positive advise on the feasibility of the site. KSR are a medium size architectural firm with experience in building conversion. LK the principal architect, also had experience in spotting old building with potential for redevelopment. The role of KSR was to develop the concept, design and produce all relevant drawings of the scheme, and initially to take over the construction phase, but this changed when the form of contract changed to design and build.

c) The project manager

GM of MacDonald Egan was appointed project manager by AL after initial advise to purchase the site. MacDonald Egan is a two man firm which deals with project management and property development. They own and manage their own property an have an expertise in creating multi-tenant business centres. GM took on the role of co-developer because he had the experience and expertise of managing that particular type of development; and as a developer himself wanted to run the project as if it was his. This meant that he developed and presented the arguments to the planning authority, motivated the professional team, managed schedule, cost and quality during the construction phase, negotiated tender contract, grant agreement and marketing strategy.

d) Planning consultant

Gerald Eve is a firm of chartered surveyors which provide a variety of property services, such as advising on ownership issues, valuation, acquisition and disposal, rents, business rates, planning and development. HB head of the planning department was appointed planning consultant. The role was to help the team through the planning process: to co-ordinate the planning process, identify the relevant issues and to advise them on how to deal with them.

e) Structure engineer

AC of Alan Conisbee and Associates was appointed structural engineer after the site purchase. The medium size firm specialises in the analysis of building structures and have had extensive experience in working with old buildings. AC's role was to analyse the condition of the building fabric and to work closely with the architect and cost consultant, as their work was driven by the architect's design and budget.

f) Cost consultant

RJ of Jackson Coles was hired as cost consultant. Their responsibilities were to evaluate the cost per square foot of conversion work. Rates per square foot calculation were based on visual inspection of the buildings and on previous knowledge of other similar buildings. They worked closely with the architects so as to achieve the end product within budget. They were also responsible for elaborating the tender package and providing a preliminary list of possible contractors.

g) English Partnership

ASw was the officer in charge of assessing the potential of the project for eligibility of a grant from English Partnerships. English Partnership (currently the Development Agency) is a government agency set up to assist the development of derelict land and buildings; with the aim of creating new jobs and new housing in defined as areas of need. These areas are recognised by the government through the European Regional Development Funding (ERDF). The role of ASw was to assess whether the scheme met the objectives of the agency (how many jobs, how many housing units would be created through the scheme), that the scheme had the support of the local planning authority, that Dorrington had the ability to develop and deliver the scheme within time and cost estimations.

h) Hackney regulatory service

The planning officers involved with this scheme no longer worked in the borough, therefore no interviews could be carried out. The information outlined was obtained from the planning files. The building and development control department of Hackney had the role of approving or rejecting the proposed development in accordance with policy. They ensured that the development met all legal requirements (see section 2.4.5.). The planning approval system was not directly linked to any other approval regime, such as building control, fire control or health and safety.

5.5 ANALYSIS OF INDIVIDUAL COGNITIVE MAPS

This section describes the results from the analysis of individual cognitive maps. The results are presented in the form of a summary map that contain themes (clusters) and links between them in degrees of strength (see section 4.11 for explanation). Links are represented in two forms: arrows indicate a causal relationship and hashed lines represent an association. The description of each map will evolve around the central themes (**bold**) and their key elements or concepts (*italics*), both identified through central and domain analysis in Decision Explorer (see section 4.10 and 4.11 explanation). The key elements within remaining clusters will also be described in relation to the central themes. Where loops (feedback of information) between clusters appear, the nature of their existence is described. It is important to note that these maps are a simplified representation of the individual's views of their involvement and development of the project process. The contents of the actor's clusters are located in appendix 3.

a) AL, Developer

AL's summary map, figure 5.2 overleaf, describes how from his point of view the development process took place, from the initial interest in the site (cluster 1) through to the success of the scheme (cluster 10).

Central themes and key elements

AL's map is essentially organised around the **selection of the team** (cluster 3) and reflects their input and influence through the process. The analysis shows that AL's views focus on: *the selection of the professional team* carried out based on existing previous working relation; on his knowledge of type and quality of their work and on the actors positive view of the potential of the site; but most significant is the *contribution through out the process of AS agent, GM project manager and KSR architects*, as the analysis identified them as key actors in the project. As AL mentions: "GM was involved in every aspect of the project" and the architects "KSR worked through problems that arose, they had patience and perseverance". The appointment of the team members brought forward the ideas to develop a scheme proposal, and for dealing with the approach to planners to get planning consent for change of use (cluster 4 and 5), a key objective in the project's process.

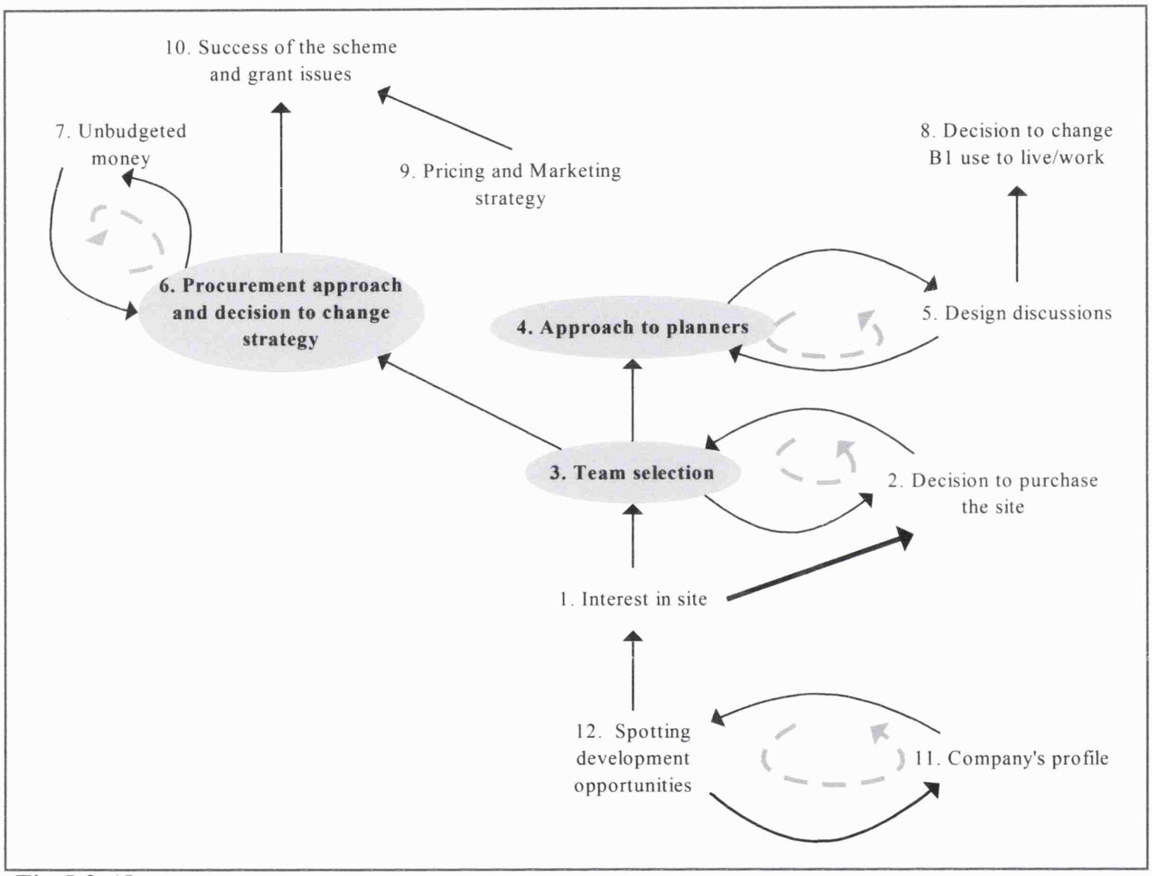

***Fig.5.2** AL summary map*

The ***approach to planners*** (cluster 4) was of key importance once the scheme proposal had been worked out (described in cluster 3). The objective was to *build a relation with the planners* to obtain a change of use. This was carried out through negotiation discussions of a well developed argument and through the understanding that this is a "drawn out tricky process" where a number of iterations have to be carried through.

The **procurement approach** (cluster 6) was influential to the success of the scheme (cluster 10). The *underestimation of building costs* was the trigger to *re-think the procurement approach* and *to change the contractual arrangements*. The underestimation of building costs were related to the underestimation of problems with the existing structures by the surveyor and to the issues related to unbudgeted money (cluster 7). The alternative was to re-arrange the layout of some of the buildings to get more units and therefore more value out of the scheme. The contract strategy changed form traditional to design and build to transfer some of the risk to the contractor, this allowed the contractor to get closer to the buildings and increase confidence in their ability to build what the client wanted. The negative outcomes of this stage were: the delays to the project caused by the negotiation process with selected contractor and the need to deal with unbudgeted money (cluster 7); the need to compromise on the quality of the details in order to reduce costs.

Loops

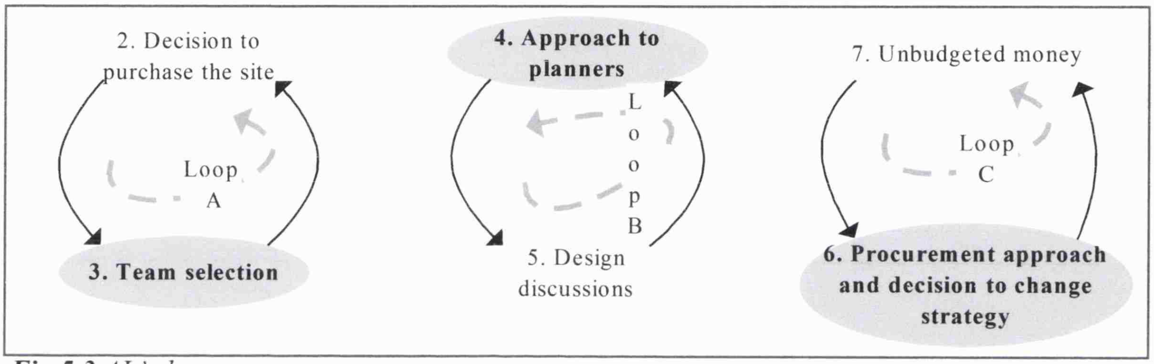

Fig.5.3 *AL's loops*

AL's summary map shows three simple loops formed between two clusters: First, loop A between cluster 2 (site purchase) and 3 (**team selection**) represents GM's (project manager), LK's (architect) positive view of the potential of the site and their influence on AL to purchase the site. While their positive outlook encouraged AL to appoint them to the team. Second, loop B between cluster 4 (**approach to planners**) and 5 (design discussion) represents the numerous iterations the design had to go through before being given planning consent. The main issues for planners were that *the site was within a DEA*, change of use could contribute to loss of employment in the area, and after the socio-economic and sustainable case was presented and accepted by the planning authority the issue shifted to *the need for a mix of accommodation types*. The design addressed these issues by negotiating 50% of space for B1 use and 50% for residential units (flats and houses). This influenced the decision to *develop the scheme in two phases*. Third, loop C between cluster 6 (**procurement approach**) and 7 (unbudgeted money) represents the effect the high tender returns had on an already affected budget, this led AL to search for a grant from English Partnership. The effects on costs arising from dealing with *environmental health concerns* such as, contaminated land, and noise and chemical pollution from neighbouring factory, not only had an effect on the budget but also on the schedule, it was critical for these issues to be resolve to get a change of use consent.

Remaining clusters

AL's interest in the site (cluster 1) came from three elements: first, AL familiarity with the area as he lived 8 years half a mile from site; second, the low guide price for the site; and third, the company's interest in the concept of converting buildings and regeneration. This is a result of the company's previous experience in converting mainly office buildings.

The site purchase (cluster 2) was the first key decision that had to be made. The focus is on *the speculative approach* with *no preliminary investigation carried out,* due to time constraints. From the site observations four risks areas were considered: contaminated land risk, market risk, building cost risk and planning risk. The contaminated land issue was not a big problem as its solution was considered to be straight forward. Market risks were high as the area was un-tested for residential development. The perception of building cost risks were eased by AC (structure engineer) initial assessment. And planning risks were mainly related to the possibility of getting change of use consent. The decision to purchase was made based on the potential of the site for development; the low guide price and "GM's (project manager) encouragement" to purchase the site.

Cluster 8 (live work issues) describes the decision to *apply for a change of use from B1 to live work.* This decision was taken because of the commercial un-viability of B1 use in the area. According to AL, consent was granted "easily", this decision was influenced by the concept of live work being seen as employment generating and by the fact that a different case officer supported the idea. In addition to the application for change of use, the *potential tax issues related to live work* were key elements of concern during this stage, because different tax rates applied to residential and business space. These didn't become a problem as planning consent was unspecified and the scheme was considered to be residential by rating authorities. This part of the process however is not causally linked to the success of the scheme, even though the change of use to live work resulted in higher returns than would have been from selling B1 space.

In the pricing and marketing stage (cluster 9) two key elements influenced whether the objective of "*obtaining returns as quickly as possible*" was achieved. First, the decision of *pricing the units adequately* and second, the approach to marketing and "*maintaining the marketing momentum*". Of interest is the decision by AL of pricing the units higher than the agent suggested. This decision was a result of long discussions with GM (project manager) and AS (agent) about the need for the development to achieve more, as construction cost were higher than expected.

At the bottom of the map, development opportunities (cluster 12) and the profile of the company (cluster 11) describe a necessary background to the project taking place. Of interest is that development is not one of company's mainstream operations, resulting in less pressure to buy sites continually and reduced pressure on having to make quick decisions

Outcome

At the top of the map, the success of the scheme and grant process (cluster 10) is the positive outcome of the overall process, where the project objective of making a profit was achieved. The *success of the scheme* was a result of the *sale of the units within four weeks*, therefore obtaining the returns quickly (objective of the marketing strategy, cluster 9). The financial success allowed to pay grant money back to English Partnership. The project's process as a "learning process" and success encouraged team members, particularly AL (developer), AS (agent) and GM (project manager), to work together in future projects and to look for similar types of schemes to develop. Success for the occupants in terms of investment, as prices in the area have more than doubled since units were initially purchased. The *issue of snagging* was a negative result of the project as it is difficult to manage, cost estimate and time consuming. An issue that is "badly handled in the industry".

b) GM, Project manager

GM's summary map, figure 5.4 overleaf, is essentially organised around three clusters describing: the purchase of site (cluster 3), planning (cluster 6) and design issues (cluster 4 and 5). The map with numerous simple loops and variety strengths of links clearly illustrates the complexity and level of his involvement in the project. Of interest are the two multiple loops formed between clusters 3, 4 and 6 and 4, 5 and 6 (fig. 5.5).

Central themes and key elements

Cluster 3 **GM's advice to AL to purchase** was determined by GM's interest and evaluation of the site (cluster 9). As a central theme it was influential towards the design (cluster 4) and development of the planning argument (cluster 6), as from this point on GM was appointed project manager and assumed the role of co-developer. The advice to purchase was based on GM's ability to see the potential of the site, that is, "*having a vision of what the scheme could be*" and this characteristic ability comes from experience and judging on "your gut instinct". This is explained by the concepts in cluster 9, described in remaining cluster section. The purchase of the site led to a *joint identification and selection of a team consultants* and to discussions with other team members on design and planning issues (clusters 4, 5 and clusters 6, 10 respectively).

The **emergence of the design through a process of trial and error** (cluster 4) came directly from first **establishing a clear objective** (cluster 5) "*come up with a volume of building* *that makes the most profit*" and second by a development of a planning argument (cluster 10) from which all *issues could be discussed with planning authority*. The main issue was to address all the concerns of the planning authority without compromising the value of the scheme. It is a *process of trial and error*, where all issues are addressed through a team approach over a determined period of time. The main design issues were overlooking, lighting, parking, land contamination and looking at building individually to assess its potential, and all these had to meet within the budget.

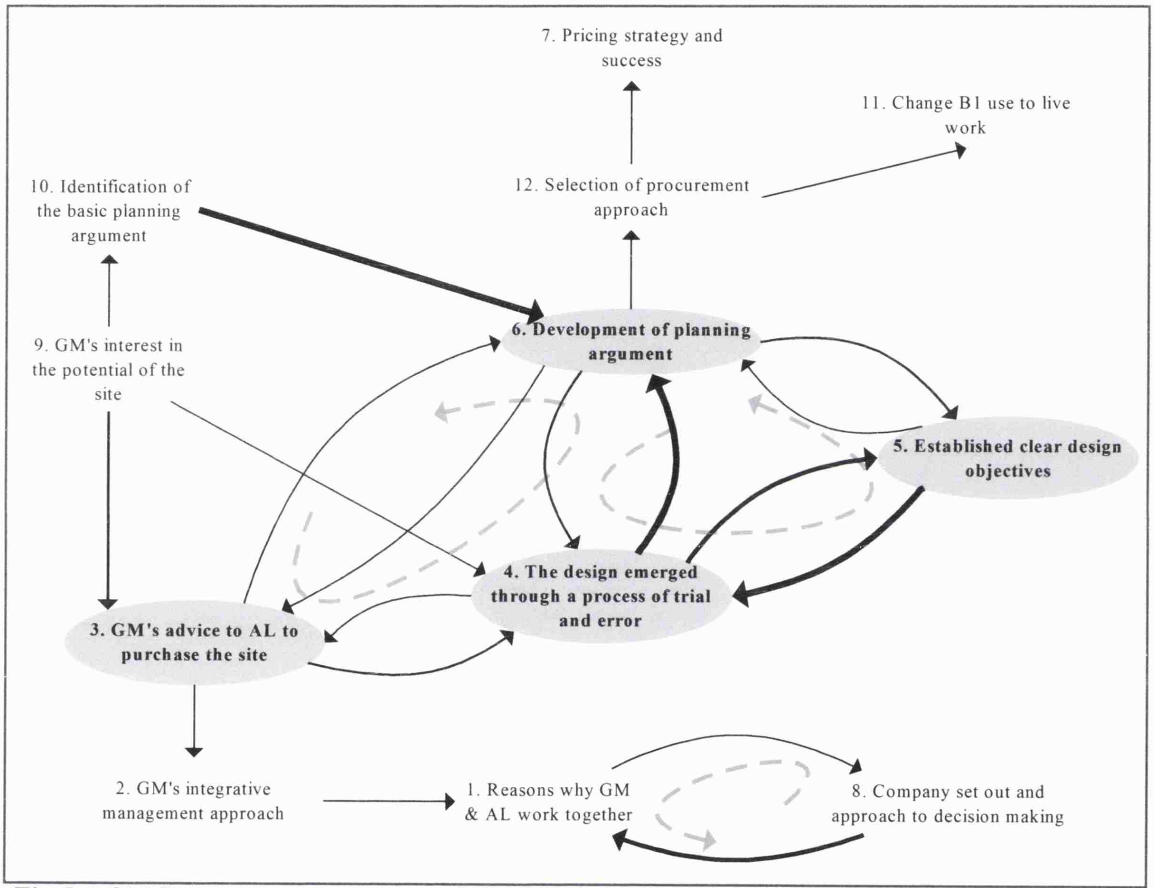

Fig.5.4 *GM Summary map*

The aim of the **development of the planning argument** (cluster 6) was to *persuade planning authority via an architectural, sustainability, economic argument* to support the proposed development. As the main barrier towards obtaining planning consent was the planning authorities concern with the development being against UDP policy, that is the site was within a DEA. Obtaining *support from head planning officer subject to proposal meeting with technical issues* was key element to getting planning consent for change of use.

Loops

The strongest simple loop (fig. 5.5) formed between clusters 4 and 6 represent the iterations the design and planning phase went through until the project obtained consent for change of use. In particular it represents the discussions with team members and planning authority on specific issues to be addressed in the scheme. The link to cluster 5 (loop A) indicates the influence of the design objectives in the emergence of design and in the development of the planning argument. Loop B represents GM's influence and involvement, at the outset of site purchase, in the development of the planning argument and the development of the design.

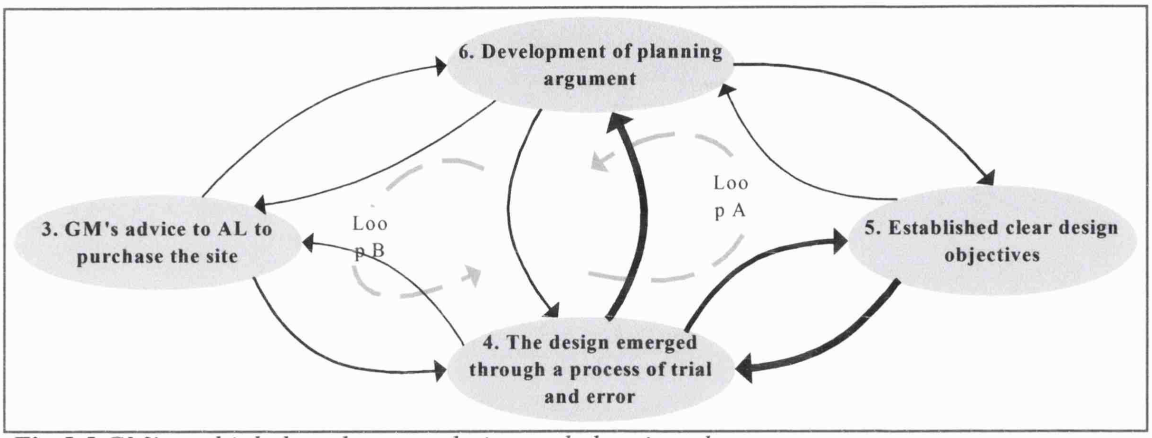

Fig.5.5 *GM's multiple loop between design and planning phase*

Remaining clusters

Cluster 9 notes specifically that the vision for the scheme came from the *nature of the buildings* (building condition, shape, height, window location), which had an influence on the *price of the site*. These characteristics meant that the buildings could be used either for residential or commercial use. And the distribution of them around the site would allow for a mews type development. Both the building characteristics and price of the site would logically influence how much money could be spent and what could be created.

The identification and development of the basic planning argument (cluster 10) was influenced by the state and condition of the site, by the knowledge of the un-viability of the existing use and the understanding of how to respond to the concerns of the planning authority. As a response *refurbishment to business and residential use would allow for the regeneration of the space. Residential use would generate a profit to create business space*. With this basic idea the economic, sustainability and architectural aspects were addressed (cluster 6).

The selection of the procurement approach (cluster 12) and the change to live work (cluster 11) were described as quite straight forward. The main issue during the tender was *finding the right builder* and the *change in contract from traditional to design and build* to bring cost down (cluster 12). GM described the change from B1 to live work as "relatively easy". The decision was taken, as B1 use was not financially viable. During the initial approach the *planning officer in charge refused the proposal of live/work*. However, on the second approach a *different planning officer supported the idea and granted consent*. According to GM there was a change in politics in the borough and the new planning officer had more vision. This is an indication of how individual's perception can influence the process.

Outcome

The pricing of units were discussed thoroughly (cluster 7), GM and AL had a feeling the *units could be sold for more than what the agent was suggesting*. This was based on their belief in the product and a stronger market. That decision to price the units higher than the agent had initially suggested was correct, as the units sold quickly and the scheme made a profit.

This led to the *success of the scheme*. GM considers *success to be money and reputation*. Money not only for the developer and team, but also for the purchasers. Reputation, as relationships are forged for the future. As a result of this particular project experience, GM works with AL in other projects. Their decision to work together is described in cluster 1 and 8. GM considers decision making and the way the company is set out very important during the decision making process as well as the individuals behaviour. GM also mentions that success does not end with the sale of the finished product, but that one has to keep doing minor additional work. Same point as AL made about having to deal with the "snagging" issues.

c) LK, Architect

LK's summary map, figure 5.6 overleaf, reflects his heavy involvement in the project during the design and planning phase. The map is organised around three central themes: the development of the concept (cluster 4), designing within a budget (cluster 6) and the development of a plan (cluster 2).

Central themes and key elements

The **development of a plan** (cluster 2) was strongly influenced by the discussions with planning authority in regard to main planning issues (explained in cluster 3) that needed to be addressed. At this point the consideration was 50% of space for residential and 50% for B1 use. This led to the *measure of buildings,* in terms of *ascribing uses, deciding which ones could be retained and which ones could be demolished.* The parameters for measurement were the potential of convertibility of each building, related to the condition of the structure; amount of viable development return created; how buildings "worked together as a unit".

The **development of a concept** (cluster 4) came from the initial considerations described above. The measurement of buildings resulted in the decision that the *design would be a combination of existing and new buildings.* The *concept developed* also from a clear vision of the niche in the market into which the development would respond to -affordable loft type living); small, high density compact product; the size of units had to respond to the developer's aim for return of capital; by the creation of a neighbourhood as an architectural concept; creation of a courtyard and need for outdoor space integrated with car parking; and by considering the budget (link to cluster 6).

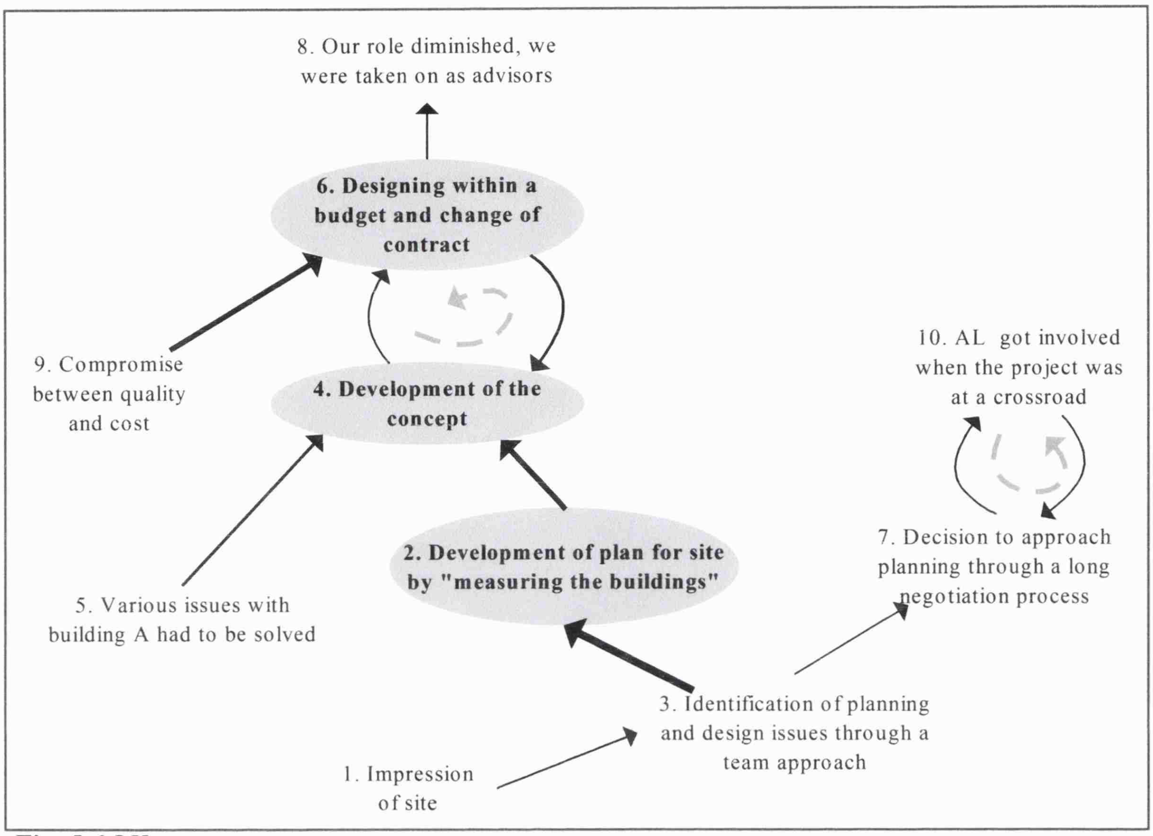

Fig. 5.6 *LK summary map*

Constraints on the budget (in cluster 6, **designing within a budget**) came from the uncertainty and risk of how the market would perceive such a development and sale price estimation of £150 per square foot meant that houses had to be built for £85 a square foot. From this standpoint there was little room to move in, "*we had to move into where things were visible*"-windows, balconies, finishes. This resulted in the architectural concept being "watered down" (described in cluster 9). The uncertainty and risk associated with working with existing buildings led to tender returns coming back too expensive, this triggered the decision to *change the form of contract from a traditional to design and build.* This resulted in the construction risks moved away from the development design team to the contractor.

Loops

The most significant loop (A) is between the development of the concept (cluster 4) and designing within a budget (cluster 6), in figure 5.7 overleaf. The objective of building for £85 per square foot constrained the development of the concept and increased the number of units which had to be created in order to get viable returns. As a result the "concept was cost driven", and compromises had to be made with the quality of finishes. This is a clear example where the design responds to the clients objectives, planning issues and architectural concept. Loop B represents the developer's involvement in the planning phase only at key stages and the decision to approach it through negotiations.

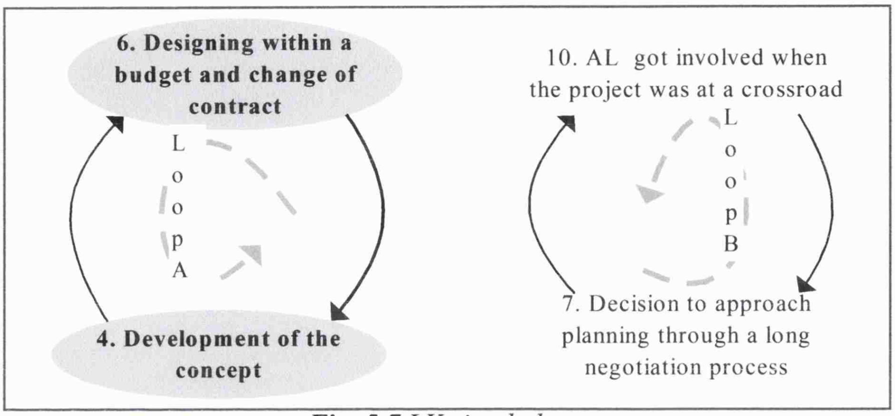

Fig. 5.7 LK simple loops

Remaining clusters

The map summary indicates that the planning issues (cluster 3) and the *team's initial discussions with planners* influenced the development of a design plan for the site (cluster 2). The main issues discussed with planners were related to: the amount of business space required, which would result in the amount of residential space allowed; issues related with parking provision in particular parking for residential space; and issues relating to noise and air pollution from neighbouring factory.

The link between cluster 3 and 7 indicates LK's view of the approach planners and developers can take. According to LK, AL was aware of the risks of deciding to go through the long negotiating process (9 months in this instance), as it was more likely that the results would be better for both architect and developer. The aim was to *convince planners* of the benefits of the proposed scheme.

Cluster 5 describes the issues related with the decisions for building A. There was *pressure from the agent* to design a block of flats where building A stood. While planners wanted three houses (concept 917) the argument was made based on the lack of parking space for the flats. As a result three houses were designed but appeared to look as a block of flats. Clear compromise between planners requirements and agents vision for the development.

Cluster 9 describes that the change of contract was influenced by the cost consultant's decision to produce bills of quantities which LK was not comfortable with. As LK describes "it is not possible to do that level of detail in existing buildings". The aim of the cost savings exercise was to *create the most saving with the least damage to the buildings*, from this came the decision to cut down on the quality of finishes as the building envelopes cost were already established and could not be reduced.

Outcome

At the top of the map cluster 8 describes the diminishing role of the architect after the change of contract. LK took on an advisory role, and GM (project manager) had a much stronger influence over the design and build process. LK regards the scheme a success as it brought a new form of development into the market.

d) RJ, Cost consultant

RJ's map illustrates his involvement in a specifics task during the project. It shows the relative ease in transition between the design, budget and tender phases. Decisions were reached with minimum disruption. The key aspects were: the limited budget and its effects on the process, which led to the decision of changing the form of contract to design and build. This of course was not straight forward, as negotiations with the contractor had to take place and an additional savings exercise had to be carried out. RJ's map reflects his view that the issues that were coming up were just part of the process.

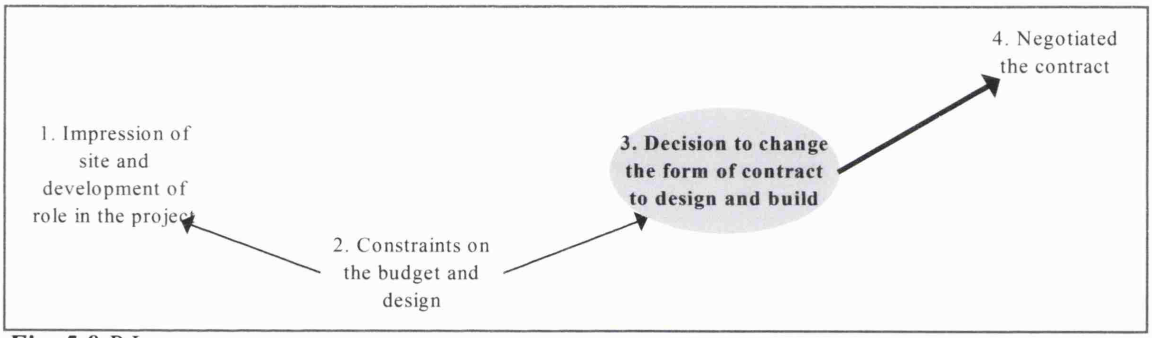

Fig. 5.8 *RJ summary map*

Central themes and key elements

The **decision to change the form of contract** (cluster 3) was of key importance, as it allowed the project to continue to develop within the project's objective parameters. The decision was taken based on two aspects: *failure of the cost planning exercise*, due to the over specifications from the architect's team; *tender coming back too high.* The tender package was put together with the knowledge that it would come back too high, therefore the process was only used to select the contractor with whom to negotiate. RJ recommended the change of contract to design and build as a method of transferring risk to the contractor, reducing costs, and establishing a simpler contractual relationship between the client and contractor.

Remaining clusters

Cluster 1 describes RJ'S role in the project; which was to *evaluate the conversion costs*. In order to meet this objective it was necessary to consider two things: *the state of the buildings and the end product the team envisaged*. From previous experience in conversion work, RJ determined the site was right for conversion and that a substantial amount of money was needed to do that work. As in this case the buildings lied three quarters of the way up the scale to major refurbishment work. The estimation of cost came primarily again from experience, that is, RJ placed the project in the context of other projects they had previously participated in, carried out visual inspection and used a rate per square foot to calculate cost.

The constraints on the budget and design let to establishment of the end product through discussions with the team members (cluster 2). According to RJ, three actors were involved in this process: the agent, developer and architect. The agent would advise the developer on the end product and the developer would then inform the team. As the selling market was unknown at that time, the agent and developer would take on a conservative role, this had an *impact on the amount of money available to spend*, therefore making the project very cost limited. On the other side was the architect who had "very high aspirations for the end product". As a result of the limited budget, *solutions were sought to meet it.* A cost planning exercise was run in parallel with the design stage. The alternatives for savings were located in the extent of the quality of finishes and different materials for new elements (cluster 2). In addition, AL (developer) looked for the availability of grant money, for which RJ had to submit details of cost to the English Partnership[1]. The continual battle between quality and expectations came from the differences in views between the cost consultant and the architect. As a result, the cost saving exercise was unsuccessful.

While tender was out, RJ's solution was to elaborate a list of items that could be re-priced. The tender's came back over budget as expected, but the process was used to select a suitable contractor with which prices could be negotiated. The successful contractor was selected based on the lowest bid and on an existing working relation with RJ. RJ's views on why the tender came back so high was to do with the architects change to the cost planning exercise, the differences in views of types of finishes between the cost consultant and architect; the difference in perception of the risks between contractor and cost consultant; and an estimating error on the cost consultant's part. The latter resulting from a lack of recognition for increase in cost.

Outcome

At the end of the argument (cluster 4) RJ and Redcon went into negotiations and a savings exercise on areas that could be addressed. The risk areas the contractor was concerned about were related with the structure of some buildings, possible additional work required, and fire precaution specifications, which were not specified in the design documents. Negotiations concluded by the developer giving an element of their contingency in exchange for the technical

[1] note that AL's views indicate that the grant was sought as a result of the tender returns, however it seems that grant was sought irrespectively of tender returns, as AL already knew that cost were going up.

risk. From that moment on RJ's role was reduced and held only as advisers. RJ considers their objective was achieved, as the project was carried out within a few thousand pounds of where they initially intended.

e) AC, Structure engineer

As would be expected AC's summary map evolves around the structural issues.

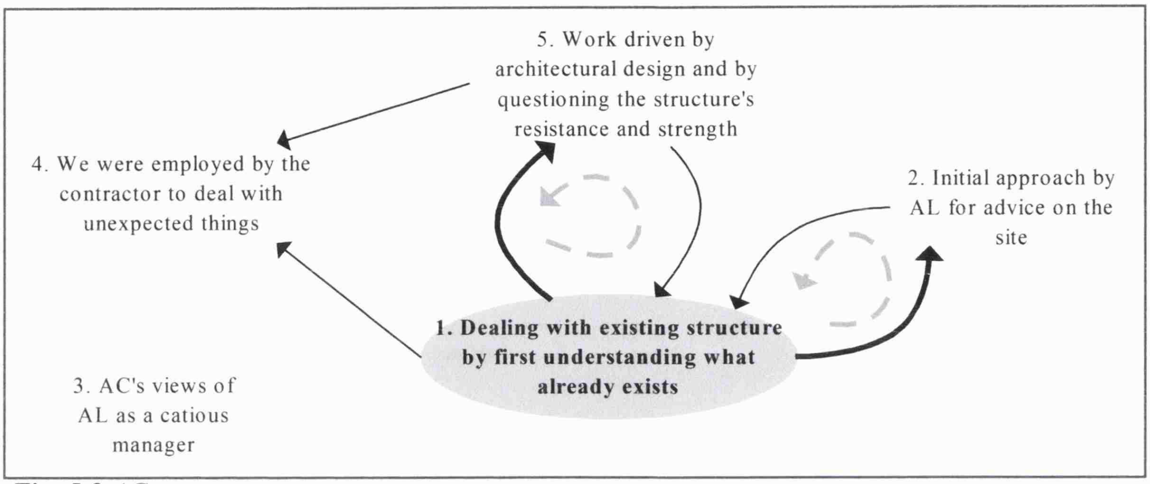

Fig. 5.9 *AC summary map*

Central themes and key element

Dealing with the existing structures (cluster 1) meant first to *understand the building before changing them*, this was done by carrying out research on the structure and questioning which buildings could be adapted to other uses. In this case, the developer's time frame was longer than the engineers needed to do their research. Plans of the existing structure were drawn; and parts of the buildings were opened up as much as possible. This exercise was an advantage for the project, as the increase in knowledge on the structure led to better decisions being taken and minor things being dealt with on site. In addition, a contingency sum was built into the budget to take into account the *unexpected things which might come up during work on site*. The adjustments to the budget, between 5-10%, were done by the cost consultant on advice of AC's estimates of percentage of work needed to be carried out.

Loops

Two sets of simple loops are formed between cluster 5 and 1; and cluster 2 and 1 (fig. 5.10). The causal relationship can be easily explained. The understanding of buildings (concept 1529, cluster1) comes from the *firm's wide range of experience in building conversion.* This gave AL (developer) the encouragement to approach AC for his opinion of the site's potential. The feedback from AC was that the building structures seemed to be in a reasonably good condition to convert, with only superficial problems such as damp penetration, falling tiles and so on.

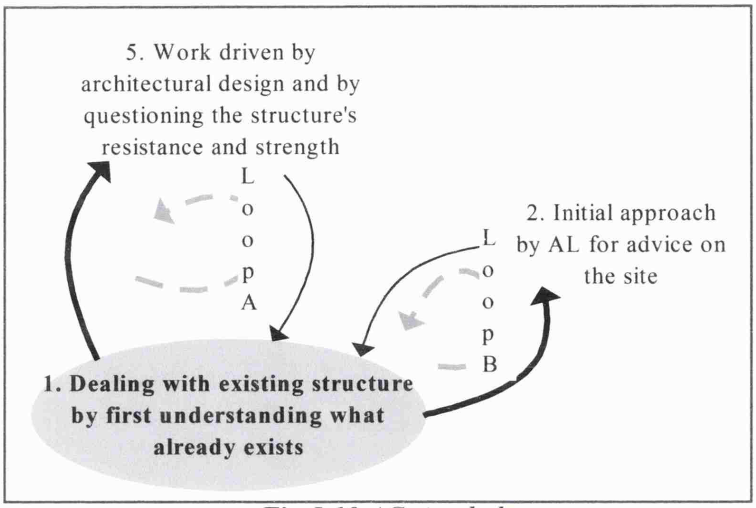

Fig.5.10 *AC simple loops*

Dealing with existing structure meant that some issues needed to be addressed, these were mainly *driven by the architectural design*, as the addition of architectural elements –staircases, extra floors, partitioning lead to questioning whether existing building structure was strong enough to take them. In most cases AC complied with the architects design, with only a few instances where the architect's design had to be compromised.

Remaining clusters

After the project went to tender AC was hired by the contractor and *worked closely with them on site* (cluster 4). During the construction phase no major changes were carried out as all structural work had been fixed early on in the design.

AC's views regarding the management of the project is unlinked to any of the other clusters. This may indicate a non influential role on part of the management, but AC regards the project well managed and refers to AL (the developer) as the cautious project manager with clear established goals.

f) HB, Planning consultant

The summary map (fig. 5.11) illustrates HB's role central to the identification of planning issues as would be expected. HB's role in the project was to coordinate the planning phase and advise during the negotiation phase with the planning authority (explained in cluster 4).

Central themes and key elements

The **principal planning issues** (cluster 1) were identified by a site inspection (described in cluster 4). The poor condition of the estate (concept 1306, cluster 4) and the minimum B1 use led HB to determine that *the site was unsustainable as it stood.*

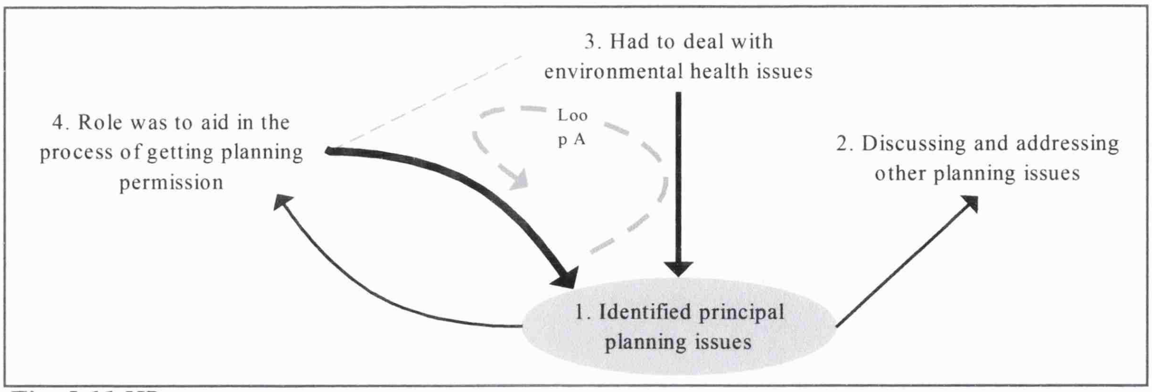

Fig. 5.11 HB summary map

The first issue was to negotiate with the council an alternative use. Initially the *council's opening stance was to protect the existing use as a matter of policy*, for buildings were part of a Defined Employment Area (DEA). The alternative was to *negotiate a balance between residential and employment use.* The main points of the negotiation package presented to the council were: 1) recycling the buildings would generate development value, 2) existing business use would not generate the value required, 3) residential use would generate development value, 4) balance between residential and business was required, 5) development would not prejudice the remainder of DEA. On that basis a planning application was put forward and other planning issues were discussed (link to cluster 2).

Loops

Loop A (fig.5.11) formed between three clusters (1, 3 and 4) is indicative of HB's role as coordinator of the planning phase and an influential element in the identification of environmental issues (cluster 3), all mainly related with the site located within a DEA, and general planning issues (cluster 1). This then led to approach the local planning authority to consider their stance on the proposed development (concept 1314, cluster 1) and to assess if the existing use could continue (concept 1313, cluster 1).

Cluster 3 describes the environmental issues which had to be addressed. Because the site had been in industrial use and was *still within a DEA*, environmental issues had to be dealt with. Two key issues needed to be resolved to get change of use consent: ground contamination and the impact of neighbouring industrial emissions on residential space. In these cases remedial strategies were sought and applied. HB notes that council had their own enforcement powers if emissions were causing nuisance to surrounding existing residential units, but did not enforce them. Rather, this issue had to be resolved by the developer through a negotiation with the factory owner.

Remaining clusters

Other issues discussed (cluster 2) were related with day lighting, overlooking distances, car parking provision, access to site, ownership of access road and live work conditions. Once more each issue had to be addressed and a suitable solution sought and applied.

After months of negotiation with the planning authority, consent for development was granted. HB's objective was achieved and the team only had to comply with the planning conditions. HB was not directly involved with the application for change from B1 to live work.

g) AS, English Partnership

AS's summary map illustrates the two stage application process the development team went through to obtain a grant from English Partnership (EP) (currently London Development Agency).

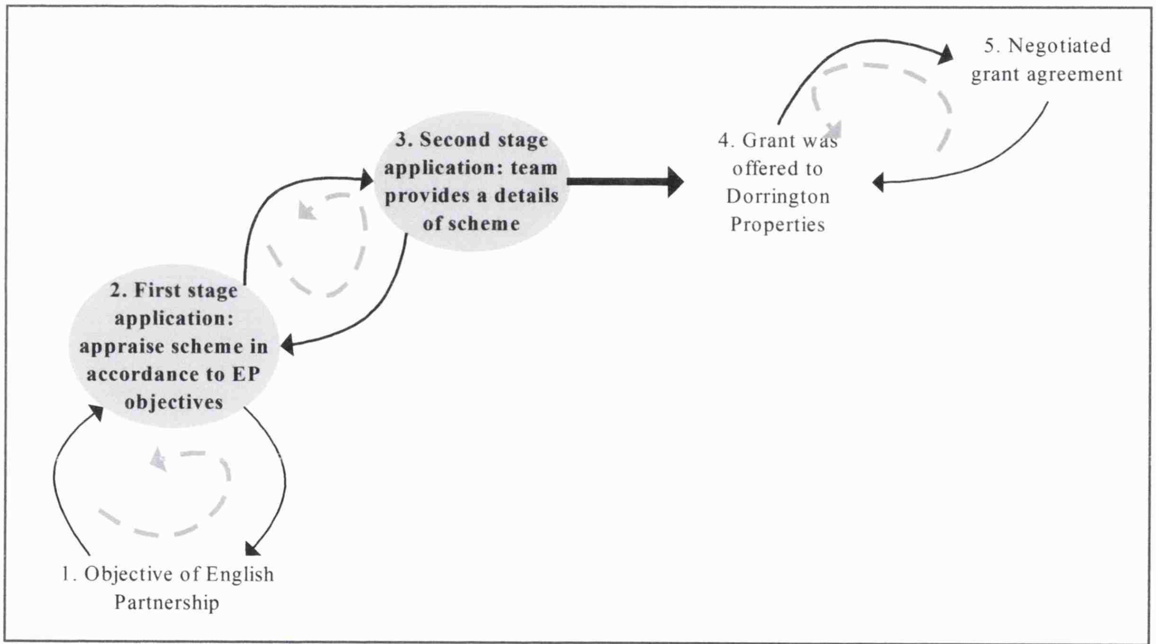

***Fig.5.12** AS summary map*

Central themes and key elements

The **first stage of EP application process** (cluster 2), is a response of the proposed scheme meeting with EP objectives, explained below. In this phase the *principles of the scheme are looked at,* this was related to *questioning whether the amount of funding for the project represented value for money to the public sector,* and to the *developer's ability to deliver the scheme.* During the first stage of application EP looked at the principals of the scheme: 1) site was within a ERDF area, 2) scheme would redevelop derelict land and buildings, 3) development had additional development costs making scheme unviable, 4) scheme had potential to create new jobs and housing units in a deprived area, 5) funding provided would represent value for money to the public sector. Value for money was crudely calculated based on DTI statistics (concept 1630, cluster 2), looked at how much business floor space would be created, therefore how much job opportunities were created. Although it was acknowledged this was not an ideal approach. Once these requirements were fulfilled the project went into the second stage (cluster 3). An additional advantage to the project was the position of EP as a new organisation in London making "the application process … completely open".

The **second stage of the application** process (cluster 3) required to *provide a detail application* which included a detailed cost plan from the cost consultant, information on funding situation from developer and company demonstrating his track record in development and indication of planning consent had been granted. The satisfaction of all requirements led EP to offer a grant to Dorrington Properties (described in cluster 4).

Loops

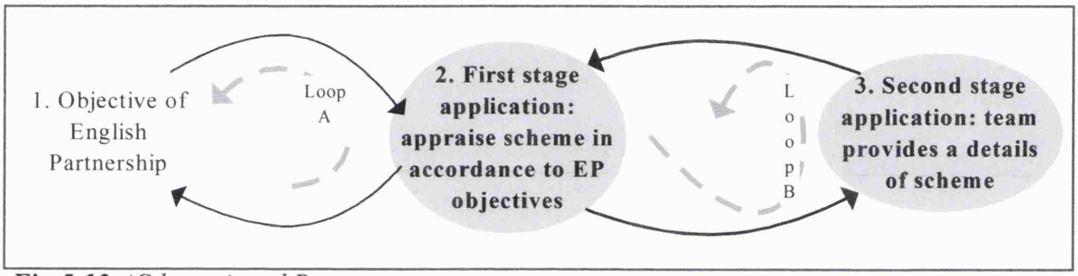

Fig.5.13 *AS loop A and B*

The loop A formed between cluster 1 and 2 indicates that the first phase of application was dependant on the scheme meeting with EP objectives. The loop B formed between cluster 2 and 3 indicates the decision to take the project to the second stage of application and the reassessment during the second stage of the principals of the project.

The loop C (fig.5.14) formed between cluster 4 and 5 indicates the negotiations carried out after the grant was offered. EP has a standardised development agreement, however some details were discussed related with the time scale of construction and the amount of money required to be paid back if the scheme made more than the estimated value. The grant funding was paid back once the scheme was completed and sold.

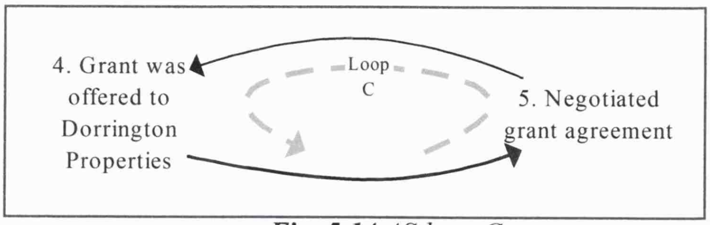

Fig. 5.14 *AS loop C*

Remaining clusters

Cluster 1 describes the main objective of EP, which was to provide funding to projects that were within a European Regional Development Funding (ERDF) area and which had to deal with *abnormal development costs* (cluster 1). A proposal for the project was put forward by a consultant on behalf of AL (developer).

5.6 DISCUSSION OF INDIGO MEWS ANALYSIS

This chapter has attempted to map individual actor's perceptions of a conversion project's process development to identify the pivotal factors and issues that affect actor's decisions. Through the analysis we identified each actor's level of involvement and participation in the project; the central areas of concern for each actor; key issues for each actor during specific activities; and degree or strength of influence between key themes. Although the findings do not yet seem to provide a clear answer to the research question, they are nonetheless useful pieces of the puzzle which is put together in chapter eight. For now we will review the results of individual analysis, table 5.1 at the end of this section present a summary of key elements per actor and key theme. It must be noted that during this discussion an awareness of the growing residential market, openness to live/work spaces and gentrification was beginning to be experienced in the area, and this also played a role on how the process developed.

Indigo Loft-side and Newington Place Mews project process was considered a success by all the actors involved in the project's process, even though it suffered delays, ran over budget and had to reduce the quality of details and finishes. Why was it considered a success? The answer lies in understanding how the project developed by looking at the following aspects:

- Initial interest and site purchase;
- Team selection and building process;
- Planning, design and cost saving process;
- Tender and procurement approach;
- Marketing;
- Operation;
- Success;
- Decision making.

The identification of the site through a chance encounter is not unusual in property development, but what is unusual is the initial interest in the site by the developer. The initial interest came from first hand knowledge of the potential of the surrounding area. Momentum then built up from the low guide price for the site, and his previous experience in conversion work. Chapter two considers that the most important stage of a development process is the evaluation of the site, as it tends to guide the decision making. This first decision was made speculatively primarily due to the lack of time to carry out a preliminary investigation. However, throughout the process, the developer is characterised as being risk averse, thoughtful and cautious. During this initial stage the perception of the gains outweighed the losses. Furthermore, the option of selling the site was considered if additional concerns came up during a formal site evaluation. An additional factor which influenced the site purchase was positive feedback about the potential of the site from the project manager and architect. This also came from their previous experience in similar types of projects. That is, they were able to assess the building's characteristics individually and as a unit; to estimate, based on guide price, the number of units that could be created and the maximum sale price of units and therefore the amount of profit; and they were able to identify the risks associated with the current use (land, noise and air contamination) and approach them as things that needed to be addressed in detail in the future and not as barriers to the purchase.

The same vision or belief about the potential of the site helped on the development process. It was a good starting point from which future group problem solving would take place, and this contributed to a sense of integration, trust and cohesion in the team. This element can be appreciated in the majority of actors' knowledge of issues through the site purchase, planning and design process for example. This is an important element as explained in chapter three, for it can have an influence on the degree of project success. This point is reaffirmed by GM's (project manager) views on his approach to managing the project and the success of it (cluster 2).

The significance of the team selection process is most apparent in AL's (developer) summary map and indirectly in other team members' summary maps in the form of lines of relationship during particular activities. The selection of actors, their defined roles and relationships and established lines of communication contributed to the positive outcome of the development process. Each actor and their roles evolved over the development of the project in accordance with the project's objective and with the interaction with other actors. Overall the analysis highlighted the developer, project manager, agent and architect as key actors in the project. This is due to their high level of involvement and input throughout the project's process, but most of all during key stages: the planning and design process, procurement approach and site evaluation.

GM's role as co-developer, even though he did not have a percentage of the profits, was most beneficial to the project, his management approach (high involvement in every aspect, maintaining clear lines of communication, informing team members of developments, establishing clear objectives and working for the project) stems from being a developer himself.

The architect's role of developing the concept and designing the scheme influenced and was influenced of course by other actors (structural engineer, agent, cost consultant, planning officer, service engineer, developer and project manager), as the design had to be an optimum layout, at minimum cost for the most profit. Within these parameters and those of the planning authority the architect was trusted and given considerable freedom over the design. The developer's role not only as client, but as part of the team was a key driver in the project. That he was thoughtful in decision making and respectful of the team's views on various issues that arose was a common view of team members.

This team building process began with the criterion for the selection of team members. The actor's previous relation with the developer and project manager, and their experience in conversion work of that nature gave a solid base to work from. All actors mention the reason for working with this particular developer, and the developer working with these actors, apart from mutual respect of working methods and techniques, is that working in such a manner will give the actor's firms the profit that is expected. This might be considered a driver for team integration throughout the process. The team developed integrative and existential characteristics. These were enhanced as team members worked towards a common objective defined early in the project. Problems arose however, when the existential characteristics evolved in some team members. For example, the architect's and cost consultant's differences in views and perception of the end product contributed to the problems encountered during the tender process, resulting in higher tender returns, delays in the process and change of contract to design and build.

From the summary maps we can appreciate that the planning, design and cost saving exercise were run in parallel. In this project, the limitation of obtaining planning consent was the site's location within a DEA. The case presented through the architect to the planning authority aimed to balance a number of environmental, economic, architectural and technical issues. The case was presented by emphasising the potential benefits the scheme could bring to the surrounding area. The case presented was sensitive to the local authorities concerns, whilst maintaining the developers' concern for obtaining the required returns.

The differences in views about the development between case officers gives an indication of the impact UDP interpretation can have. Initially the proposal was rejected as it went against UDP policy and it would set a precedent. However, the head planning officer subsequently supported the proposal as the scheme would provide employment. This is again a subjective view, as provision of employment space does not guarantee employment in an area.

Having jumped the first barrier, the following issues that affected the change of use consent were regarding noise and air pollution and contaminated land aspects. Although the knowledge of these issues existed within the team, the time it would take to address was uncertain. The time spent in dealing with these issues took longer than expected, for negotiations with the factory owner fell through and the initial report on ground contamination was not favourable. At the same time other design issues (overlooking, density, parking, access to site, ownership of access road and live work conditions) were discussed but not considered problematic, simply issues that needed to be addressed and suitable solutions sought.

The planning process took 9 months from the initial approach to consent being granted. For some development companies this is too long; however, the developer was conscious of the possible time frame in which consent could be obtained, and accepted if the project was to achieve its objective "getting the volume of buildings that would make the most profit, without compromising the value of the scheme" he would have to work within it.

The time frame conferred a significant advantage on the design and construction phase. The design was worked and re-worked and improved each time. The level of detail in the design drawings benefited the construction phase under a design and build contract, in that the majority of issues had been addressed in the design and hardly any problems were encountered during construction work. Of course this level of detailing was a result of the initial decision to approach the construction through a traditional form of contract.

The issues of having to change the form of contract to design and build caused additional delays to the project. This was caused by a combination of aspects:

- differences in perception between the cost consultant and architect about the end product;
- differences in perception between the cost consultant and architect on the appropriateness of costing technique;
- cost consultant estimating error due to the lack of recognition of cost increase (there was one year difference between calculation of bill of quantities and tender process);
- variation in perception of the construction risks between possible contractors and cost consultant.

This was a problematic stage for the developer as more money, time and resources had to be invested before work on site could commence, resulting in an increase in the time frame of obtaining a return on the investment. For the cost consultant and project manager these issues were part of the process and not significantly problematic, as there existed the option of changing the form of contract to reduce costs. The tender process was used to select an appropriate contractor with whom to negotiate. The appointed contractor was selected based on his low bid and on an existing working relation with the cost consultant, that is the knowledge that an agreement could be reached which would meet with the development's team objectives as well as that of the contractor's firm. The solutions to reduce costs and risk areas (structure and fire precaution) were to modify the layout of units, increasing the number of units, and the selection of alternative materials and finishes.

Parallel to this stage was the EP grant application process. The search for a grant was triggered by the developer's concern towards the increase in project costs, caused by delays to the process (dealing with environmental health concerns, technical issues), unbudgeted money (payment to a neighbouring factory to vacate the premises), and uncertainty about the market in that particular area for that type of development. Although a long and tedious process the grant application was successful and gave confidence to the team about the project.

The key aspect in the marketing stage is the pricing of the units to achieve the objective of obtaining the expected returns as quickly as possible. The decision to price the units higher than the agent recommended, was driven by the need to achieve more, as costs had been more than expected, but combined with the belief in the product. Because the type of development was unusual for that location, the marketing strategy was of key importance. Advertising the development was carried out using: flyers, brochures and news paper advertisements. In addition, the decision to involve Halifax during the sales was also beneficial, as it gave potential occupiers the option of obtaining a mortgage on site.

The sale of the units were a success. And although the project is complete issues still arise. These are referred to as "snagging issues" (things that are not finished or come up once the units are occupied). Both developers mention it as an element that is hardly considered part of the development process, but bears significant cost in terms of money, time and resources.

From the summary maps and project development we can see that the success of the project is related to:

- the financial success (team members and developer making the expected profit);
- process success (satisfaction with level of involvement of developer/client, as he gave freedom and trust on how best the project and scheme could be achieved successfully);
- agreement between team members of the approach to solving issues;
- occupier's success (in the form of a valuable investment);
- reputation (working relationships were forged).

There is no doubt that effective decision making is influential to the success of a project. The findings of this study are in accordance with the existing literature dealing with decision making described in chapter two and Egbu et al's (1996) study of decision making in refurbishment projects, of the complexity and dynamism of the process. It was evident that the decision maker had to deal with both internal issues (related to the project) and external issues (related to the context). For this study the most significant issues which affected decisions were:

- experience of the decision maker and team members in conversion projects of similar nature;
- level of support and integration of team members with decision maker and each other;
- time constraints;
- budget limitations

In this project the decision maker was trying to plan ahead in most instances, for example he sought negotiations with the factory owner early on, investigated grant funding, looked for alternative solutions for noise and air pollution. Throughout the process uncertainty was high and so he took a conservative or cautious role, but when the uncertainty about the viability of the end product was reduced he became more aggressive in pricing the units for example. During the development process, the development of alternatives, deciding among them and their application, were the most repeated stages. Problems were easily identified, but the following stages of finding alternatives and selecting the best option seemed to have the most bearing on the process. In most cases the choices between alternatives were made only to satisfy the minimum requirements, during the planning stage for example; while in other cases best options were sought, the marketing stage for example.

The findings reaffirm the views of Williams (1999) on project complexity; of March and Simon (1958) on decision making in organisations characterised by uncertainty, complexity and risk. In the end a decision maker will make choices based on their capacity and ability to decide and this is what impacts, positively or negatively, upon a project's development.

ACTORS/THEMES	ABOUT THE TENDER	ABOUT PLANNING ISSUES AND APPROACH	ABOUT THE SITE	ABOUT TEAM BUILDING	THE PURCHASE OF THE SITE
developer	Flexibility and openess to re-think the tender approach, changed to design and build as it reduced cost, layout of units changed to increase value, down scale expectations of product	planners immediate respond to UDP policy, develop argument highlighting how proposal will benefit the area, build a relation with the planners, negotiate	an area you know has potential, where value outweights costs and the potetnial scheme is in line with the company's aim.	knowledge (direct/indirect) of actors type and quality of work, in accordance with the vision of the product, actors with similar mind set about the project, commitment and high level of involvement	done speculatively=no formal preliminary invetigation, considered risk areas: contaminated land, market, building costs and planning. Had encouragement from other actors (architect, PM)
project manager	change to design and build to reduce cost, identified right builder for the project	develop argument of persuasion, open to discussion of issues, support from head plannign officer key, present argument through architect. Developed an economic, architectural and sustainable argument, argument addressed the concerns of the PA for creation of new jobs and regeneration	interest in site came from low price, nature of buildings to be re-used for anything	management approach is to feed everything through one person, team works as a team, everybody serves the project, tell the team almost everything that is going on with the project	have a vision of what the scheme could be, comes from experience, saw the potential of the site (influenced by interest in site)
architect	Tender returns high lead to a change of contract=reduced the contractural risks	the approach to planners can be: to do what they say from day one or go through the long negotiation process, the aim is to convince planners.planning & design issues resolved by the whole team getting involved, have to deal with planning issues through discussion with planners, main issues were related to parking provision, noise and air pollution and % of residential and business space		developer got only heavily involved when core decisions with planners had to be agreed as planners get a measure of people. planning and design issues dealt with through the involvement of the whole team	

***Table 5.1** Indigo Loft-side and Newington Place Mews Key Elements Matrix 1/4*

ACTORS/THEMES	ABOUT THE TENDER	ABOUT PLANNING ISSUES AND APPROACH	ABOUT THE SITE	ABOUT TEAM BUILDING	THE PURCHASE OF THE SITE
cost consultant	failure of cost savings exercise, battled between quality and expectations, tendered knowing it would come back too high, used it for selection of contractor, changed to design & build, simpler contractural arrangement, responsibility lied in the contractor, higher prices resulted from difference in perception of the scheme between contractors. Most willing and lowest bid contractor selected, cost saving exercise with contractor			evaluation of cost done through the analysis of the state of the building and the establishment of the end product the team envisaged	
structure engineer				Developer approached due to previous working experience,involved ast the outset of site purchase, opinion asked of potential of site,had a lot of discussions with the architect and the QS	
planning consultant		establish whether the current use could continue or not, negotiate alternative use, strike a balance between residential and employment use, considered initially the concept of live/work. as site was in DEA had to deal with health issues, ground contamination and industrial emissions. planning application put foward to give the developer a negotiating position, negotiate rather than appeal, 8 week issue misunderstood, comply with planning conditions after consent, issues of overlooking, highway ownership, car parking and day lighting		involved right after site purchase, and I coordinated the planning phase up to planning consent	
English Partnership					

***Table 5.1** Indigo Loft-side and Newington Place Mews Key Elements Matrix 2/4*

ACTORS/THEMES	STRUCTURE	DESIGN	COST & BUDGET	PRICING	LIVE WORK	SUCCESS
developer		awareness of design and planning as an iteration process, planners keen for mix of accommodation drove options of use for buildings, uses assigned according to attractiveness of buildings and easiness to convert, development of scheme on two pahses driven by the option of approaching planners in the future for alternative use of second phase	need for unbudgeted money arose from cost of environmental health concerns: land contamination, noise and air pollution, underestimation of building costs. All caused dealys to the process	objevtive was getting returns as quickly as possible, units priced according to the aim market,maintained a marketing momentum, developer became more bullish at pricing the units	search for live/work option due to financial un-viability of B1 space in area, live/work employment generating=idea supported by PA, difference in case officer who supported the application, potential tax issues realted to live/work	outcome was a profit made, fantastic learning process, units sold in a short period of time, availability of grant allowed to continue and snagging issues which are rarely considered by developers
project manager		design is a process of trial and error, design had to address planning issues, design has to meet budget, design has to stay true to the concept, view buildings convertibility . The objective of the design is to come up with the volume fo buildings that make the most profit without compromisisng the scheme, design and financial appraisal run in parallel, architect gives the scheme identity, he is given freedom.		taking advice from agent, decision to price higher than adviced taken from the belief in the product	intiallly is to approach planner with the idea, key that planner supports the idea, support came from a change in the borough policy and thorugh change in the planning officer	units sold quickly, scheme made a profit, success=money and reputation. After sales had to deal with some minor works=snagging issues
architect		develop a plan for the site: measure buidlings according to their convertibility, aim for a potential for creating sufficient development return, ascribe uses to the buildings, scheme design with high level of cohesion.The concept has to be a balance between design and planning, between design and budget, establish desnsity within buildings=size of units=developers return, and the integration of parking within the open area	Contrainst on the budget as market for that location was unknown, architectural concept had to be watered down= affected the detail and finishes, risks in dealing with existing building lead to cosntruction cost being higher, market risks: perception of development unkown, Tender returns high lead to a change of contract=reduced the contractural risks. compromise between quality and cost: production of bill of quantities not in favour, create the most savign with the least amount of damage, cut down primarily on finishes			

***Table 5.1** Indigo Loft-side and Newington Place Mews Key Elements Matrix 3/4*

ACTORS/THEMES	STRUCTURE	DESIGN	COST & BUDGET	PRICING	LIVE WORK	SUCCESS
cost consultant			placed project in the context of other projects carried out, dis a visual inspection and calculated at a rate per square foot. unkown market had an impact on the amount of money available to spend on the buildings, solutions for meeting with budget made thorugh a cost savings exercise, paid attention mainly to the extent of the qulity of the fitting out			
structure engineer	important to understand what there is before changing anything, look at building which could be adapted to other uses, alteration work always involves unexpected things coming up, we had a lot of time to do research=increase in knowledge=better decisions, buget was adjusted according to what we though we might find, issues were to question whether building were stron enough, all work driven by the architects design= a lot fo discussions with the architect	structural work driven by the architect's design	build in a contingency summ of money for the unforseeble, adjustment done to the budget between 5-10% of the contract value			
planning consultant						
English Partnership			funding provided to projects to deal with abnormal development cost.funding for the project has to represent value for money to the public sector, looked at the principles of the scheme, did a crude analysis based on DIT statistics, application process open in that area, required detailed applications, planning consent granted, and looked at developer's funding situation, discussed agreement of funding offered			

***Table 5.1** Indigo Loft-side and Newington Place Mews Key Elements Matrix 4/4*

Chapter Six

Old Aberdeen Wharf

6.1 Site background

Old Aberdeen Wharf is located in the area of Wapping in the London borough of Tower Hamlets. The development consists of the conversion of a grade II listed warehouse into 17 residential units. The site of approximately 700 square metres is bounded to the south by the river, by Wapping High Street to the north, by Wapping Police Station to the east and by Waterside Gardens to the west (fig.6.1).

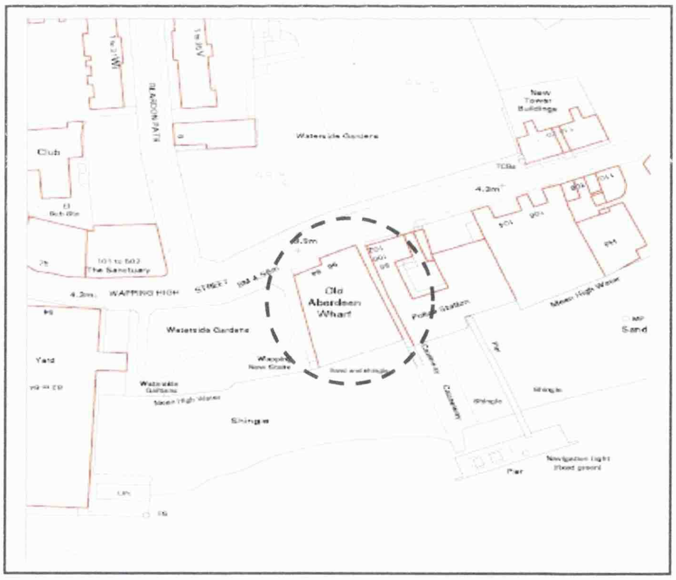

Fig.6.1 *Aberdeen Wharf location map*

The four-storey warehouse was built in 1843-44 for the Aberdeen Steam Navigation Company who subsequently acquired and built a large wharf at Limehouse (Ellmers and Werner, 1988). Aberdeen Wharf was occupied by the wharfingers, Taylor Bros until the 1960s, when it fell into disuse. One of the last warehouses to be converted in the Docklands since regeneration began in the 1980s, the warehouse is constructed from London stock brickwork, with traditional large section timber floors supported by classic cast iron columns and beams. The building has three structural bays, which run from the riverfront to Wapping High Street. The river front elevation, damaged by bombing in the second World War, has a "unique" neoclassical design and was given a grade II listing in 1983 by the Historic Buildings and Conservation Area Group, recognising it as a building with architectural and historical value.

6.2 Project Background and Overview

The redevelopment of Old Aberdeen Wharf is an interesting one as the site was bought and sold by three different developers before development was completed. A description of the involvement of each development company is made, as it sets the background for the final development taking place. An indication of complexity with this project lies in the building's listed satus, within a regeneration area, and worked on by three different development companies with different views of project potential. Appendix 4 presents a time line of the development.

The redevelopment process was initiated when London & Henley Ltd. purchased the site from Wapping police station in 1996, at the start of a "boom" residential period in the area. The Metropolitan Police had purchased the site sometime in the 1970s with a view to developing it as an extension of the existing police station (Metropolitan Police, 1967; letter). However, financial difficulties limited the development of the site and subsequently it was only used as a storage space (Chief Architect Surveyor, 1977; letter).

London & Henley Ltd. approached Landmark Architecture Ltd seeking advice on whether they could obtain planning and listed building consent for Old Aberdeen Wharf. The advice from their planning consultant was positive as the area was being regenerated, and the site was purchased shortly afterwards. Landmark Architecture Ltd was hired to develop the design of the scheme and to obtain planning consent from the London Docklands Development Corporation (LDDC).

The brief given to the architect was simple: to meet London & Henley's design criteria for converting the building to residential use, to obtain as many flats as possible and to meet all planning requirements. Landmark proposed a scheme of 14 units with 15 car parking spaces. An application for listed building, conservation area and development consent for the conversion of the building to 14 flats, with associated car parking, alterations to elevations and extensions at roof level, was submitted in September 1996 to the LDDC.

Potential concerned parties such as Wapping Pier Head, the Environment Agency, the borough of Tower Hamlets, Wapping Police and English Heritage among others, were informed of the application for development and were asked for observations. There was no objection in principle to the development from "concerned parties", however English Heritage and Wapping

Police made some observations regarding the design. Wapping Police were mainly concerned with how the roof terraces and windows on east side would compromise the privacy and security of the police quarters (Wapping Police, 1996; letter). English Heritage suggested the reinstatement of the full entablature of the riverfront façade; the containment of the windows within the pediment; and offered additional details of the materials to be used on windows and doors (Calvocaressi, 1996; letter).

Landmark Architecture Ltd responded to observations made by Wapping Police and English Heritage (Williams, 1996; letter). Louvers were added to roof lights on the terrace and indicated the use of opaque glass block on the east side windows. The design drawings proposed the reinstatement of the full cornice, and the design of the pediment was improved by including the windows in it. Further details of materials were also offered in response to English Heritage's observations. The response was considered appropriate by English Heritage and Wapping Police (Wapping Police, 1996; letter and Calvocaressi, 1996; letter).

Tower Hamlets planning authority did not object in principle to the development, but did consider the works to the roof structure and alterations to the western elevation inappropriate and unsympathetic to the historic character of the listed building as they would have a "detrimental and negative" effect on the historic fabric of the building. In addition, the scheme conflicted with the borough plan and emerging UDP that sought to ensure new development affecting listed buildings (Tower Hamlets, 1996; letter). These observations however were received 7 days too late, as the LDDC granted permission for development in December 1996.

Having enhanced the value of the property London & Henley Ltd were interested in selling the property with the scheme in place. Cluttons, a property consultant approached Delta (UK) Land Developments. Delta looked at the planning consent and scheme design and decided to buy fairly quickly on the advise of the property consultants.

Delta decided to re-design the scheme as it did not use space efficiently and more development value, i.e. more money could be obtained. Delta approached Landmark Architecture Ltd. to re-design the scheme by adding three more units and to negotiate consent with the relevant authorities. By this time the LDDC had reverted its planning powers back to Tower Hamlets. In April 1997 applications for listed building and development consent were submitted to Tower Hamlets Planning and Environmental Service Department for the conversion of the building to 17 flats with associated car parking, alterations to elevations and extension at roof level.

The re-designed scheme resulted in the building being modified substantially. The three additional units took up the space from the atrium opening, reducing the amount of light to the interior space. Window openings had to be placed on both east and west flank walls. And more parking spaces had to be provided. These new modifications raised concerns from several parties.

There was concern from Tower Hamlets on how the development, and in particular the window openings on the west wall would affect the potential of the adjoining site which was council owned (Waterside Gardens), the issues were related to rights of light (Tower Hamlets, 1997; internal memo). In this case Tower Hamlets legal department established that rights of lights issues were not relevant. The leisure service department indicated that a section 106 agreement could be obtained in terms of a contribution for the maintenance of Waterside Gardens.

At the same time Delta was already in discussion with Wapping Police regarding the details of the windows to be installed on the east elevation, as they compromised the police station's security and privacy. An agreement of the details of these elements would be done by the two parties.

English Heritage raised no objections to the development, and laid down just one condition; that external fabric be retained and finished to match the adjacent work with regard to methods used and material colour, texture and profile (O'Rourke, 1997; letter).

The most influential observations were made by the Historic Building Officer of Tower Hamlets. Even though the principles of the scheme were accepted, the details of the proposals were still an issue. As a result the Council objected to the scheme on the basis that "changes are detrimental to the character of the building" (Tower Hamlets, 1997; letter), observations made by the Historic Building Officer despite the fact an inspection of the property was not carried out (Lambert, 1997; memo). In addition detailed design treatment, car parking arrangements and amenity provision had to be considered more carefully.

The proposal was revised substantially and was considered an improvement on the townscape by case and Historic Building Officers of Tower Hamlets. However, the Historic Building Officer considered the material proposed to repair the cornice inappropriate and asked for traditional material to be used. In addition, Tower Hamlets requested a contribution of £40,000 towards the cost of providing and maintaining amenity space in the Borough. Delta was unwilling to make that amount of contribution as it did not come directly from UDP and/or circular 1/97 (Williams, 1997; letter). Delta reluctantly agreed to contribute £17,000 (£1000 per unit) subject to application being approved in the next planning committee meeting and granted planning and listed building consent as "Borough has not set any reasoned justification to demonstrate how the level of contribution is related to the impact of the development" (Williams, 1997; letter).

With additional observations from the Historic Building Officer the planning application was supported informally and conditionally in September 1997, subject to a section 106 agreement.

A section 106 agreement was prepared requiring the developer to pay £17,000 to the council on commencement of the development (Tower Hamlets; 1997; memo).

The marketing process and enabling works on site were about to start when Delta were approached by Clutton's estate agent once again, this time to see whether they were interested in selling the property.

London Town plc were interested in the property as they knew it had development potential. London Town, having reviewed all information from Delta (planning conditions, English Heritage views, party wall awards, Port of London Authority views, British Museum views, bill of quantities, section 106 agreement, etc.), decided to purchase the site and scheme in December 1997. Delta decided to sell as the offer London Town made was equivalent to the profit they were expecting to make and because construction costs were varying more than they were expecting. This resulted in London Town purchasing a scheme at an advanced stage with no planning risks.

Landmark Architecture Ltd were retained to continue to deal with negotiations with Tower Hamlets and Wapping Police with regard to repair to the river front façade and windows openings on the east flank wall. Negotiation with the police party wall surveyor regarding the size of windows, size of openings and glazing material continued after site was purchased by London Town.

Full Planning and Listed Building Consent was granted January 1998. Negotiations with the Historic Building Officer of Tower Hamlets regarding the repair of the façade and other conditions continued well through the construction phase (March 1998-May 1999) as all listed building conditions required approval from the planning authority.

The quantity surveyor, who worked for Delta, was consulted further on construction cost, but not hired as his fees were considered too high for London Town, who were still a small company at the time. While enabling work on site was in progress tender packages were prepared and sent to identified contractors. The selected contractor went bankrupt while in negotiation with the developer. This lead London Town to project manage the work on site themselves, something they had previously done on other projects.

During enabling works London Town approached the planning authority to see whether the top two units could be enlarged to form a 3 bedroom flat with roof terrace. The planning authority considered the changes to represent a material change, so further planning and listed building consent application would be required. Application was not submitted as it would result in delays to the construction phase.

The marketing strategy started early in the construction phase with the construction of a show flat, and a model, to be put in the agent's office and a brochure, to promote the development. This exercise resulted in six units being sold "off plan".

The construction phase went according to schedule, with the "usual" issues as in any other conversion scheme coming up. The main difficulties were encountered while piling, removing the roof, meeting natural ventilation requirements of some units and atrium, and getting materials on site; all these aspects related to their effects on cost and programme. Construction phase (March 1998-May 1999) eventually reaching completion approximately 3 months late, primarily as a result of the delay in the tender phase.

The sales department was moved on site to Aberdeen Wharf. Prices per unit ranged from a minimum of £165,000 to a maximum of £550,000 (199.00 £/sqft- 402.00 £/sqft). In July 2000 there was still one unit left to sell.

London Town saw the redevelopment of Old Aberdeen Wharf as reasonable. It did not make a loss, nor did it make as much money as expected. It was considered a learning experience and a good development to be included in their portfolio. Today the value of the units has increased and London Town has gained a well respected reputation as residential developers.

6.3 KEY ACTORS IN THE PROJECT

The key actors were identified initially through LRR database and subsequently by the final developer, London Town plc. The following section gives a description of the roles each actor played in the project.

a) PH, Developer

London Town plc is a residential investment, development and project management company working purely in the central London area. They manage residential property funds for institutional investors, develop high value residential property, let and manage residential property and have their own in-house design, architecture and project management team. While working on the Old Aberdeen Wharf project the company, had only 5 years of being launched, it had transformed itself from being a residential property developer into a residential property funds manager. PH, head of development was in charge of evaluating the potential of Old Aberdeen Wharf scheme, assembling the team, assigning responsibilities and establishing lines of communication. PH was involved in every stage of the development process in varying degrees: in a supervisory role, making sure the project was going on time and within budget, and reviewing the contract strategy. All events of the development process were reported to the board of directors who took all major decisions, such as purchasing the site, project managing site work themselves and pricing the units. As a development company they knew exactly what they wanted from the scheme resulting in assigning responsibilities to other professional members. They were the client and other members responded to that role.

b) AW, Planning consultant

Landmark Architecture Ltd is a medium size London based company that provide architectural and town planning services. Andrew Williams was the planning consultant to London & Henley Ltd, Delta (UK) Land Development and London Town plc. For this project his role was to provide planning services to all three developers. Initially they established the planning principles to obtain change of use and development consent for London & Henley. Subsequently, they continued to negotiate the design changes for Delta with Tower Hamlets planning department. They finalised negotiations of detailing with the planning authority for London Town plc.

c) TM, Residential agent

Cluttons Daniel Smith is a property consultancy, which provides a range of services to the agricultural, commercial and residential sector. It is a well established company with regional offices as well as in the Middle East. The company provides investment, property management, portfolio management, valuation, building surveying, research, sales, acquisition and letting advice.

TM partner of Cluttons was the agent involved in the sale of Old Aberdeen Wharf for London & Henley Ltd and Delta. He provided advice to Delta on the background of the building, its value and possible sale price. He advised London Town plc on the concept of the scheme, layout of units, types of specifications, profile of potential buyers, potential sale value of units and elaborated a market research report.

d) EH, Construction project manager

EH was hired as a construction project manager by London Town plc once the decision to project manage the works in-house was taken. EH's role was to manage and deal with all work on site, procure all working packages, negotiate all tender packages, place orders for materials, make programmes for the works and make sure all works were developed according to budget and programme. In other words EH took on the role of a main contractor. Problems on site, which according to EH were too numerous, were dealt with mainly by the architect (Landmark Architecture ltd), engineer and himself. Major decisions primarily regarding cost were taken to the board of directors.

e) PC, English Heritage Officer

English Heritage is responsible for protecting the country's unique legacy of historic buildings, landscape and archaeological sites. As Old Aberdeen Wharf is a grade II listed building, English Heritage had to be involved in the decisions related to the modifications that could be allowed to the building. PC was the historic building inspector in charge of this project. The level of involvement was minimum. PC's main concern was with the repair of the riverfront façade. His role was to indicate to the architect how repair and restoration of the façade could be done and the degree of alterations that would be acceptable. This was carried out generally to ensure that the design proposal did not damage the character of the building in any way.

f) Tower Hamlets Planning Authority

The role of Tower Hamlets Planning and Environmental Service Department is to approve or reject a proposed development in accordance with UDP policy. They ensured that the development met all legal requirements (see section 2.6.4.). The planning approval was linked to listed building approval but not directly linked to any other approval regime, such as building control, fire control or health and safety. All information related to planning was obtained from the planning files.

g) Other actors

Quantity Surveyor

EC Harris is a leading International Capital Project and Facilities consultancy. BH, a partner of the company, initially provided Delta with the implications and likely cost of conversion to residential use before design was carried out. After site was purchased and detailed drawings were produced by the architect, their role was to create a detailed conversion cost plan and measure the bill of quantities which would be used to select the contractor. After the site was sold to London Town plc, EC Harris assisted them by continuing the cost advice and by measuring the cost of the changes London Town were proposing. EC Harris's assistance ended when the fee charged by them to continue with a detailed work was considered too high by London Town plc. London Town were a small company at the time and could not afford them. EC Harris has subsequently worked with London Town on other projects.

Vendor

Delta (UK) Land Developers plc is a development company, but does not specialise in residential development. They had carried out several successful river front residential developments prior to the purchase of Old Aberdeen Wharf. DA's initial role was as a developer. He evaluated the potential of development, the quality of the scheme and planning conditions. Delta developed the scheme further by modifying the design and increasing its development value. The development process was carried through to the elaboration of the bill of quantities by EC Harris. DA's role changed to that of vendor once London Town offered to purchase the building and scheme.

6.4 ANALYSIS OF INDIVIDUAL COGNITIVE MAPS

This section describes the results from the analysis of individual cognitive maps. The results are presented in the form of a summary map that contain themes (clusters) and links between them in degrees of strength. Links are represented in the in two forms; arrows indicate a causal relationship and hashed lines represent an association. The description of each map will evolve around the central themes (**bold**) and their key elements (*italics*), both identified through central and domain analysis in Decision Explorer (see section 4.10 and 4.11). The key elements within remaining clusters will also be described in relation to the central themes and/or other clusters. Where loops (feedback of information) between clusters appear, the nature of their existence is described. It is important to note that these maps are a simplified representation of the individual's views of their involvement and development of the project. Cluster contents are located in appendix 5.

a) PH, Developer

PH's summary map, figure 6.2 overleaf, has four main themes: first, the interest and evaluation of the potential of Old Aberdeen Wharf (cluster 3); second, the decision to purchase (cluster 6); third, the development of issues after site was purchased (cluster 9) and the issues that arose while dealing with the subcontracting (cluster 15).

Central themes and key elements

London Town's interest in Old Aberdeen Wharf (cluster 3) came from two aspects: first their previous experience in converting listed building to residential use and second, their knowledge of the surrounding area of having potential for development of residential space. The knowledge of the area came from having recently completed a scheme in Rotherhithe, area south of Wapping were Old Aberdeen Wharf is located.

The **evaluation of the site and scheme** (cluster 3) in this case was carried out based on the *package of information* Delta (previous developer) had supplied. All information was disclosed by Delta once London Town provided a 10% deposit of the agreed sale price. The key elements during this stage were to *contact all relevant bodies that were involved with the scheme to corroborate information* and to do it within 6-8 weeks. In this case Harris contacted Tower Hamlets planning authority, English Heritage, British Museum that deals with archaeological issues, architect, engineer, quantity surveyor, and party wall surveyor. In addition, the agent provided comparable sales and rental values. Local interest groups were identified (Wapping Police Station) and the quality of the end product was assessed in accordance to London Towns' criteria.

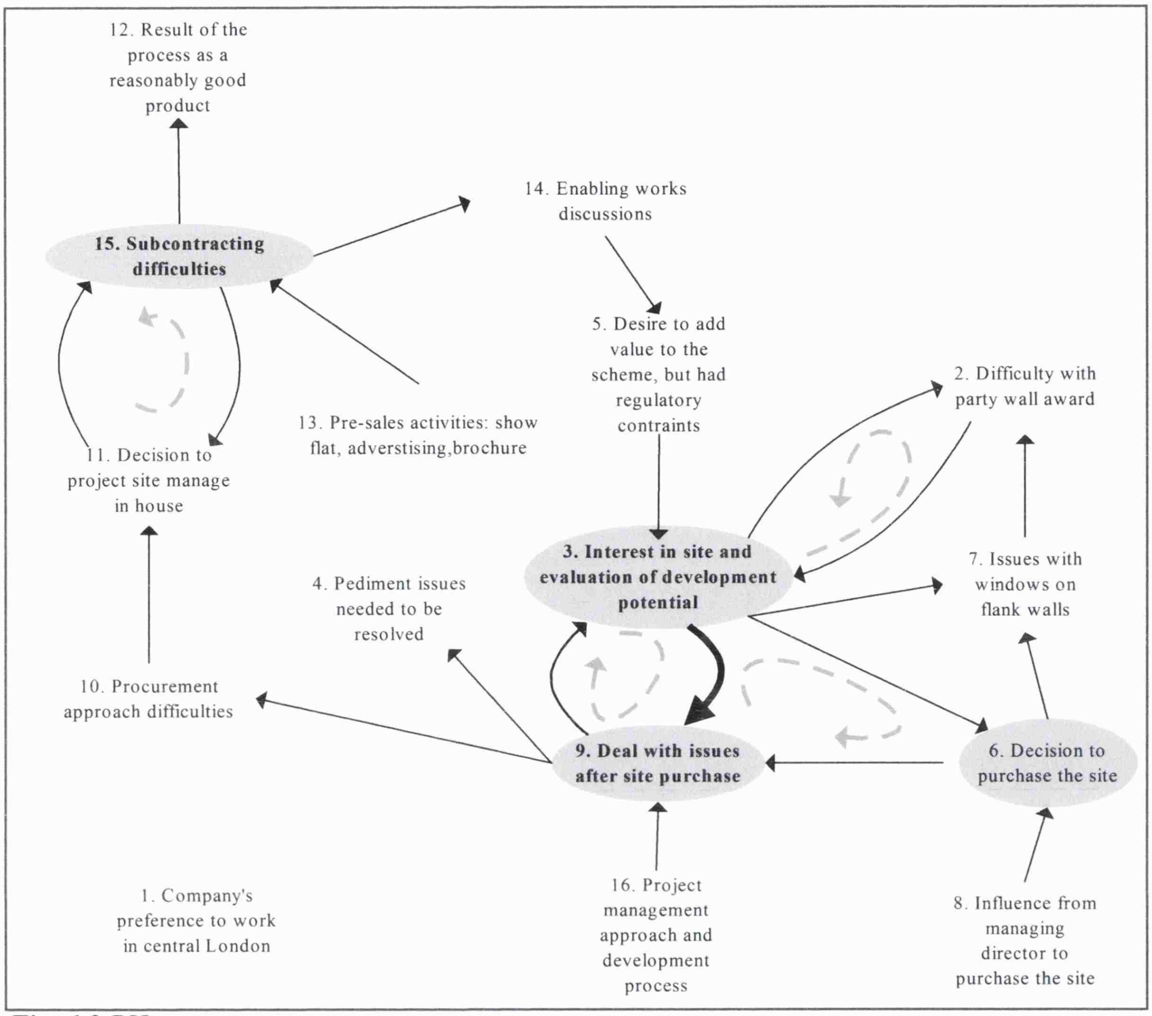

***Fig. 6.2** PH summary map*

The summary map illustrates that the evaluation phase (cluster 3) is linked to themes describing issues that needed to be considered before (cluster 2, 7, 4, 5) and after purchase (cluster 9) (figure 6.3). The evaluation results drove London Town to purchase the site with scheme in place (cluster 6). These clusters will be explained in this section rather than separately, as they were highly influential to the evaluation process and to the decision to purchase, both central themes in the summary map.

The issues of potential risk that had to be considered were issues related with *windows on both sides of the flank walls* (cluster 7 and 2 and loop C). According to Harris, permission had not yet been granted from English Heritage to punch openings on the west wall. However, according to files English Heritage had no objection to these openings. The Historic Building Officer of Tower Hamlets was the one making the observations. This indicates that the developer did not perceive a difference between these two actors. This issue, related to the effects to the character of the buildings was understood as an English Heritage objection.

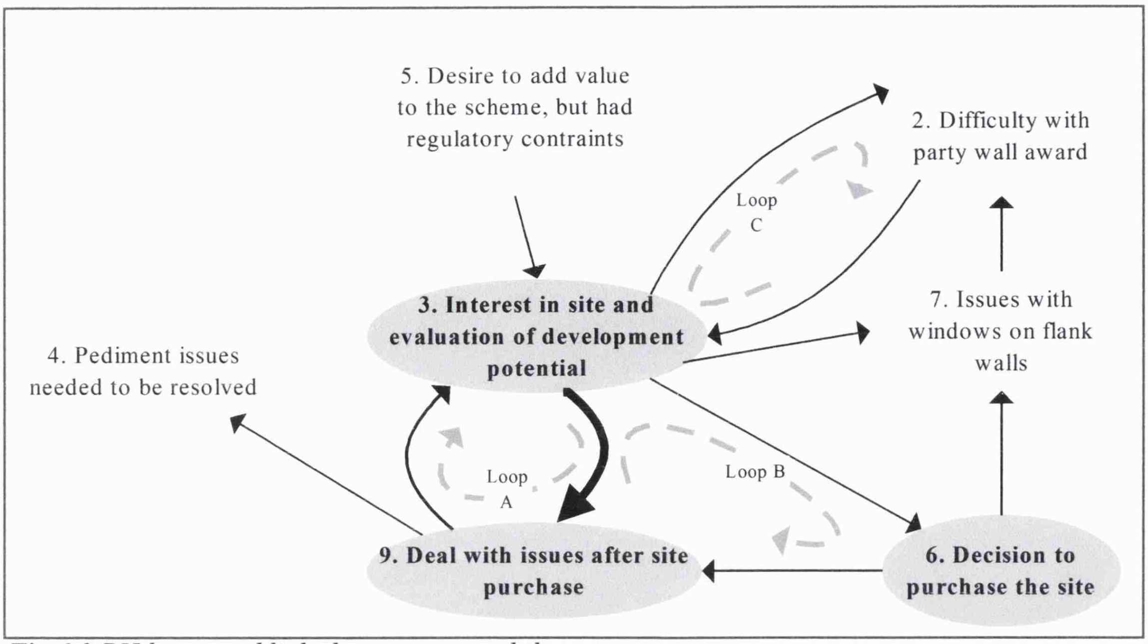

Fig.6.3 *PH loops and links between central themes*

If permission for openings on the east side was denied, then the internal layout had to be re-ordered, which would result in 14 units instead of 17, resulting in a less profitable development. On the west side, an existing alley way between Aberdeen Wharf and Wapping police, meant that an agreement had to be reached between both parties to allow windows on the west wall, as police did not want people to have direct visual access to the police station. If no agreement could be reached then there could be no habitable rooms on the west side and there would be a need for mechanical ventilation, which would increase costs. According to Harris the *issues referenced in the party wall awards* (windows could not open more than 7 inches and obscure glazing should be used) had to be dealt with by the planning consultant, architect, English Heritage and the party wall surveyor. However, interview and files confirmed that English Heritage and Historic Building Officer were not involved in these negotiations. Files confirmed that in this instance the planning consultant was *dealing directly with police party wall surveyor*. Although the party wall awards were 90% from being obtained, *difficulties regarding the party wall surveyor fees* delayed negotiations (cluster 2). The fees were paid by the previous developer and party wall awards were obtained.

The issues with the pediment (cluster 4) were related to *discussions with English Heritage of the option for the repair of the river front facade*. English Heritage made the observation in writing to the Historic Building Officer of Tower Hamlets, noting that pediment should be replaced in original construction. London Town *considered it time consuming, expensive and potentially dangerous* and proposed to replace it with Glass Reinforced Plastic (GRP). Once again the interview and planning files confirmed that the Historic Building Officer was against the use of GRP and not English Heritage. The site and scheme were bought with the risk of re-constructing the pediment in its original form. This issue continued to be negotiated after site was purchased and was resolved during the construction phase (cluster 9 and loop A).

While evaluating the scheme London Town kept in mind the idea of adding value to the scheme (cluster 5) by adding more space on the roof and balconies, which would lead to a more saleable product. Negotiations with the planning authority for these additional elements occurred after site was purchased and continued while construction was on its way. Scheme did not achieve any additional value, as modifications were considered by the planning department a material change and therefore required further planning and listed building consent application. This would have been too much of a lengthy process for the developer and ceased to pursue this issue.

Loop B represents the link between the three key themes. The **decision to purchase the site with scheme** (cluster 6) was *taken by the managing director*. Decision was taken based on the fact that *there was no critical issue that would stop London Town from building straight away*. That is, all planning issues were settled, which were of primary importance; solution for archaeological issues were simple and would not cause any delays; issues with English Heritage (means Historic Building Officer) were a calculated risk; costs seemed to check out; it was in a good location and *funding had been obtained*. However, an additional factor was that the *managing director was keener to purchase the site* than Harris was (cluster 8). Harris was *concerned with the timing*, the company was very busy at the time, so there was no time to get a contractor started straight away, which would eventually lead to damaging returns. The managing director pointed out that the company had 2 or 3 months to get the tender package ready and procured, as the previous developer already had a contractor ready to start off the clearing work.

The site was purchased in December 1997 (cluster 9). This meant that the company had to *address three critical issues: time, cost and strategy* (explained in cluster 16). The **issues after site purchase** were related with the *assembly of the professional team,* planning arrangements, design and opening of windows and replacement of pediment. The existing architect and engineers were approached to continue their work on the project and asked to *put forward a fee proposal for continuing to develop the scheme*, this was accepted and *drawing production and schedule were developed*, for the overall design was very good and did not change. The quantity surveyor was not contracted as his fees were considered too high. London Town already had their bill of quantities, which served as a basis for developing the tender package. VAT implications were also looked at, but *no VAT had to be paid from a commercial conversion to residential use*. In addition, an opportunity for selling a 1 million pound penthouse arose, this was subject to creating a roof terrace and putting two units together. However, the Historic Building Officer and planning authority did not support the idea. Loop A between cluster 3 (interest and evaluation of the site) and 9 (issues after site purchase) indicates how the initial considerations in relation to the Historic Building Officer's observations, did become an issue after site was purchased.

Remaining clusters

The drawing production led to focus being put to getting *specifications ready* in order to *finalise the bill of quantities* and go out to tender (described in cluster 10). Alternative specifications were sought for existing ones were not the standard of finishes that London Town did. The project went to tender and a contractor was selected based on an existing working relation and on the low bid return. However, half way through the negotiations the contractor went bankrupt, resulting in *a change in strategy from the developer*. Because there was no time to re-tender and other contractors were too expensive plus their previous experience in managing the site work in-house, lead to a contract management approach being taken (described in cluster 11).

The key elements during the in house project management phase (cluster 11) were three; *getting all packages of work together, carry out a cost control exercise and project and site manager responsible for carrying all accounting procedures in-house*. Packages were elaborated based on information fed through by the design team (cluster 14),and by getting prices from particular contractors and subcontracting them. The cost control exercise meant that every item had to be reviewed between QS and manager before going to a single contractor. All works were reviewed by an external QS, who would produce a certificate with which the bank paid out money from the company's deposit. The results of this in-house monitoring system were that there was more control or knowledge over how much was being spend at any one time. In addition, monthly reports were submitted to the finance director and to the Joint Venture Partners.

The expectations of subcontracting all work themselves was that works would be cheaper than if managed by a main contractor (in cluster 15). The **subcontracting difficulties** (cluster 15) were related with the pre-sales activities (in cluster 13); meeting with the design team to discuss the package of information that would go out (in cluster 14) and the difficulty in getting a piling contractor. This latter issues was influenced by having to comply with English Heritage and archaeological implications, difficulty in getting them into a restricted site and difficulty in identifying a suitable piling contractor. The pre-sales activities involved getting a show flat as quickly as possible which put additional pressure on the construction side.

The loop formed between cluster 11 (project site management) and 15 subcontracting difficulties), illustrates how difficulties in a particular subcontracting job affects the site management process, in that a solution had to be identified, chosen and fed back to the subcontractors, this then had an effect on the rest of the construction process in relation to cost and programme.

While enabling works were in process discussions between team members on issues related to the overall design were carried out (cluster 14). These were necessary as they would affect the packages of information going out. The main issues discussed were types of finishes, *gas or electric heating system*, type of windows and their location, review of the structure and repair of riverfront façade (in cluster 5). The link from cluster 5 to cluster 3, indicates that during this period London Town were still dealing with the Historic Building Officer of Tower Hamlets in respect to repair of façade.

Outcome

Cluster 12 describes PH's perception of the project's process. The work was considered much harder than previously imagined, *even though they had carried out other similar projects previously*. It is was considered a very time consuming activity, which resulted in a longer construction phase.However, "it worked out reasonably well in the end" even though it was harder work and they didn't make as much money as they were expecting.

b) AW, Planning consultant

AW's summary map contains information related to London & Henley and Delta UK, the previous developers, this provides background information to the central themes: planning and English Heritage aspects for Delta (cluster 2) and the changes London Town wanted to make to the scheme (cluster 6).

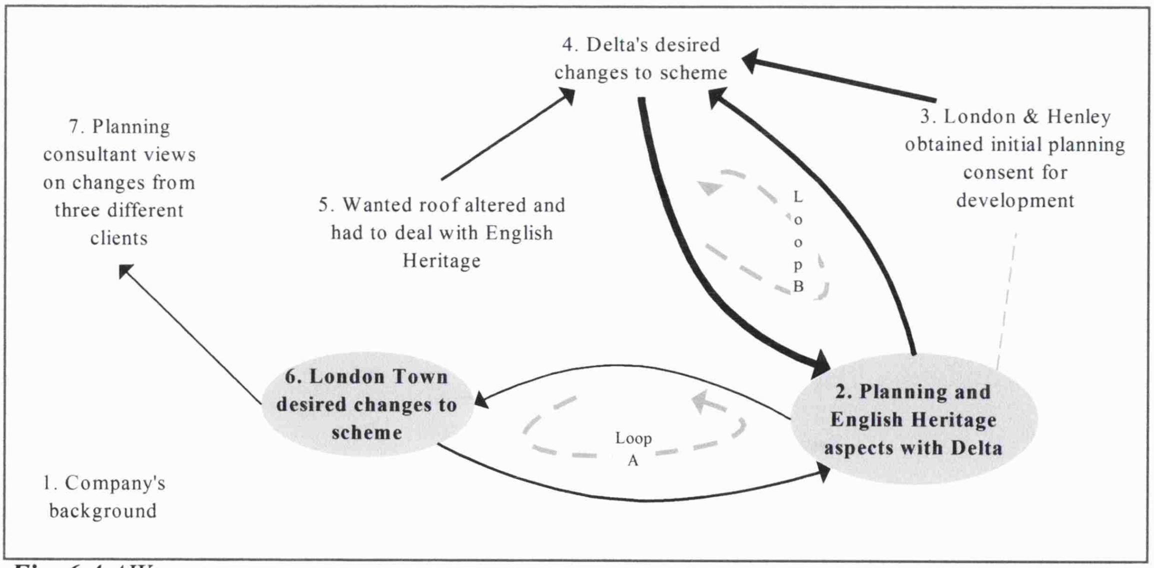

Fig. 6.4 *AW summary map*

Central themes and key elements

The **planning and English Heritage aspects for Delta** (cluster 2) were related with the changes Delta wanted to make to the scheme. Landmark Architects Ltd. were employed by Delta to *obtain planning consent for more units (3), terracing and to provide architectural services*. Delta's main concern was getting on site quickly therefore English Heritage and planning aspects had to be addressed successfully with speed. English Heritage concerns were related with keeping as much as the original structure as possible. Restriction applied to the amount of modifications that could be made to the river front façade. English Heritage had no major observations, but the Conservation Officer (Historic Building Officer of Tower Hamlet) wanted to restore the façade with original materials. The additional units meant that structural issues needed to be discussed, building control aspects solved (means of escape, atrium ventilation, sound insulation), location and type of new windows agreed with Wapping Police Station, and agreement of contribution for maintenance of amenity space reached. Delta's application was more difficult and "confrontational" than London & Henley's, because there was less to compromise with. Williams argued strongly throughout the process presenting the ideas that they were trying to achieve rather than accepting what the planners wanted. In the end, consent for 17 units was granted.

As Delta was about to go to work on site, London Town plc purchased the site and scheme and wanted to make **additional modifications to the scheme** (cluster 6). London Town employed Landmark Architecture Ltd to *discharge remaining planning conditions*. The main issue was the *detail of the pediment*, Conservation Officer required it to be of original material, however the team argued that the pediment was never built of stone and demonstrated it. After a long negotiation process the Conservation Officer allowed for the pediment to be built out of Glass Reinforced Concrete. In addition, London Town wanted to include terraces in the front façade and roof, proposal that had been rejected during Delta's involvement. Nevertheless, *London Town pushed to get consent,* terraces on the front façade were rejected on the basis it would alter the character of the building, and roof terrace proposal was withdrawn because a separate planning and listed building consent application had to be processed. On going work on site put pressure on obtaining consent for materials.

Loops

Loop B (fig. 6.5) represents the iterations the planning and design phase went through and how design changes proposed by Delta increased the complexity of negotiations with planning authority, police surveyor and Historic Building Officer. For example, Delta's desire of increasing the number of units made it more difficult to provide a satisfactory environment within the building. Space had to be taken from atrium opening, which reduced the amount of light for the units that were already there. This resulted in having to take consent for window openings on flank walls. In addition, there was a desire to have a bigger construction at roof level and more terracing. This was considered by the conservation officer to alter the building to an extreme.

Loop A indicates how the sale of the scheme to London Town and their desire to modify the scheme brought forth additional negotiations with Conservation Officer, some of which had already been negotiated for Delta. For example, London Town wanted to negotiate the material that would be used for the repair of the river front façade, as London Town pushed for it to be Glass Reinforced Plastic. London Town also wanted balconies and terraces, so negotiation on these elements had to be carried out, even though the idea of terraces and balconies had been put forward to Historic Building Officer of Tower Hamlets with Delta and rejected.

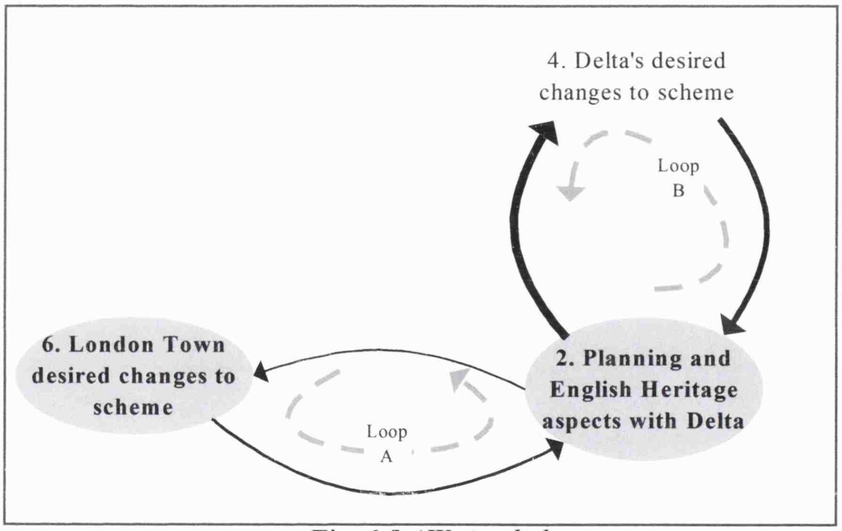

Fig. 6.5 *AW simple loops*

Remaining clusters

A different approach was adopted by London & Henley (cluster 3). London & Henley gave a simple brief: design a scheme with as many flats as possible that meets all planning requirements. In this case their aim was to get consent as quickly as possible in order to sell the property at a higher value.

Delta's negotiations were related to increasing the development's value but with the concern also of getting on site quickly. London Towns negotiations for increasing the development value were not accepted by authorities, as planning consultant had previously advised. But their persistence and argumentation on the material to be used for the replacement of the pediment on the riverside façade eventually was accepted.

Outcome

Finally cluster 7 as an outcome, indicates the views of Williams towards working on the same project with three different clients (London & Henley, Delta and London Town). The focus is on the time it took to complete the scheme and on "being asked to do things that had already been considered with the previous clients". This resulted in difficulties, having to explain each time why certain decisions were made and still having to discuss things with planning authority, things that had been considered with other clients.

c) TM, Estate agent

TM's summary map illustrates his involvement in the project limited to the site evaluation phase. And his role as an advisor is indicated by outgoing arrows.

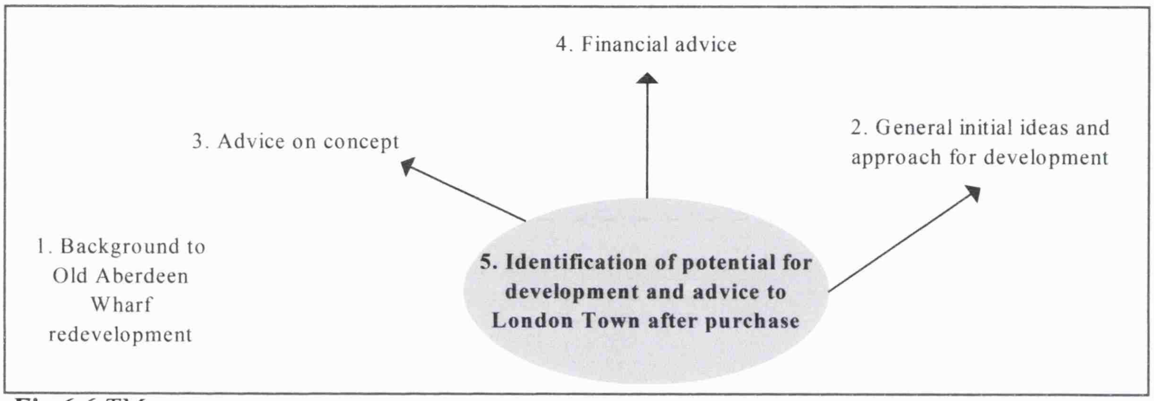

Fig.6.6 *TM summary map*

Central themes and key elements

The central theme in the summary map is the **potential for development** (cluster 5). TM's advice to London Town to purchase came from the *outlook of Aberdeen Wharf being a good project*. In terms that it was located in an area that would attract people to live –close to amenities and safe; and there were other successful residential developments in the surrounding area. This gave an indication of the type of residential space that could be provided, which could lead the developer to achieve enough money to warrant developing it. The key is to *give the developer as much information as possible*. They advised on the local boroughs views towards development, on the concept (link to cluster 3) and financial aspects (Link to cluster 4).Once London Town purchased the site and scheme, TM suggested to sell some flats "off plan" to see how people would respond to the product. A certain amount of expenditure was allocated towards the marketing, which was carried out through a show flat, brochure and agent's contact list.

Remaining clusters

The link from cluster 5 to cluster 4 indicates the financial advice given to London Town after purchase. TM's advice was in terms of valuing the units, that is, what is the maximum price that could be achieved for that type of development in that location. This is not an easy task as appraising can happen 6 month to 1 year before sales start and that gives "plenty of time for things to go wrong" or "to turn things around if things go wrong". In this case London Town could priced units higher than agent suggested.

The link from cluster 5 to cluster 3 indicates the advice given towards the concept. This refers to how to attract people to the scheme. Agents observe what appeals to customers in the area and then advise on types of finishes, specifications and layout of units. As improvements to the concept add value to units, which in turn increases the profit for the developer.

The link from cluster 5 to cluster 2 leads to a general description of how the approach to identifying a site's potential changes. Agents see ways of making schemes or sites potentially viable by answering 4 questions: first, can a development make an impact; second, what would they develop if they had to; third, is it financially viable; fourth, what would make anybody purchase in that location.

TM does not consider Aberdeen Wharf being as successful as it should have been (cluster 1). As building design could have been improved, but understands the constrains and difficulties encountered with the building; vendors wanted too much money for the building, the sale prices of £500,000 for some units was too high for that type of development.

d) EH, Construction manager

Central theme and key elements

The problems on site and impact on cost (cluster 4), in figure 6.7, were influenced by the daily activities that were carried out and the running of them on site (in cluster 3). One of the main effects of the problems encountered were their *significant impact on cost*. Although EH mentions that numerous problems came up daily, four were of significance. First, the problems during piling, caused by hitting and braking a rod on one of the tide beams. Discussion of options had to be discussed with engineer and Port of London Authority (they were interested in the foundations as the building was close to the river), rather than moving the piles and re-designing they opted to reinstate some tide beams and rods from the riverbed back into the wall. Second, getting materials on site as access, parking and storage space was limited. The alternative was to have smaller size deliveries, which in the end would cost more. Third, dealing with two ventilation issues, one in the atrium and west side rooms. Ventilation in the atrium required 25% of floor area in opening ventilation, design only provided 22%. Additional hoppers were put in to provide the remaining 3% required ventilation. There was a need for provision of mechanical ventilation in rooms, which were designed as studies, but regarded by building control as habitable rooms. Finally, the logistic of taking the roof off (cluster 5).

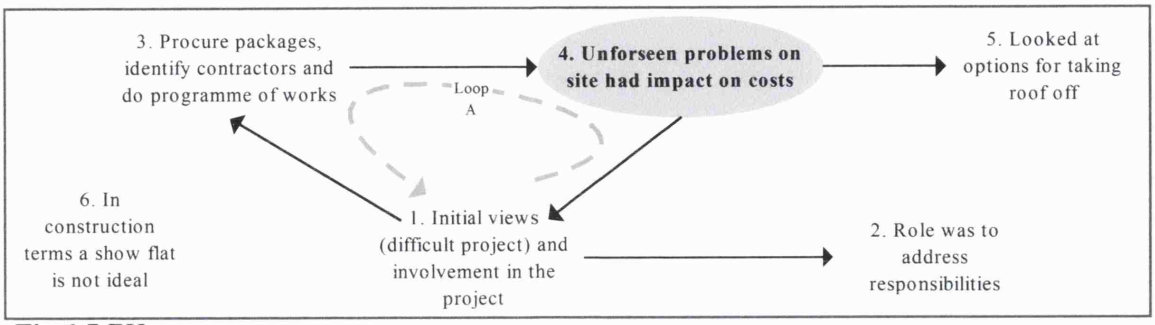

Fig.6.7 EH summary map

Loops

Loop A formed between cluster 1, 3 and 4 (fig. 6.8) illustrates the development and influence of his role throughout the construction phase. EH's initial view of the project was that "*it was not going to be an easy project*". Three key elements are identified: *the timing and circumstances of EH's involvement in the project* i.e. when the scheme was ready to go on site and the change of contract strategy; the *establishment of his role as construction manager*; and the identification and *establishment of lines of communication with other key actors*, i.e. engineer, architect, mechanical engineer, building control and Conservation Officer.

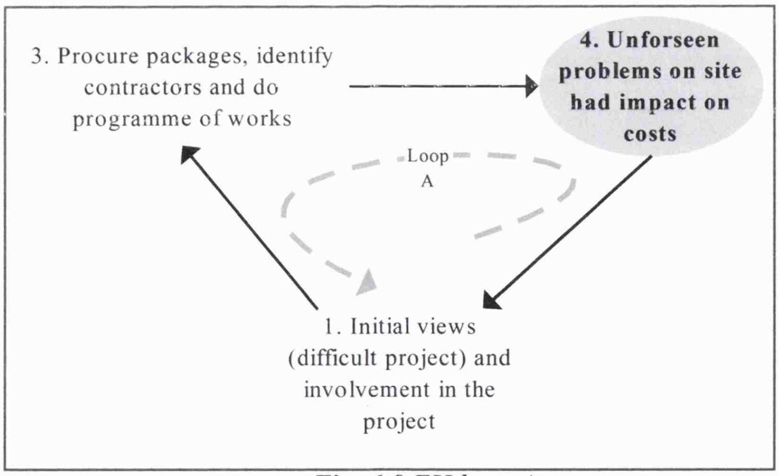

Fig. 6.8 EH loop A

EH's role as construction manager lead to the development of specific job activities (link to cluster 3). The most significant according to the analysis were: first, the *development of the procuring packages*; second, the *identification of possible contractors*, in this case selection was carried out based on cost, programme, previous working relation and knowledge of the firm; third, *elaboration of the programme of works*, where they had a time constraint of only 62 weeks for completion; and fourth, *the daily running of the site*, i.e. infer other packages later, inform other contractors on progress, order materials, etc. The day to day running of work on site was a medium to identify and solve problems arising on site in a manner that would cause least damage to budget and programme (link to cluster 3).

Remaining clusters

The options for taking the roof off (cluster 5) were to use a tower crane, proposed by the initial contractor, but discarded as it would be very expensive and it would not help the programme. Rather the team opted to use a service joist, reducing cost, servicing every area and helping the programme.

The definition of EH's role as construction manager lead to addressing daily responsibilities (link to cluster 2). These were to overlook health and safety on site, supply of materials for specific subcontracted jobs, execution of jobs according to programme and expected quality and to foresee potential problems on site, which was difficult due to the nature of the work. The latter a key element, for potential problems had to be addressed in a way which would not affect the programme.

Cluster 6 briefly discusses the issue of the production of a show flat. Generally, it is regarded as a nightmare for project managers, but necessary as a marketing strategy. It is unlinked because it was considered something that had to be dealt with and not an issue to the construction schedule and budget.

e) PC, Historic Building Officer

PC's map, figure 6.9, clearly illustrates his limited involvement and influence on the project. Confirming that the issues related to design changes which would affect the character of the building were being observed through the Conservation Officer in Tower Hamlets.

1. Historic background of Old Aberdeen Wharf and English Heritage issues that need to be addressed → 2. The river front elevation was the main concern. It was a straight forward case

***Fig.6.9** PC summary map*

PC considered the case to be fairly straight forward (cluster 2). In terms that there was a "free hand on the conversion". The main feature was the river front elevation as it was an unusual architectural stucco elevation. This led to the mouldings replacement and design to be the main issue. PC considered the architect to be inexperienced in their design proposals. Therefore PC made sketches of the design elements in the façade, however sketches were purely conjectural as there was no solid evidence on how they originally were. As the rest of the building was considered "pretty plain" the design proposals were left to the architect, with the view that the basic structure should be retained.

Cluster 1 contains the principle issues in relation to English Heritage. *Aberdeen Wharf is a grade II listed building in a conservation area*, therefore issues for development had to assessed. These were: first, retaining and repairing the river front façade. English Heritage aim was to repair it in its original form and style. The material use would be stone at the bottom of the façade and stucco at the top. Second, getting light into the building, as the interior was fairly undistinguishable the proposal for an atrium was accepted, as well as putting windows on either side of flank walls if they were proposed in a "sensible way". Third, balconies and terraces were not accepted (referring to Delta's proposal). Balconies on loading bays would have been acceptable as well as windows guards, however, the proposals were not done in a "seemingly way". Roof terrace proposal was considered visually obtrusive.

Assessment of proposals was done according to how alterations would affect the view from the river and from the public gardens next to the building and if they were modifications that would be seen in a buildings of that nature. In this instance the review of English Heritage files was not allowed. However, PC's map does indicate a limited involvement in the project. Planning files indicate that PC made these initial observations and the Conservation Officer was enforcing the recommendations.

g) Other actors

These were not directly involved with the final development phase of Old Aberdeen Wharf, but provide valuable background information.

g1) BH, Quantity surveyor

BH was involved with the project while working with Delta, the previous developer. His participation with London Town was minimum. However, London Town did use all information supplied by BH.

BH was asked by Delta to look at the building and give an indication of the likely costs for conversion. In this case the main issue was *the condition of the fabric.* The fabric was a mixture of old and new; there existed problems of damp penetration, and roof leaks; part of the floor was strengthening floor; and potential problems for fire and sound insulation. Cost estimation was carried out from experience with other similar projects. The initial feasibility estimate was considered too high by Delta, nevertheless the site was eventually purchased. The decision to purchase according to BH, could have come from a negotiation of selling price, negotiation of price with quantity surveyor or a reduction of percentage of profit.

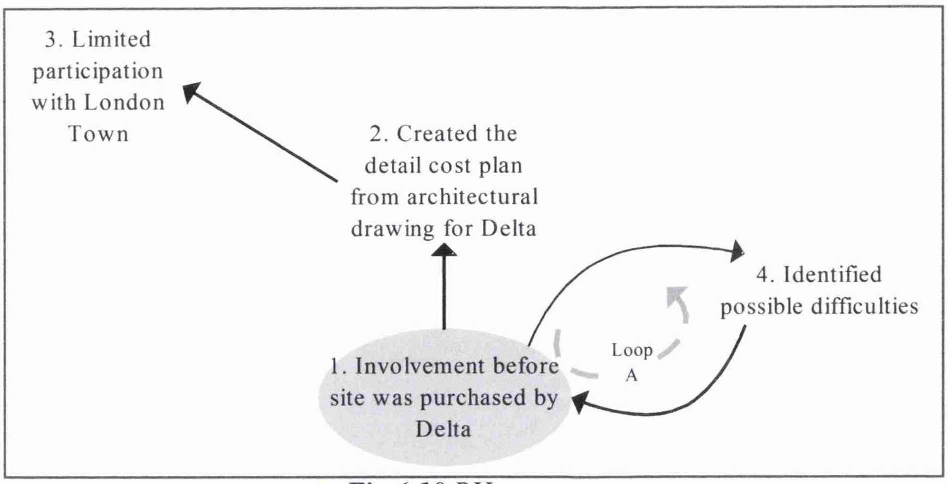

Fig.6.10 *BH summary map*

The building was looked at more closely leading to identification of possible difficulties (cluster 4). These were related to the metal structure and the support of the building in addition to the careful unblocking of windows; levelling of floor areas; removal of heavy construction and repair of the front façade. These closer observations could have lead to a slight reduction in costs as there weren't many things that couldn't be seen (Loop A).

Bill of quantities was elaborated from the architect's drawings, at this point Delta sold to London Town (cluster 2) and BH's firm were paid to give all information to London Town (cluster 3). BH assisted London Town estimating cost of some changes they wanted to make. However, London Town could not afford the fee quoted by Harris and their assistance ended.

g2) DA, Vendor

DA summary map, figure 6.11, illustrates simply how his interest in the site and purchase lead to dealing with design and planning aspects. The interest in this actor is to consider his views of the development up to the point where it was sold on to London Town.

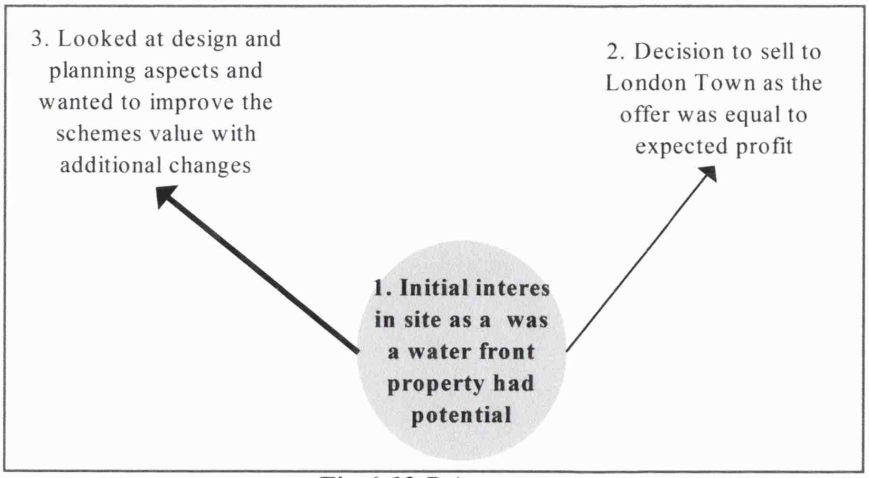

Fig.6.12 *DA summary map*

The **initial interest in Old Aberdeen Wharf** came from three aspects (cluster 1): first, the introduction and advice on the site from agent friend; the company's interest in waterfront properties as saleable products and the company's experience in refurbishing buildings successfully.

The site was evaluated considering the development and quality of the design work, in that, it was something they could work with; the planning consent and their previous "good" relationship with the planning authority and the agent's advice on the possible market values for the scheme.

Cluster 3 describes the design and planning aspects that had to be dealt with. On the design side, the main issues were the inefficient use of space, therefore the decision to increase the number of units to increase the scheme's value. On the planning side the main issue was to get consent for the changes; specifically related to the window openings that had to be placed on flank walls and the repair of the river front facade. This lead to the development of a case to be presented and discussed with English Heritage and Conservation Officer of Tower Hamlets, planning authority and police station. English Heritage and planning authority were persuaded to allow windows on the west façade and an agreement with police was made on where exactly windows would be placed. In addition, a section 106 agreement was made so that the developer pay a certain amount of money to the boroughs leisure fund.

The decision to sell on the scheme (cluster 2) was made based on one main factor but influenced by two issues. The main issue was the "silly offer" made by the interested developer. Silly in the sense that the offer was equivalent to the profit Delta expected to make on the development. The influencing issues were the phase in which the project was, that is, ready to start work on site; and to the fact that costs were varying more than Delta was expecting.

6.5 DISCUSSION OF ABERDEEN WHARF'S ANALYSIS

The redevelopment of Old Aberdeen Wharf was carried out through an unconventional process, for three development companies were involved during different phases of the redevelopment, and each had different expectations from the project. Through the analysis we identified: actor's participation during specific tasks; the key elements; and actor's level of influence in the process. The participation of different developers is a particular aspect of this case study and useful in that we can trace the changes in developer's perception about the scheme potential. As in the previous case study (Indigo Mews in chapter five), findings may not seem to provide a clear answer to the research question, but this level of analysis has allowed us to sift the data thoroughly and identify where problems areas arose and how they were managed. A complete picture is presented in chapter eight where the overall results are discussed and table 6.1 at the end of this section presents the key element matrix.

Compared to Indigo Mews, Aberdeen Wharf's process was not perceived as "successful", rather it was considered "reasonably good", "was not as successful as it should have been", "was a very long process" and "difficult to manage". By observing the following aspects we can begin to understand why this was the case:

- Developer's site interest and decision to purchase;
- Developer's decision to sell;
- Approach to planners, English Heritage and other interested parties;
- Procurement approach;
- Management of construction works;
- Marketing strategy;
- Pricing the units;
- Perception of success;
- Decision making.

The first developer's (London & Henley) aim was to obtain planning consent in order to increase the property's value by reducing the planning risk. To achieve this, the design of the scheme was commissioned so that it would achieve maximum development value (as many units as possible), while addressing all planning requirements. Relevant authorities were approached with a proposal "with a view of accepting what planners were proposing" (AW, cluster 2, concept 555). In this instance, negotiations with authorities were carried out quickly, although these were not straightforward for there we numerous issues to discuss.

The second developer (Delta UK) aimed to complete the scheme. They had experience in refurbishing buildings and in successfully developing waterfront residential spaces, in addition to the good and growing market conditions lead to their confidence in this development. The information regarding the planning conditions, design and possible market value of the units were attractive to the developer. In this instance, the developer purchased a scheme with planning and design risk reduced. However, the company's aim to maximise the scheme's value by increasing the number of units and its effects on other related design aspects brought forth a planning risk. Here the developer encountered numerous iterations between the planning and design phase. Modifications to design were regarded by the planning authority, conservation officer and even planning consultant as "too extreme". That is the changes were considered to significantly affect the character of the building. The issues this second time around were less but more specific, leaving the planning consultant with less room to negotiate. In this case the planning consultant and architect approached Tower Hamlets planning authority and conservation officer with proposals for changes with a view to trying to persuade authorities of what they the development team were trying to achieve, as opposed to letting planners or conservation officer propose everything. This resulted in much more confrontational negotiations. This aspect could be perceived by reading through the correspondence between the planning consultant, case officer and conservation officer.

The proposal of the section 106 agreement is interesting, as the borough's initial argument was not justified within the UDP policy. Their initial proposal of a £40,000 contribution was not justified in that it did not demonstrate how that level of contribution was related to the impact of the development (Williams, 1998; letter). Delta proposed to contribute £17,000 towards the provision of maintenance of open space if the application was approved by the planning committee. Planning and listed building consent were granted shortly after and the observations made by the historic building officer were included as conditions in the written consent. The position of the planning authority or case officer was to obtain as much as possible from the development in a way that would benefit the borough.

The description of the issues and their development related to the opening of windows on flank walls, and the repair and treatment of riverfront façade, varies between planning consultant, developer and English Heritage officer. Even though English Heritage files were not available for review, there is an indication from English Heritage officer's map and from the planning files that the issues were being raised by the historic building officer in the conservation department in Tower Hamlets. The detail of the proposals were the main issue, these related to how they would affect the "character of the building". This aspect might well have been perceived by other actors as an English Heritage issue, and therefore described as "dealings with English Heritage".

Full planning consent was granted after section 106 agreement was prepared, and once an agreement was reached with the police station regarding the window openings. Whilst the planning issues were dealt with, the other aspect being considered was the cost of conversion. The quantity surveyor's initial calculations were carried out by taking costs from other similar conversion schemes. This gave a base from which the developer could consider more carefully the potential of continuing. At the point of preparation of the bills of quantities an offer to purchase the site was put forward by a third developer, London Town plc. The agent involved was a key aspect for this process as none of the developers were specifically looking to sell or buy. However, the agent involved in the sale of the site to Delta approached them to assess their interest in selling to another developer. The agent then approached London Town plc. with the idea that Delta was looking to sell the scheme on. The agent was the key initiator for London Town to take on the development of the scheme. The agent advised London Town on the possible values the scheme could achieve and therefore influenced their decision to agree on the purchase price, which according to Delta was equivalent to their expected profits, and resulting in a formidable deal for Delta and agent.

London Town's interest in the site was similar to Delta's. They had experience in converting buildings to residential use, they had knowledge of the potential of the area for high value residential space, and the potential of Old Aberdeen Wharf as a saleable product for being a riverfront building, the location factor. London Town's criteria for evaluation of the information provided was similar to that carried out by Delta. However, London Town's review was more thorough and over a longer time period of 6-8 weeks. All planning conditions were reviewed and corroborated with the local planning authority; archaeological risks were assessed; window issues were reviewed with the historic building officer and the party wall surveyor as consent and agreement had not been granted yet. The agent produced a report containing information about the local environment and comparable sales and rental values. The quantity surveyor, architect and engineer were approached by London Town to discuss the design, structure and costs.

The decision to purchase was made on the basis that planning risks were low, the design stage was well advanced and there did not exist any critical aspects that would prevent them from going to work on site straight away. Costs seemed reasonable, funding was obtained, and VAT implications were non existent. The risk with Tower Hamlets conservation officer was with the repair of the façade, but the developer was willing to go ahead with what they were proposing if they could not persuade them otherwise. These are the objective facts that were considered. However the head of the development department did not consider it a good time to start a new development as they were very busy. In this case we have to take into consideration the desire of the managing director to go ahead and purchase the scheme. As Harris mentions "the managing director was more keen to purchase the site, he influenced me". Here there was a difference in perception of the capabilities of the company to develop the scheme. And there was an attempt to align the objectives and goals of the company with those of the project. That is, the goal of the company of making money for investors and themselves, of increasing the company's reputation as a residential development company by increasing their portfolio could be achieved through the development of Old Aberdeen Wharf. However, the initial consideration of Harris, head of development, of the possibility of the project being delayed for two months as a result of not getting a contractor on site immediately therefore damaging their returns, proved to be accurate. The completion of the project was at least two months over schedule affecting their returns. Not greatly, but sufficiently to consider the project only to be "a reasonable development".

This situation is indicative of how the managing director can overestimate the company's capabilities for developing the project to achieve their initial goal. This is explained by the tendency of heads of organisations that have been successful in the past to underestimate the risks involved in other similar projects.

Once the site was purchased work immediately started to produce the tender package. The selection of the contractor was based on their previous working relation with the developer and their lowest bid return. However, during negotiations the contractor went bankrupt, requiring a change of strategy. This situation could indicate the lack of an appropriate evaluation or review strategy for selecting a contractor. As a result, a contract management strategy was taken on the basis that it would affect the programme the least. This approach was not unusual for London Town, they had done it in several other projects. During the project site management phase the numerous issues that came to light were dealt with by considering two things: first how much it would cost, i.e. how would it affect the budget and second, how would it affect the programme. The cost control exercise was a critical aspect to keep within the budget. Monthly project monitoring was carried out and reports sent to the finance director and Joint Venture partners.

The pre-sales marketing phase started once the site was purchased and was managed in house. Work immediately started to get a show flat together, and to elaborate the marketing strategy. A scale model was built and exhibited in the agent's office, brochures were produced and flyers were launched. The aim was to pre-sell as many flats as possible early on to get some return on investment. This resulted in 6 flats being sold "off plan"; a success for their marketing strategy.

Finally, the product was saleable. However, it was considered that the pricing of the units was not optimum. Prices ranged from £165,000 to £550,000. It is the perception of the agent that the developer wanted too much for the scheme, which seemed to be the case as at the time of the interview (TM, August 2000) there was still one unit left to sell, 15 months after the project was completed. The reason for increasing the price of the units, was to compensate for the unexpected increases in cost and because it was proven by other developments in the area that units could be sold for £500,000.

It is considered that the perceived problems encountered by the last developer were greater than the success the project achieved. Three problems were encountered which could have been reduced.

First, the detailed negotiations with English Heritage or the Historic Building Officer and case officer of Tower Hamlets could have been reduced if the development company had initially fully understood the project's planning history. They could have accepted the conditions for repair of the river front façade and they could have followed the advice of the planning consultant of not trying to negotiate over balconies and terraces, as the previous developer had already done so unsuccessfully.

Second, the change of contract strategy is difficult to comment on. It was better for the contractor to go bankrupt during negotiations rather than during construction work. However, the selection of the contractor was not considered thoroughly. It seems to have been based more on previous working relations rather than on the contractor's financial capabilities to carry the job out. A positive outcome of this problem was that the construction manager was hired to work in-house on future projects.

Third, the pricing of the units and the overestimation of the value of the product by the developer. Price ranges vary greatly, and the development company did not follow the initial advice of the agent, which in this case proved unwise. As a consequence, the company did not achieve their expected returns.

Compared to the Indigo Mews project (chapter five) the success of Aberdeen Wharf was hardly considered, and if it was, it was done in terms of profit achieved. All maps focused on the difficulties encountered and the process by which they were overcome. The lines of argument end with a concept describing the actor's completion of a task and activities. In addition, there is no sense of team building, as maps indicate a low level of actor relation and lack of clear lines of communication. This is explained by the differences in views between actors about the involvement and influence of English Heritage and Conservation Officer during the discussions of design detail related issues. Rather than a "team" it was a group of actors brought together to work for the client (developer) and do as he indicated to achieve the company's goal, a clear example of an autocratic approach to management.

In this project decisions were carried out with time pressure, as returns needed to be recovered quickly; with the aim of achieving as much development return as possible, explained by the insistence of design changes with relevant authorities; with the consideration on how decisions would affect construction schedule and budget. A reason for this, and compared to Indigo Mews, is that London Town were at the time of development a small, relatively new company that needed to carry out one development after another, this ensures quick returns, increase in company's portfolio and reputation. While Dorrington Properties was part of a bigger international corporation and with no need to develop in chain.

ACTORS/THEMES	INTEREST	SITE EVALUATION & PURCHASE	DECISION TO SELL	PLANNING	DESIGN
Vendor	Water front properties saleable. Experience in refubishing buildings successfully. Relationship with agent	development and quality of design work. good planning consent and existing relationship with PA. Agent's positive advice of the marketing value of units	Offer from London Town was equal to the expected profit. Ready to go on site, enablings works going on. Costs were varying more than expected	design had to address parking issues. Had to get for additional units. Had to persuade PA (development & conservation) opening windows on flank walls and agree with interested party on their location.	L & H design did not use space efficiently. Added three more units. Had to put windows on flank walls. Discuss with authorities what they would or would not allow.
Developer	previous experience with conversions of listed buildings. Knowledge of potential for residential in the area. Perception of higher property values. Relationship with agent	review of package of information: planning conditions and consent, 106 agreement, comparable sales and rental values, local environment, archaelogical aspects, EH issues. Review of costs from QS. Architectural design. Engineer's review of structure. Party wall surveyor review of windows. Information reduced risk: design was advanced, there was nothing critical that would stop from starting work on site. archaelogy and planning favourable. construction costs reasonable. good location. funding obtained. no VAT implications		reviewed the detail of the design and treatment of the façade. Reviewed the possiblity of adding a roof terrace and balconies. Replacement of pediment very expensive and time consuming & potentially dangerous in engineering terms.Conservation officer did not listen to alternatives. Company pushed for pediment to be modern material... original.	
Planning Consultant				With L&H: establish the planning principles and discuss with relevant authorities. Get consent for change of use. issues of density, parking, amenity space. With Delta: more terracing, additional 3 units, amenity space, means of escape,atrium ventilation, negotiated appropriate design for facade and strike a 106 agreement for up keep of amenity space. Conservation officer made the final decision.With London Town disussed the details of the materials approved. had to discharge subsequent conditions.discussed details of the cornice and pediment. we had big constraints on time as people were on site and we had to get conditions discharged.London Town pushed to get consent for what they wanted. roof alteration had an affect on the conservation area status.	With L&H: carried out design according to planning guidance. With Delta: Increased the number of units. Changed layout. Had to take up space from atrium opening. Required more windows on flank walls. Problems of light provision.
Cost Consultant		condition of the building was similar to that of all waterside buildings. The biggest problem was the condition of the fabric. Floor areas were different levels. There weren't many things we couldn't see			
Estate Agent	Aberdeen Wharf was a good project. in good area for residential development.	site could get good returns. Site could be improved.adviced on the highest level of price they could achieve.			Adviced on the concept: who is going to buy the units, what type of finishes, advice on plan layout to increase value (bigger kitchen and bathrooms)
Construction Project Manager					
English Heritage	Aberdeen Wharf is a listed building in a conservation area. The building has an exceedingly unique stucco river front elevation.				the principal feature was the riverfront façade. Made sketches to show how it might have been

***Table 6.1** Old Aberdeen Wharf key element matrix 1/2*

ACTORS/THEMES	ENGLISH HERITAGE ASPECTS	PROCUREMENT	CONSTRUCTION WORK	PROJECT MANAGEMENT	RESULT	MARKETING
Vendor	openings on flank walls. Addition of balconies					
Developer	replacement of pediment. Detail of design and treatment of the façade. Reviewed addition of roof terrace and balconies to increase value	prepare specifications to go to main contractors. Finalise bill of quanitities. Send tender package to identified contractors. Changed strategy to project management due to contractor going bankrupt.	subcontracted all work. contractors had to ensure they would comply. Got show flat as quickly as possible.	get packages of work together. Discuss with team members packages of information that would go out. Carry out accounting procedures. Cost control exercise. QS avails works. Subcontract all work. Assumed work was cheaper of site managed	reasonable project: did not make as much money as we thought we would. Project managing is very time consuming and not something we like to do. Construction took slightly longer than anticipated	Marketing exercise starts as soon as possible. Created a show flat, brochures and model. Try to pre-sell as much as possible. Offer a guarantee through a quality control exercise
Planning Consultant	terracing would alter too much the character of the building. Negotiate the appropriate design of the riverside façade. EH were not so concered about the details as much as conservation officer. Changes to roof affected listed building character					
Cost Consultant		created a detailed conversion cost plan from the architectural drawings. London Town could not afford our fees				
Estate Agent					London Town wanted too much money for the units. Aberdeen Wharf was not as successful as it should have been. Design could have been imporved. It was a difficult building.	London Town had expenditure for advertising. Adviced to sell flats off plan.
Construction Project Manager		Got involved when Aberdeen Wharf was ready to go on site. Impression was that it was not going to be an easy project: existing structure, pilling room limited, logistics of getting material. Procured packages.	problems during pilling, taking roof off, getting material on site. which all had an impact on cost. Had to deal with issues of building control: ventilation of atrium.	elaborated programme of works. Identified and selected contractors. Run day to day work on site. try to foresee potential problems.conversion work has numerous unforseen problems.		
English Heritage	it was a relatively straigh forward case. Only interested in the recuperation of the façade. The case got complicated as architect wanted to put roof terraces.					

Table 6.1 Old Aberdeen Wharf key element matrix 2/2

Chapter Seven
Wheat Wharf

7.1 INTRODUCTION

The conversion of Wheat Wharf, a grade II listed 19th century granary into 25 residential units and 757 square metres of B1 space is the subject of this chapter. Wheat Wharf forms part of the Butlers Wharf estate and was sold by Frogmore Estates to Angel Property Trading Ltd in 1998. The conversion process through which Wheat Wharf was developed will be described and analysed in the following sub-sections. We will begin by giving a general background of the site, followed by a project overview. This is followed by a brief description of key actor's roles. The analysis is carried out and presented on individual actors, focussing on identifying the central themes and key elements of their involvement during the project. Finally, the discussion section reviews the findings.

7.2 SITE BACKGROUND

Wheat Wharf is located in the area of Bermondsey in the London Borough of Southwark (fig.7.1). The site of approximately 890 square metres forms part of the Butlers Wharf estate, located south of the river Thames next to Tower Bridge.

Wheat Wharf was a 4-storey granary built in the mid 19th century. It is considered to be one of London's early generation inland warehouses, which survived almost intact. It was originally constructed from London stock brickwork with two facades re-faced in white Suffolk brick in the early 1900s, and timber floors running length wise. It had a pitched roof; a symmetrically composed arrangement of windows and loading bays and quite unique secondary details such as doors, window shutters and roof trusses.

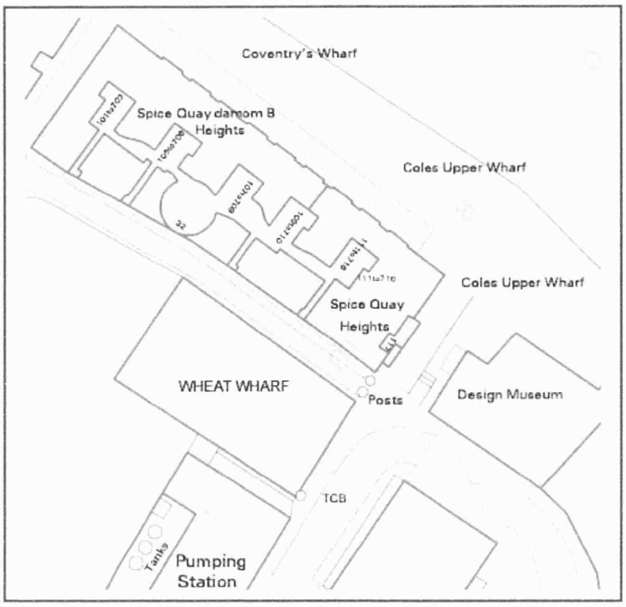

***Fig. 7.1** Wheat Wharf location map*

All these characteristics were considered by English Heritage to be of historical, architectural and technical interest, and as a result Wheat Wharf was added to the listed buildings register with a grade II listing in 1982.

A brief background of Butlers Wharf estate is necessary to understand Wheat Wharf's development, its complexity and context. The regeneration process of Butlers Wharf 5 hectare conservation area began in 1984 when the developer Butlers Wharf Ltd (Sir Terrence Conran and partners and Conran Roche architectural practice) put a bid for a mixed-use development to the London Docklands Development Corporation (LDDC). Having obtained outline planning permission the site was acquired in 1984. Butlers Wharf Ltd, concentrated on the waterfront buildings, renovating and developing the Butlers Wharf Building, Cardamon, Clove, Cinnamon, Nutmeg and Coriander warehouses. In 1990 the development company fell into financial difficulties and into receivership, as was the case for many other firms, a "bust" period had began. Midland Bank were the main creditor and set out the main objective of finishing the projects that had started to try to recover the loss the bank had suffered. The options for Wheat Wharf under the receivers were various, for instance it was considered mothballing the building and leaving it, while getting planning consent for the remainder of the estate; in another instance the option of dismantling the building and relocating it at the back of the estate was sought, as it would allow for a new office development. Options were looked at but no action was taken.

In 1994 the receivers made the decision to sell the entire estate as it was thought to be more valuable together than in pieces. A selling campaign was launched and in 1996 Frogmore Estates bought the site and approached Galliard Homes to be their Joint Venture Partner. Frogmore decided to package the site and sell rather than developing all of it, as the site was considered too big to develop on their own. The idea was to add value to the properties through the planning process, sell some sites but retain the best ones. This would result in the recovery of some of the earlier investment and develop and sell the retained buildings, making a profit. During this process Frogmore had a steering role while Galliard took control of the proposals for the planning applications. Wheat Wharf was one of the last buildings to be dealt with as it was considered a difficult building. The main difficulties or constraints with the building were: the low floor to ceiling heights; crowned floors that sloped to the walls; poor condition of the timber frame; getting light into the building as small windows could not be altered; and piling deeply from the site due to a three storey basement pumping station south of the building.

After a number of schemes had been proposed it was established that residential use had the greatest value, which was needed as the conversion costs would be very high. BUJ architects developed a proposal for 25 residential units and restaurant use on the ground floor, and submitted a listed building and planning application to Southwark planning authority in May 1996. Observations from some interested parties such as English Heritage, Archaeology officer, Southwark's traffic group manager, Southwark's conservation and enforcement group, were made and taken into consideration by both BUJ architects and planning authority. Listed building consent was granted in November 1996 with the condition that detail drawings and samples of materials were submitted and approved by the Local Planning Authority. Planning permission was granted in March 1997.

Having increased the property's value Wheat Wharf was offered for sale. The main reasons for the sale was that Frogmore did not consider 25 units to be as profitable as other developments they were carrying out in the estate. And it was considered to be a difficult building in technical, planning and design terms; and they were not willing to spend two-three years developing it. That is, they had other higher value prospects to focus on.

7.3 Project Overview

Wheat Wharf development consists of the conversion of a grade II listed warehouse into 25 residential units and 757 square metres of B1 (office) space on the ground floor. An indication of the complexity of this project lies in the building's listed status and its dilapidated condition. Appendix 6 presents a timeline of the project.

In 1998 KL of Angel Property Trading Ltd. was made aware by Cluttons estate agent that Wheat Wharf was on sale but with a legal obligation to stabilise and repair the building first. KL new about the building and its potential. KL approached PL, structural engineers to assess the building structure and cost of repair, as this was the most important area of concern. All other necessary information was reviewed such as existing planning consent, design, structure, estimated costs and estimated returns. The results of the appraisal indicated that the product exceeded their expected returns. Based on these results the decision to purchase was made. An offer was made and accepted by Frogmore in May 1998.

Immediately after the purchase a team of professionals was assembled. The main concern was to meet the legal requirement of exchange of contracts of stabilising and repairing the building. Therefore, PL were appointed structural engineers and for the following three months worked on stabilising the building. The engineers had looked at ways of "literally pulling the building back together". Solutions for problems (out of plumb columns, introduction of foundation, reinstatement of floors) were selected based on their cost and efficiency. These were the fundamental solutions to the problems that needed to be resolved for the developer to comply with the obligations under the terms of the sale. While this work was carried out, the engineers also worked with the architect and service engineer in developing the design solutions.

JD Owens De Silva architects were approached by the developer to optimise the design rather than increase the number of units, as the developer felt it would be too complicated to get more flats and they wanted to start work on site quickly. The original BUJ design was developed with the aim of obtaining planning consent, so it did not make the best use space. Therefore, the flats were re-designed to provide bigger spaces, on the top floor large windows and a glazed lantern were proposed to make the most of the roof space, one central staircase was provided reducing the circulation area, and the ground floor use was changed from restaurant to office use. A planning application for the change of use was submitted to Southwark Planning Authority in June 1998 and granted consent in July 1998.

The team continued to develop a full set of plans and specifications. The architect submitted an application for permission to develop with the amendments to appearance and layout to Southwark Planning Authority in December 1998. English Heritage had no objections to the proposal, but suggested not to approve the matters of detail, such as treatment of windows, new doors, balconies, lantern light to main roof, roof lights, re-pointing, new brickwork and treatment of timber. Listed building and planning permission were granted in February 1999.

The construction phase was approached through a traditional form of procurement. The decision to approach the construction in this form was based on the developer's opinion that under a design and build contract there would be too much risk involved for the contractor, leading to an unattractive price for the developer. Botes Building were selected to develop the contract based on their low bid. Botes Building were assigned the contract, initially to do the shell of the building as the fit out design had not been developed. They came into the project very early on, when the stabilising works were still being carried out by another contractor (Bullovans). Bullovans carried out the initial pilling work and Botes came in to do the repositioning of the columns. The guarantee provided by Bullovans was passed over to Botes.

The first problem Botes contractors faced was related to the dilapidated state of the timber frame, that is, stabilising and repairing the building.

During the repair phase the project suffered major delays due to a dispute with the adjoining landowner about the ownership of the piece of land where the scaffolding needed to be put. An additional delay to the project came through problems of receipt of information from the architect. This resulted in problems being solved in an ad-hoc daily, weekly basis; which affected the ordering and delivery of materials to subcontractors. This was also the case when subsequently Botes got involved in the fit out of the building.

Three types of flats were designed with the option given to the purchaser to change specifications, this led to constant request of information to the architect and instructions on how to solve specific problems that were encountered within each flat. This in turn led to conflicts between the builders and the architect. Building works started in January 1999, at the time of the interview, September 2000, fitting out was still taking place, work was running 5 months late. Botes finished the fit out of the apartments in January 2001.

At the time of writing (June 2001) the ground floor fitting out was still taking place by another contractor and some residential units were occupied.

Unlike the previous case studies, in chapter five and six, Wheat Wharf had no marketing strategy, as it was considered an area where money could be saved. That is, Wheat Wharf is in a prime location for residential accommodation, residential market was on the rise, therefore no need to have any formal publicity (brochures, flyers, newspaper advertising, scale models etc.) apart from contacting potential purchaser through the estate agent's list of clients. Cluttons estate agent advised on the type of end product and selling prices. All units were pre-sold off plan very early on (mid 1999), prices ranged from £230,000 to £500,000 (238 £/sqft-296 £/sqft).

7.4 KEY ACTORS IN THE PROJECT

This sections gives a brief description of the key actors involved in Wheat Wharf project. They were initially identified through LLR database and subsequently through the developer and other members of the professional team.

a) The Developer

Angel Property Trading Ltd. is a small trading style company based in London. The company is engaged in both development of residential and commercial property. Angel has been trading since 1993 and as a small company rely heavily on external consultants for developing and funding schemes. Unlike other development companies, who focus on a particular areas, Angel will go anywhere in the country where they see an opportunity. As the company has grown they tend to focus on projects with minimum sizes and within the London area as it is where the company's human resources are located. KL was the developer in charge of the Wheat Wharf Project. His role was to bring together the various disciplines of development. These included design, marketing, financing and construction. With the aim of achieving their financial threshold of 25% return on cost.

b) The Architect

JD Owens de Silva is a small architectural firm based in London that provide architectural and planning services. The firm is well known in the London area for their innovative and sympathetic design schemes in listed buildings. JD was the principle architect in charge of Wheat Wharf. Their role was to improve the existing design, develop all drawings and specifications for the project and to negotiate with relevant authorities, in this instance English Heritage and Southwark planning department.

c) The Structure Engineer

PL were the consulting structural engineers for this project. They were approached by the developer, as they had an established working relation. RP was the initial structural designer, his role was to assess the existing structural design and to propose new options to stabilise and repair the building at reduced costs. During the stabilising work on site his role was at a supervisory level and delegated to TM the project engineer. After the building was stable his involvement in the project was only to attend queries from the architect, service engineer and contractor.

d) The Service Engineer

Mendick SW is a medium sized building services engineering firm located in the London area. Their involvement in Wheat Wharf was a mixed role. They were initially contracted to have a performance role with the contractor, that is, to provide the detail design for the mechanical and electrical subcontractors. These were elaborated according to the developer's requirements. However, their role expanded to the design of means of escape and smoke control. The basic services, heating and water provision design was provided by the contractor and checked by SW.

e) The Quantity Surveyor

PSP consultants is a small to medium size project and facilities consultancy located in Berkshire. PS was approached by developer, as they had an established working relation. PSP were appointed quantity surveyors, employer's agent and on site planning supervisors. As quantity surveyors their role was to estimate costs through the elaboration of bills of quantities for repair and fit out works. They produced cost plans and updated them periodically as designed progressed. From the architects drawings a tender package was elaborated and sent to potential contractors. Once work was on site their role was to certify the contractor's works. MH was involved in the elaboration of the tender package for the fit out works while his involvement before or after that phase was limited.

g) The Contractor

Botes Buildings Ltd. were the contractors assigned to built out Wheat Wharf. Botes is a construction firm which deal with both new build and refurbishment projects. Initially they were contracted to do the repair of the shell of the building as the fit out design had not been developed. But as work progressed on the repairs they were approached to do the fit out as well. Their role in this case was to carry out the work according to the architects drawings and specifications.

h) English Heritage

English Heritage responsibilities are to protect the country's legacy of historic buildings, landscape and archaeological sites. English Heritage was involved as Wheat Wharf is a grade II listed building. PC the historic building adviser in charge considered Wheat Wharf of significant importance, therefore he was highly involved in the projects development. His role was to give suggestions to Southwark Planning department and architect regarding the appropriateness of modifications, repairs, alterations and detailed design of the building and its elements.

i) Southwark Planning Authority

Southwark Planning Department's role is to approve or reject proposed developments within the borough according to local and national policy. Southwark planning department ensured the development met all legal requirements (section 2.6.4). Development approval was linked to listed building approval, archaeological approval, conservation and enforcement area approval. But not directly linked with building control, fire control or health and safety. All information related to planning was obtained from Southwark's planning file.

j) Residential Agent

Cluttons Daniel Smith is a property consultancy, which provides a range of services to the agricultural, commercial and residential sector. The company provides investment, property management, valuation, building surveying, research, sales, acquisition and letting advice.

TM partner of Cluttons was the agent involved in Wheat Wharf. His role was limited to advising the developer on the potential of the property, sale values that could be achieved, quality of specifications and layout of units. Cluttons contacted potential buyers through their existing list of clients and put them in contact with the developer.

k) The Vendor

Frogmore Estates is a property investment and property development company. Having acquired Butlers Wharf estate, Frogmore decided to package the site and obtain planning permission for the un-developed buildings. Once Wheat Wharf had planning permission for 25 residential apartments and restaurant use on ground floor it was sold for a reasonable price to Angel Properties. The importance of their involvement in this project lies in their perception of the potential of Wheat Wharf and in setting the design base from which the architect developed a new proposal.

7.5 ANALYSIS OF INDIVUAL COGNITIVE MAPS

This section describes the results of the analysis of individual maps. The results are presented in the form of a summary map that contain themes (clusters) and links between them in degrees of strength. Links are represented in two forms, arrows indicate a causal relationship and dotted lines represent an association. The description of each map will evolve around the central themes (**bold**) and their key elements (*italics*) both identified through central and domain analysis in Decision Explorer (see section 4.10 and 4.11). The key elements within remaining clusters will also be described in relation to the central themes and/or other clusters. Where loops (feedback of information) between clusters appear, the nature of their existence will be described as well. Clusters are located in appendix 7.

It is important to note that the maps are a simplified representation of the individual's views of their involvement and the development of the project. It will be recognised that the degree of detail in these maps is limited compared to the ones in previous case studies (chapter five and six). This is considered to be due to: the level of involvement, therefore knowledge or understanding of each individual about the development of the project, possibly triggered by the lack of communication between actors; the lack of clearly defined responsibilities and roles and/or a problem of actors to articulate the process. These elements are present in the analysis.

a) CD, Vendor

CD's map (fig.7.2) contains background information on Wheat Wharf. It focuses in describing Frogmore's view of the difficulties to develop Wheat Wharf and the decision to sell it on. The interesting aspect of CD's summary map is the loop formed between the three central themes, both described in the sub-sections below.

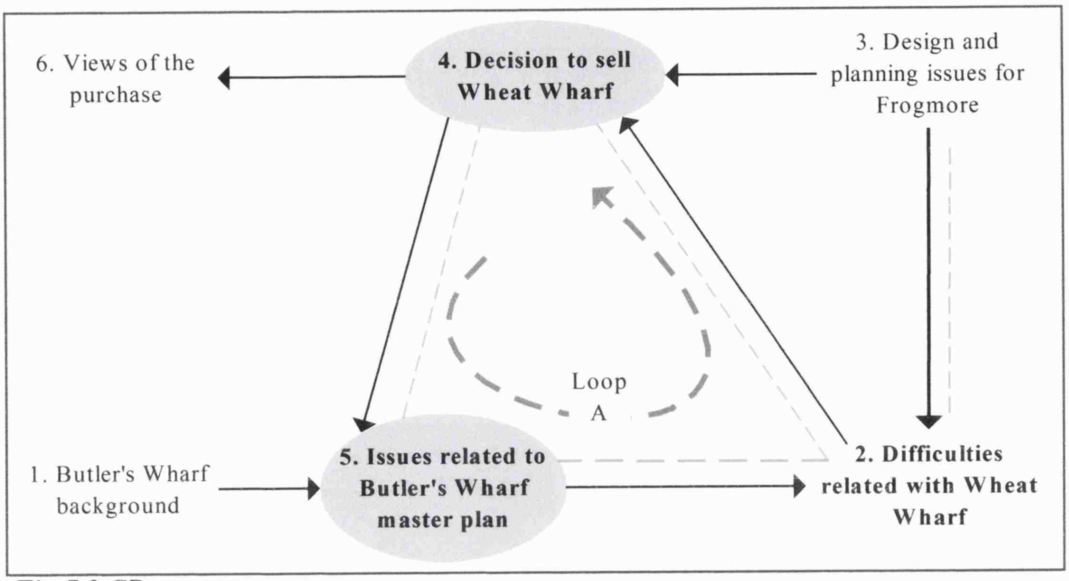

***Fig.** 7.2 CD summary map*

Central themes and key elements

CD's summary map is centred on three themes forming a loop (A): Issues related to Butlers Wharf master plan (cluster 5), leading to the difficulties related with Wheat Wharf (cluster 2), leading to the decision to sell Wheat Wharf (cluster 4).

The **issues related to Butlers Wharf master plan** (cluster 5) are the first effect of Frogmore purchase of the estate, described in Butlers Wharf background (cluster 1). Cluster 5 describes generally the main aspects of the master plan with which planners had concerns. Two key elements are identified: first, the *steering role Frogmore had in the development of the master plan and Galliards role in dealing with the planning applications*. This led to Frogmore and Galliard deciding not to build the entire estate. And second, *the development of the master plan* as planners wanted to look at the estate on a global basis. The main concerns with the master plan were the requirement to provide social housing and car parking on site. The social housing issue was resolved by Frogmore making a commuted payment of £1 million to Southwark (notes from meeting, 26/03/96); and the car parking provision was resolved by creating a multi-storey car park in the back of the estate resulting in pedestrianised areas.

Frogmore's and Galliard's roles and decision of not building the entire estate led them to package the site in small parts and sell while retaining the best buildings to develop themselves. This led to the awareness of the **difficulties with Wheat Wharf** (cluster 2). Here three key elements are identified: First, *the difficulty of the building in planning and technical terms* leading to the second key element, *leaving Wheat Wharf until last* leading to the third key element of *proposing residential use for Wheat Wharf after a number of schemes had been proposed.* The difficulty in technical terms was related to the poor structural condition of the building and the potential problems with adjacent buildings, for example, difficulty to pile deeply and logistic problems during site works. The planning difficulties were related to the interest Southwark planning and conservation officer, English Heritage and the Royal Fine Arts Commission had in the building, which resulted in limited changes being allowed. This aspect is related to the design and planning issues described in cluster 3.

The decision to seek consent for residential use and restaurant use on ground floor was made, for it provided the most value. And after other alternatives (dismantling the building or mothballing it) were not supported by authorities. This last point and the design and planning issues (cluster 3) leads to the **decision to sell Wheat Wharf** (cluster 4). Three key elements are identified within this cluster: first, *the difficulty in getting consent*; second, *having to look at what gives the maximum values even if it means struggling with planners* both leading to the third key element, *the decision to sell Wheat Wharf.* The difficulty in obtaining consent was due to the long process of negotiating and striking a balance between the planning authority and developers. The decision to sell Wheat Wharf was influenced by several issues: added value obtained through the planning process; the consideration of Wheat Wharf as a loss maker in terms of the number of stages involved to develop it; and Frogmore's needs to use time and money wisely. Their aim was to get as much money as quickly as possible without incurring too much cost. This was the reason why Frogmore wanted as much residential use as possible, for it generated higher profits, issue that influenced the design of the master plan (cluster 5). Developing Wheat Wharf would not give them the high returns as compared to other developments on the estate and it would take too long to develop.

Loops

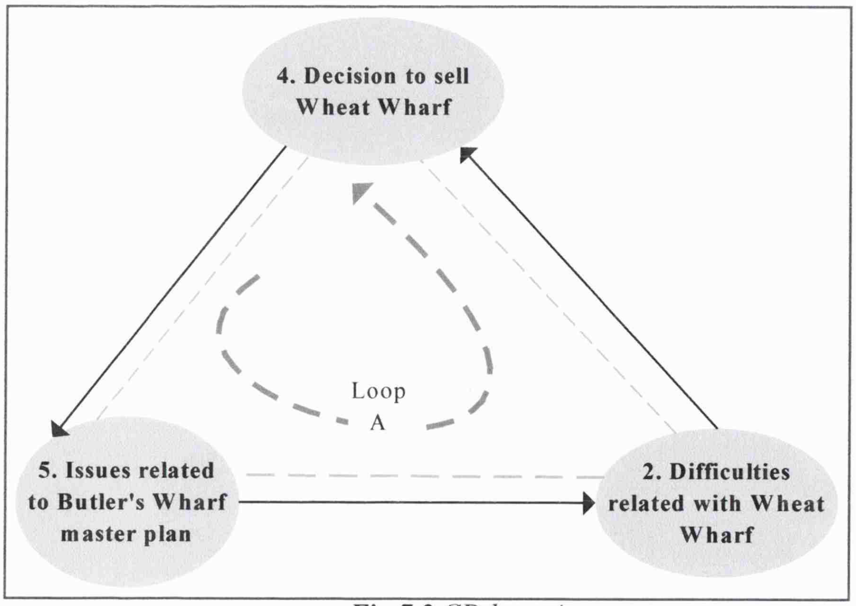

Fig. 7.3 CD loop A

CD's summary map illustrates one loop formed between the three central themes (fig. 7.3). This loop represents a simple causal relationship. The development of the master plan (cluster 5) was influenced by the decision of packaging the site rather than building the entire estate and this influenced the decision to leave Wheat Wharf until last, as it was considered a difficult building in technical, design and planning terms (cluster 2). The positive outcome of the planning process and the objectives of the master plan influenced Frogmore's decision to sell Wheat Wharf (cluster 4). The proposal and planning consent for residential use feeds back into the issues related to the master plan (cluster 5) as Frogmore's aim was to have as much residential as possible for it would generate the most profit.

Remaining clusters

The specific design and planning issues (cluster 3) which caused the difficulties with Wheat Wharf (cluster 2) and which influenced the decision to sell Wheat Wharf (cluster 4), were the low floor to ceiling heights; the depth of the building, which made it difficult to ventilate and to provide adequate natural lighting; the limitation from English Heritage and Southwark Planning Authority of modifications to the roof, facades and windows.

The sale of Wheat Wharf (cluster 6) was made when KL (developer of Angel Properties) put an acceptable offer forward. The price for the site was low compared to other sites in the estate, due to the perceived difficulty of developing.

b) KL, Developer

KL's summary map, figure 7.4, describes how from his point of view the project developed from the site purchase (cluster 3) through to construction work on site (cluster 5). KL's map focuses mainly in describing the problems that were encountered through the conversion process. Of interest are the six sets of loops (L) formed between the central themes (L 3-4, L 4-5, L 5-6, L 3-4-5, L 4-5-6 and L 3-4-5-6) illustrated in figure 7.5, as they mostly feed from and to the selection of the professional team and associated problems (cluster 4). This indicates that the most significant problems encountered, according to the developer, were related with some of the professionals involved. An additional interest is the orphan theme of being over budget (cluster 12), a significant outcome of the process, however unlinked to the difficulties encountered during the design and contract phases.

Central themes and key elements

Four main themes were identified all forming six sets of loops between them. First, the criteria to purchase site (cluster 3) leads to and feeds back from the selection of the professional team (cluster 4) secondly, which feedbacks from and strongly influences the third theme of contract and site difficulties (cluster 5), finally this feedbacks from and leads to the difficulties in the design and effects on the contract (cluster 6).

The criteria to purchase the site (cluster 3) was based on the results of an *up to date appraisal*, that showed the product could exceed the development company's threshold return of 25%. The appraisal consisted in considering four things: *building condition and existing planning consent*; *cost plans, sale values, measured survey and planning;* the *formed opinion that extra square footage and technical solutions were cost effective;* and the attainment of funding (cluster 9). The importance of funding was mentioned by developers in previous case studies (chapter 5 and 6), however it is only in this project where funding becomes an issue.

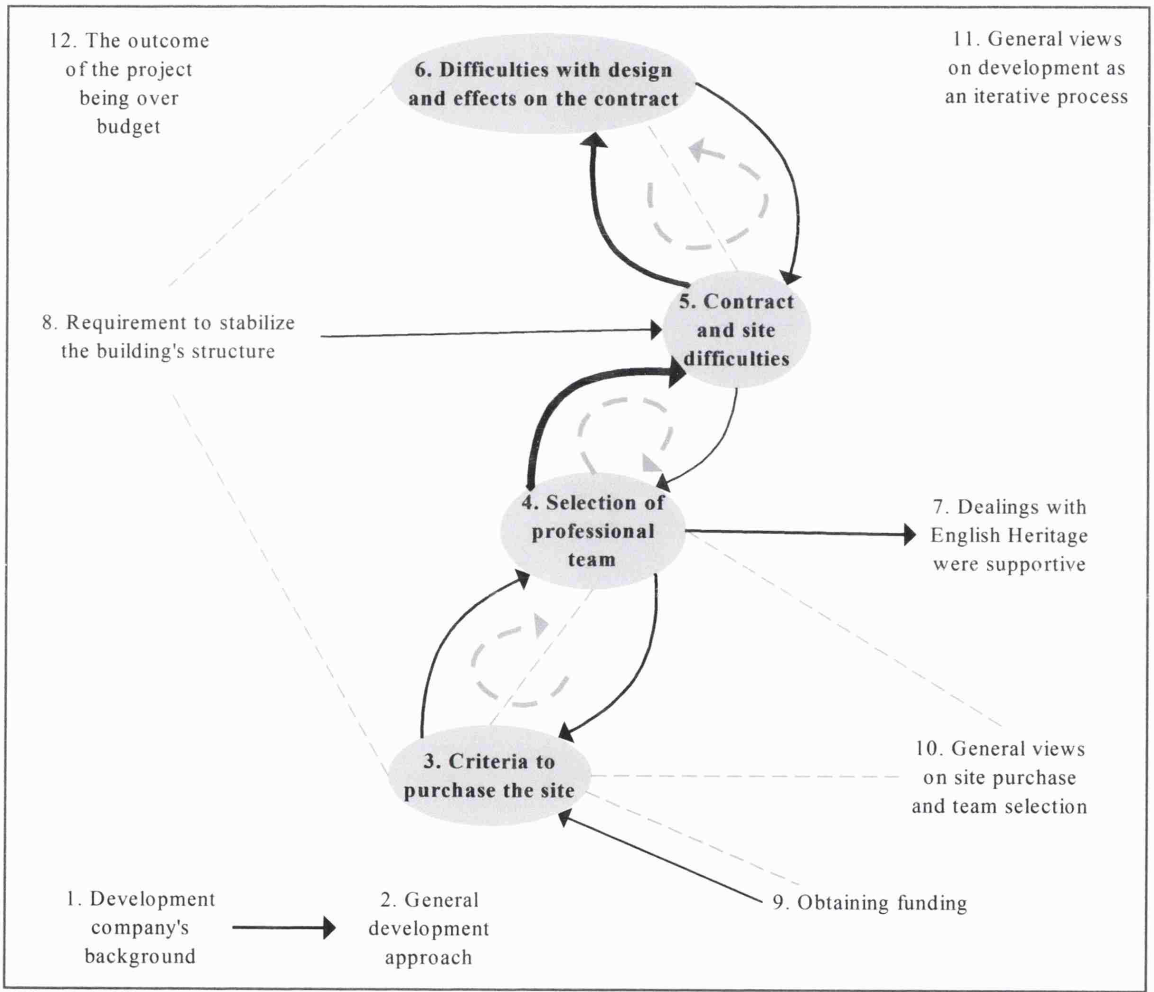

***Fig.7.4** KL summary map*

This can be due to Angel's size, probably not as well established as the other development companies. The result of the appraisal and the difference in perception between the vendor and the developer of what could be achieved with the building led to the site being purchased and to the **selection of the professional team** (cluster 4). The team was formed by those professionals who had been consulted during the site appraisal and *who specialised in that type of building*. An influencing factor in this selection was the developer's decision to *rely on mature practices* which are better resourced to deliver their services. The team's *opinion that extra square footage could be generated and that the technical solutions were cost effective* is an issue that also appears in this cluster. This is due to the developer's view that the professional team influences strongly in decisions for he relies on their information resulting in not second guessing them. This aspect is pointed out by the developer in relation to the estate agent's and the architect's role in the project. These last two points of relying on the professionals information and on their role in the project, had significant effects in terms of difficulties encountered between the developer and architect. The architect was engaged to provide their professional services to the complete the project, however, over time the developer has not been happy with of the decisions the architect made; and with the difficulties between the architect and the contractor. Furthermore, this cluster highlights the selection and role of the appointed architect over other team members, this is due to his role as scheme designer and negotiator with Southwark Planning Authority and English Heritage (described in cluster 7) and continual involvement with the contractor.

The strong link to cluster 5 which describes the **contract and site difficulties** represents the professional team's (architect, structure engineer, quantity surveyor, project manager and service engineer) heavy involvement in developing the full set of plans and specifications for the design.

Once the plans had been developed the "team" decided to approach the construction phase through a *traditional form of procurement*, for it was considered that the contractor would perceive to much risk in the building, which would result in an unattractive price for the developer. It is important to note that the developer considered the decision of going for a traditional form of contract was a team decision. However, no other actor mentions their involvement in this decision, the project manager mentioned that a traditional package was developed on request of the developer.

Botes were awarded the contract for the repairs of the shell of the building, for the fit out design had not been completed. It is interesting that compared to the other developers in previous case studies, KL does not mention how the contractor was selected. The difficulties encountered during the repair phase were related to two things: first the *problem with the building being out of plumb*, which caused design and fitting out difficulties (cluster 6), resulting in the realisation that the architect did not have the resources to deal with the difficulty of the building (concept 85); second, *contract difficulties*, caused by problems of delivery of information (cluster 6), resulted in subcontractor's and contractor's delays. This situation resulted in confrontational situations between the contractor, developer and architect. The contractor was trying to make up for those delays by using the specifications in the contract, resulting in more money being asked for.

Difficulties with the design and effects on the contract (cluster 6) describes more clearly the problems encountered with the contractor and architect. Due to the building being out of plumb ("there wasn't a straight line anywhere"), "*everything had to be shoe horn into position*". This has resulted in major delays in the development of *design information, it has taken two years to develop.* An additional explanation for these delays, according to the developer, is the architect's lack of resources and proper communication with other team members. It is interesting that the developer considered the architectural firm a small practice (concept 89) therefore not having the resources, being that one of the criteria for the selection of the professionals was "mature practices that can deliver their services"(concept 197). Mature practices meaning the opposite of small practices according to the developer.

The results of these two key elements (*italics*) have been two: first, costs increased, for the work became more labour intensive and labour rates increased. Second, *problems of delivery of information,* led to difficulties between the architect and the contractor and problems with the contract strategy. The contractor was not obliged to do the work without drawings, therefore picking up on this and asking for more money. The contractor and project manager advised the developer to "get rid of the architect", however the developer assessed the situation and opted to give more money to the architect and contractor.

Loops

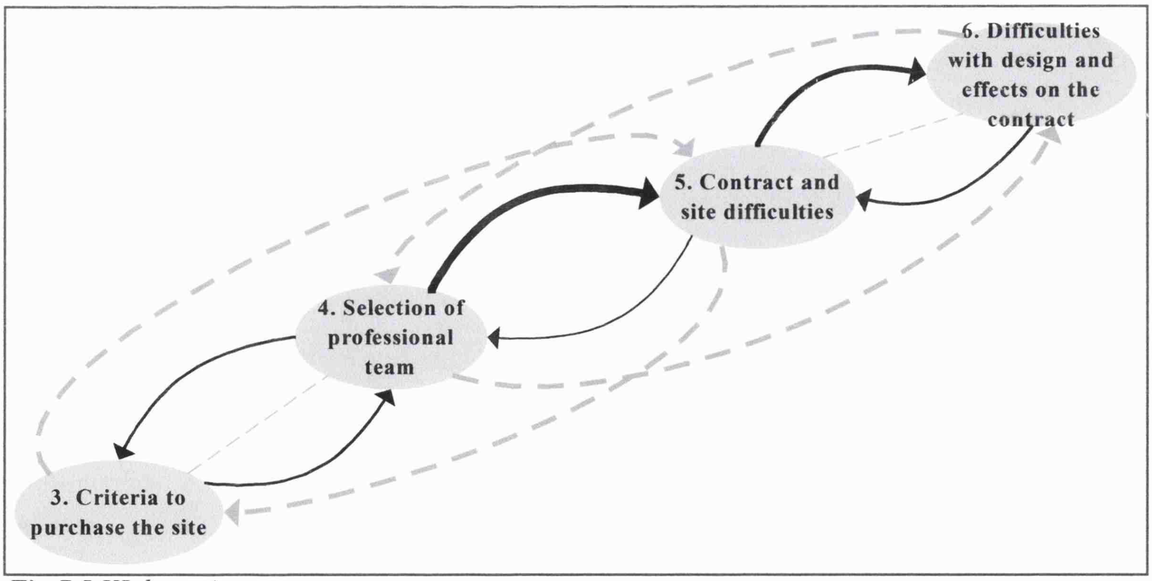

***Fig.**7.5 KL loop A*

The loop between the criteria to purchase the site (cluster 3) and the selection of the professional team (cluster 4) indicates that the professionals involved as consultants during the site appraisal and the positive outcome of it, lead to them being appointed in the project.

The loop between the selection of the professional team (cluster 4) and the contract and site difficulties (cluster 5) represents the strong initial involvement of all team members to develop the design plans and specifications and how in particular the architect's development of his role was not considered by the developer as the best for they are not happy with some of his decisions. An interesting aspect appears here, the developer considered that once the design of the layouts of the building had been completed everything else was less important other than producing a good quality product. This statement comes from the fact that once layout design was complete all units were sold, resulting in less effort being put into the final product (concept 164). Developer would have put more effort into the final product had the units not been sold so early on.

The relation between the contract and site difficulties (cluster 5) and the difficulties in design and its effects on the contract (cluster 6) have been mentioned above. The loop between them indicates how the difficulty of the building and the lack of resources from the architect affected the development of the design information and how this in turn affected work on site, causing difficulties between contractor and architect, affecting the contract strategy and resulting in more money being asked for and given to the architect and contractor.

These three sets of loops are not independent, that is one loop feeds into and back from the next loop creating three more sets of loops between clusters 3-4-5; 4-5-6 and 3-4-5-6. This indicates that the professionals selected and involved in the development of the project, in particular the architect and the contractor were at the centre of the difficulties and problems encountered as the scheme progressed. The feedback loops leading back into the selection of the professional team (cluster 4) might also indicate that the criteria used by the developer for selecting the architect and contractor were not adequate for this project. This criteria is described in cluster 10 in the following section.

Remaining Clusters

Cluster 1 and cluster 2 describe Angel's background as developers, their role and how they tend to approach developments. These are unlinked to any other clusters as they just provide background information not directly related to the development of Wheat Wharf.

Cluster 11 also unlinked describes the developer's views on development being an iterative process and the time it takes to go through it. An interesting concept that appears is that the developer states it is "more important to get the right product at the right cost rather than to go to site in a hurry" (concept 267). However, in Wheat Wharf it was important to get on site quickly, leaving other aspects for later in the process and assigning the contractor very early on when design had not been completed. This is confirmed in JD's cluster 1 and RP's cluster 5.

Funding (cluster 9) was an influential factor for the site purchase (cluster 3). The issue for Angel Property's is the need for continual support from the bank to develop. It is an issue as they need to look at their returns on equity and not only their returns on cost.

General views on site purchase and team selection (cluster 10) is linked to both Cluster 4 and 3 describing the criteria to purchase and the selection of the professional team. The key elements are that the decision to purchase the site is based on the available information, therefore there is a lot of search for information early on. The selection of the professional team is based on whether they are the right team for the job. Based on people the developer knows, experienced in buildings or projects, adequately resourced and design and cost effective. However, it seems that this criteria was not properly implemented, for as has been mentioned the architect was not properly resourced.

English Heritage (cluster 7) "was a big issue" mentions the developer. However, no specific issue was mentioned apart from the fact that English Heritage could strongly recommend to over rule building control and planning. But in this project that wasn't the case English Heritage were supportive of the project, as the developer later acknowledged. The support came from the good relationship the architect and English Heritage adviser had. Probably initially coming from the knowledge of the architect's work in listed buildings.

Cluster 8 describes briefly the legal requirement to stabilise the building as a condition of purchase, therefore linked to the criteria to purchase the site (cluster 3). The obligation existed as other parts of the estate, in particular adjoining sites, needed to be developed.

Outcome

Finally, cluster 12 unlinked, describes the *effects of being over budget and late*. Delay in the completion of the scheme is considered to be due to the lack of professional inclination and difficulty of the building. Costs being over budget could not be absorbed by the contingency, however the large returns on cost allowed the developer to deal with the situation. This could be a reason why this cluster was not linked to the central themes describing the difficulties and effect of design and contract. An additional issue resulting from this is the *"painful process in management terms"*, for a lot of human resources had to be put in when dealing with purchaser specifications. An area where the developer has learned from. It is interesting to note that even though the project was over budget and delayed the developer was still making money out of it.

c) JD Architect

JD summary map (fig.7.6) describes, as would be expected, the design aspects of the project in terms of problems and solutions. The summary map is separated into two sets of grouped clusters. One contains information related to the design aspects of the project and the other information related to the relation with other team members. It is similar to the developer's map in terms of its focus in describing problems encountered through the development process. It is interesting that no loops appear, as this would be expected while dealing with English Heritage, planners and building control.

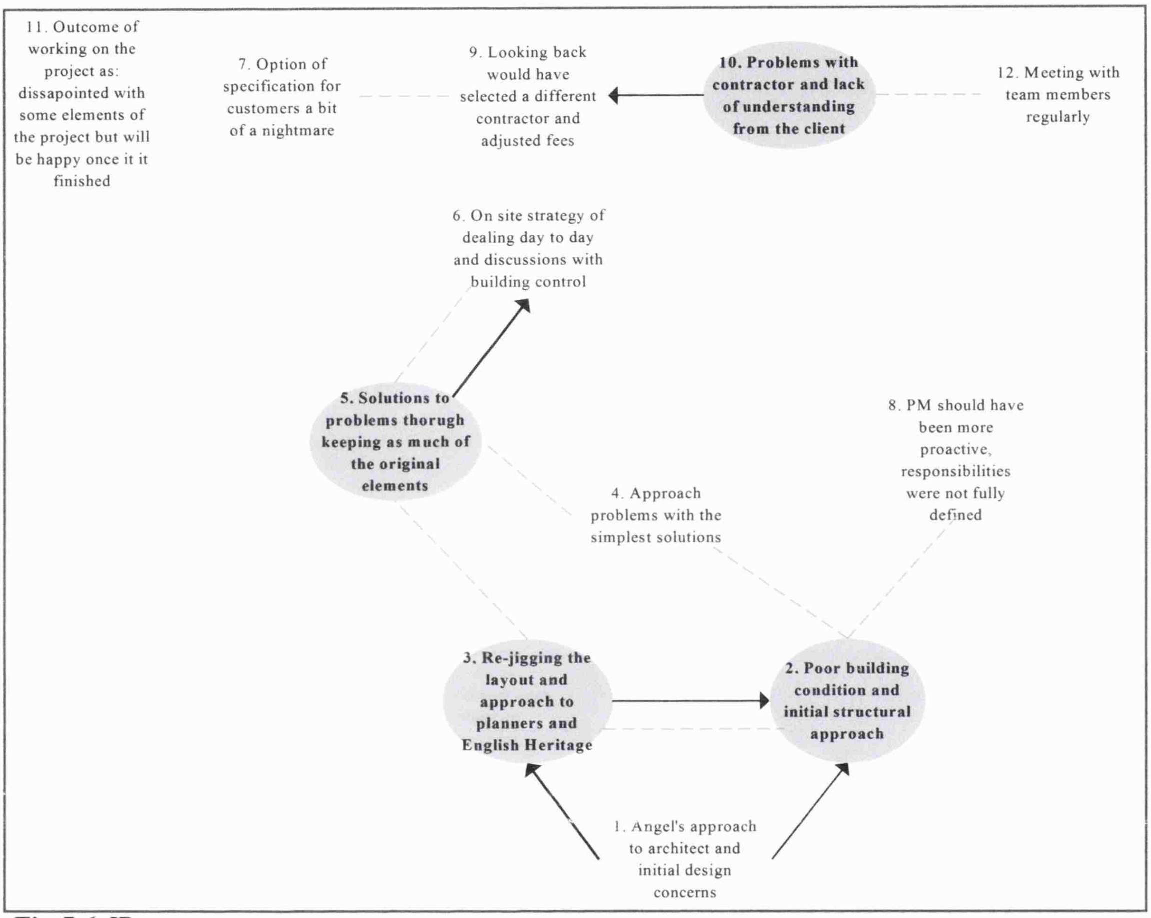

***Fig.7.6** JD summary map*

Central Themes and Key Elements

Three themes were identified through the analysis: first, re-jigging the design and approach to planners and English Heritage; second, state of the building and initial structural approach; and third, solutions to problems while keeping original.

The concerns with the **state of the building and initial structural approach** (cluster 2) came after Angel Properties approached the architect with the design concerns (cluster 1), and went to have a look at the building. The building was in a dreadful state which meant *a lot of work was necessary to get the building back into shape for re-use.* The main initial concern was to *look at the building in terms of resurrection and repair*, before anything else. This lead to *working with the structural engineer* in an early stage, proposing *efficient and cost effective ways of rectifying the problems with the building,* as that had been the main deterrent towards developing. The structural engineer developed the ideas of how to deal with the building and in combination with the architect developed an assessment in order for the architect to see what he "had to play with".

The decision to **re-jig the design** (cluster 3) came from concerns regarding the inefficient use of space in the original BUJ design. The *re-organisation of the design* resulted in *better and bigger flats* and in *discussions with English Heritage, and Southwark's conservation and planning officer*. The design looked at dealing with the detail of putting the apartments successfully into the building, therefore had to look carefully on how the structure worked; and the detail of how to deal with the building in terms of its listing. The strategy adopted to deal with planning and English Heritage was to approach them with drawings, watch their reaction and impress to them that the changes were improvements to the way the building was being dealt with. It took a lot of "liaison" as the architect mentions. This is interesting as other actors in previous cases refer to this process as a "process of negotiation or persuasion". In this case it was a process of communication and coordination. Probably the reason why JD map does not show feedback loops during this stage.

Keeping original and solutions to deign problems (cluster 5) is the last central theme. The structural problems and their solutions indicated *how much of the building could be left alone*. This was important due to its listing. The aim in this case was to *keep as much of the original material as possible,* for it was a planning condition. This caused conflicts with the design and lead to discussions with English Heritage and the planning authority. As a result, new windows were put in on the west wall based on older ones and sills were dropped to make some window openings bigger; ceiling joists and floor boards were left exposed to make the space feel bigger, as floor to ceiling heights were quite low, this meant however that there needed to be a thin construction between floors which met fire and sound insulation standards. Leading to discussions with building control (cluster 6) in the following section.

Remaining clusters

Cluster 1 describes Angel's (development company) approach to JD with regard to the design. Angel felt the original design and the approach to the building could be improved. Angel's *decision of not increasing the number of units* but rather improving the layout and design was based on their interest to start work on site as soon as possible. The concerns with the original design were that it did not make the best use of the space especially the roof's where the units could have more value. This situation lead to two of the central themes: re-organisation of the design (cluster 3) and towards thinking of the structural approaches for the building (cluster 2).

The objective of having efficient approaches to the building repair (cluster 4) were carried out by looking at the simplest solutions. *Solutions were sought for specific problems in terms of not having to re-build the whole element,* in line with keeping as much of the original material.

And the options considered were the ones that *were most acceptable for a listed building,* that is, accepted by English Heritage and Local Planning Authority. This strikes the relation with cluster 5 where solutions had to be in parallel as to keeping original.

The link between cluster 2 describing the state of the building and structural approach and cluster 8 describing the relation with the project manager is due to the timing of involvement of these two actors. While looking at the state of the building the quantity surveyor and project manager, both from PSP consultants, were involved. JD mentions that they had *a very difficult start with the quantity surveyor and project manager.* This view is due to three aspects: first, discussions they had early in the process about costing and what to do were not fruitful, JD mentions "I didn't find them as supportive as others", second, the quantity surveyor missed a lot of the bill (not explained further) and third, areas where the quantity surveyor was project managing were not done as is required. Here there seems to be an overlap of roles or responsibilities and is confirmed by JD 'responsibilities didn't seem fully defined'. This is explained by his view that there seemed to be an overlap between project managing a project and managing the project on site. This view is also considered by RP the structure engineer (cluster 9).JD view is that the *project manager should have had a more pro-active role* rather than just chasing people to deliver the information.

The second group of clusters (cluster 12, 10, 9,7) (fig.7.7) are not directly related to the central themes but contain some interesting aspects of the project. These four linked clusters describe the relation of the architect with the developer and contractor. Meetings with team members were held every two weeks, and once a month on site, and project issues were dealt with within project routines. The architect considered that meetings held with the developer regarding design related decisions were not frequent enough. More meetings would have given the developer a better understanding of difficulties. As JD mentions "the more time we got into the nitty gritty the less we met with the client". The reason for this can be found in KL's map, where he mentions that they were less interested once the layout design was completed and units had started to sell. Their aim at that point was to deliver a product that met the sales specifications (KL, cluster 4). The infrequent meetings resulted in the client's lack of understanding and recognition of the time and cost to do the work. The delays experienced during the construction phase resulted in problems with the contractor as they were putting pressure on claims. JD considered the contractor too contractual, unhelpful and un willing builders, without a working team philosophy.

Cluster 9 has a look back at the project and mentions things that the architect would have done differently, which is easy to do after the event. However, it can indicate areas where they have learned from the project, for example in simplification of interiors, and one design with no options given to purchasers.

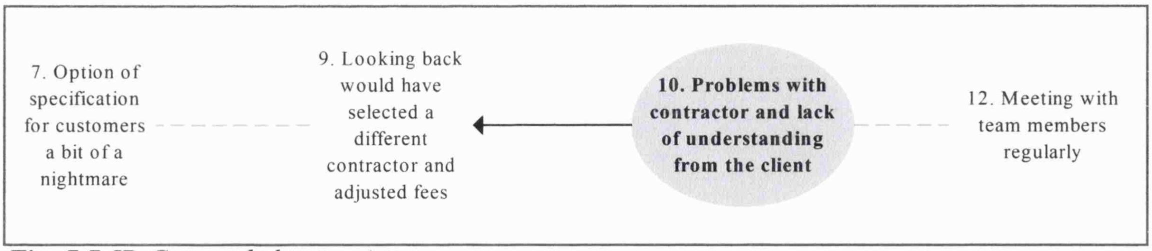

Fig. 7.7 JD Grouped clusters A

d) RP, Structure engineer

RP's summary map, figure 7.8 overleaf, describes the structural aspects of the project. Like the two previous summary maps it explains the structural problems with the building but gives clear solutions to the problems encountered. After the main structural problems had been resolved his involvement in the project decreased, RP considered the emerging problems as part of the refurbishment process. It is interesting to see that for him the outcome of the process was positive. He was aware of the difficulties between the architect, developer and contractor but as he was not involved, his perception of the development of the project is therefore positive.

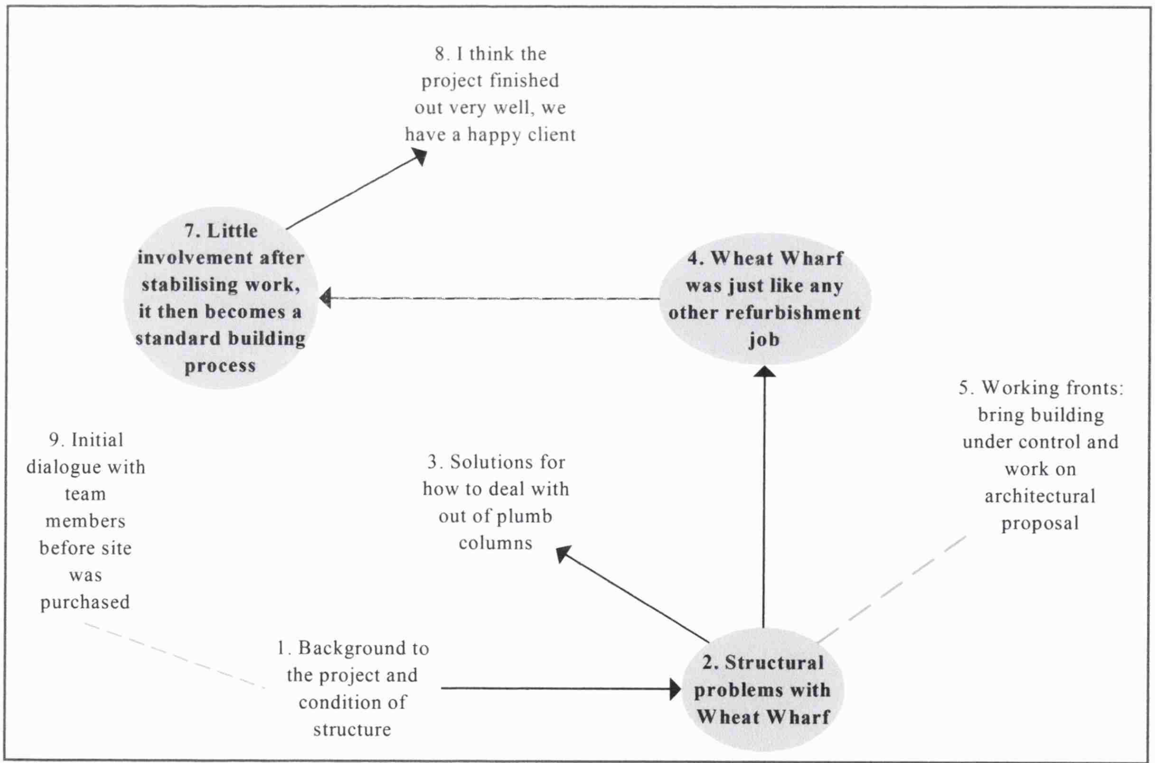

***Fig.7.8** RP summary map*

Central themes and key elements

RP's summary map presents one central theme describing the **structural problems** and solutions the building (cluster 2). The building had temporary repairs due to a partial collapse it had suffered. The main problems that had to be resolved in order for the client to comply with his obligation of repair under the term of the sale were three: *resolve the problem of out of* *plumb columns, control building movement and introduce* and *harden the foundations.* The movement of the building was controlled through the introduction of new piles and through the installation of ties all through the building. The foundations were hardened through the pilling system. Foundations were re-established at ground floor level at a position that would be to the most out of plumb part of the columns, this meant that each foundation base had to be moved and columns were repositioned on them and throughout the building, described in cluster 3. These solutions restored the stability of the building and allowed to take control of the building, achieving the initial aim so that the developer could meet the obligation of the purchase.

Remaining clusters

Cluster 1 relates to the central theme by giving the background information on the complications of the building according to the vendor. The previous owner considered the costs to do the repair work were unattractive, therefore offered Wheat Wharf for sale. However, RP considered the suggestions made for the repair were excessive and would have probably done more damage to the building. RP's solution for the repair were of a more gentle approach and were cost effective (£1 million vs. £600,000) allowing the developer to purchase the site.

Cluster 5 is associated to the central theme by explaining the two fronts in which RP was working. Doing the fundamental building works and trying to bring the building under control was run in parallel to the development of the architectural proposals. The fundamental building works were completely self contained. RP had subcontractors going into do the works and controlling the costs. However, Botes came in fairly early in the process, with limited work and took on the job of repositioning the columns. Subsequently RP was advising the architect and service engineer when required.

The engineer's involvement decreased once the building had been stabilised and repaired, complying with the legal agreement. From that moment on it "became a traditional refurbishment job"(cluster 4), such as recommending how to do floor repairs, where columns could be taken out or where larger span areas could be created. All this eventually become a "standard process of building" (cluster 7), such as being called in by the contractor from time to time, reviewing the contractors prices, etc.

Cluster 9 Briefly describes the initial involvement with other team members. Emphasis is made on the importance of having a continual dialog with the architect about space and volumes and with quantity surveyor about costs. And getting to know the building so as to make the best recommendations to the client. It is interesting to find that RP also mentions the overlap of coordinating the project between the architect and project manager, but does not explain further.

The outcome of the process is expressed in cluster 8. Over all RP considers the project finished very well, explained by getting the commercial mix right, good design, and good marketing as the developer got their returns early. There has been minor problems of sound insulation between flats, but otherwise “snag free”. The developer is happy, but perhaps let down by the contractor for his lack of performance. As indicated in KL’s map (fig.7.4).

e) SW, Service engineer

SW’s summary map, figure 7.9, reflects his involvement in the project in terms of providing the service engineering work. With a limited role in the begging but gradually expanded as and when it was required.

Central Theme and Key Element

Cluster 3 describes what were the difficulties and solutions for **bringing the services into the building**. Initially bringing gas, electricity and water into the building could not be resolved independently by SW. Therefore, it was important to *consult with the developer, architect, cost consultant and structure engineer on options*. And these had to be *discussed with planners and building control*. The nature of the building made the *fitting of services tricky* as there was not a lot of space to position them. There were very tight floor to ceiling heights, columns and floors were at different angles, every flat had a different layout rather than being repetitive, all this made the positioning of the services difficult.

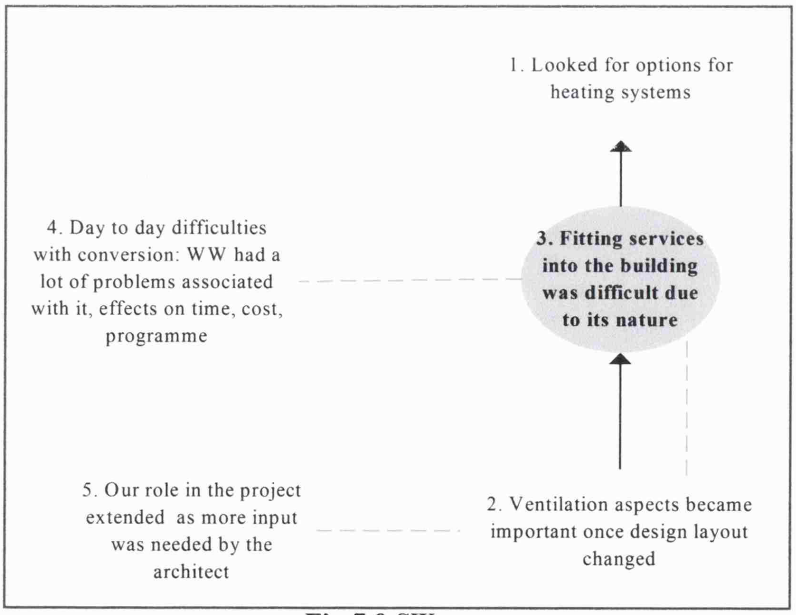

Fig.7.9 *SW summary map*

These issues were solved through long discussions with the architect and both of them working together on the best position of the drainage stacks in particular. In some instance the stacks pass through bedrooms and living rooms. The issues with authorities at times were resolved through compromises, as they understood the difficulties that the team had.

Remaining clusters

Cluster 5 describes the role and involvement SW had with Wheat Wharf project and his relation with other team members. Their initial role was to provide the developers requirement documents and specifications and checking that the contractor was doing the work. The reason for this limited involvement was that the developer considered that the contractor could take on board the detailed design, as it was only a domestic type conversion, therefore he would not need to pay an additional consultant fee to do all the detail design. Their relation with the contractor was "quite dismal" explained by the difficulty of the job for everyone involved. This gives an indication of the contractors position in the project, unsupportive maybe, explained further in TM's cluster 1 section g. On the other hand, their relation with the architect was supportive as he needed greater input to carry out the design. In some instances SW developed the designs of the installations and services that affected the floor plans, task that would not be done under normal circumstances, this resulted in the design of the services becoming split. In addition, they became involved with the architect when smoke ventilation was required (cluster 2).

JD design maximised the floor area but created venting problems of two sorts: first, of venting internal bathrooms and kitchens and second, of providing natural smoke ventilation. Venting internal bathrooms and kitchens was difficult as there was not any ceiling void through which to run the ducts, therefore ventilation ducts had to run horizontally though the walls. Additional problems were encountered when the drawings of these details did not reflect what was in the building resulting in the architect spending a lot of time on site resolving those particular issues. Smoke ventilation was required as the means of escape were completely internal. JD design proposal was a smoke shaft system which most building control officers accept, however Southwark building control did not, as it had recently been publicised that the system did not work. A pressurization system was proposed as an alternative, even though more expensive, as the system required large fans and duct work and a standby fan and power supply; but it ensured a safe route out of the building. An interesting aspect of this situation is that the building control officer left Southwark three months later, and today Southwark are accepting smoke shaft systems once more. Demonstrating that different officers will take different views and that it is really about the interpretations of the building regulations.

Cluster 1 describing the heating system options, this aspect took longer to resolve for more options were looked at. There was a dilemma between what system the developer wanted and what English Heritage would allow. The developer wanted gas heating, boilers and radiators; however English heritage would not allow boiler flues through the elevations. The options looked at were mainly four: taking the boiler flues up to the roof, but losing floor space; thermal stores, but the weight of the system would cause structural problems; wet systems, but they have high running costs; finally traditional wet radiators which convert into electricity were selected. It was the look the architects wanted for heaters, expensive system to run but there would not be pipes running along the floor.

Unlinked cluster 4 explains the difficulty with conversions in general and relates them to the difficulties with Wheat Wharf. The similarities are the daily issues coming up and the unexpected things one can find when the building is opened up. With Wheat Wharf the main difficulty was the irregularity of the structure, which meant that it cost more to resolve the problems in terms of time and solution options which affected the contractors programme.

f) PS, Quantity Surveyor/Project Manager

PS summary map (fig.7.10) is organised around cluster 5, which discuses the information flow problems experienced in the development of the project and the effects it had on cost. It illustrates that that the role and relationship with the client was highly influential to these problems, as well as the decisions taken in regard to the development of the procurement approach.

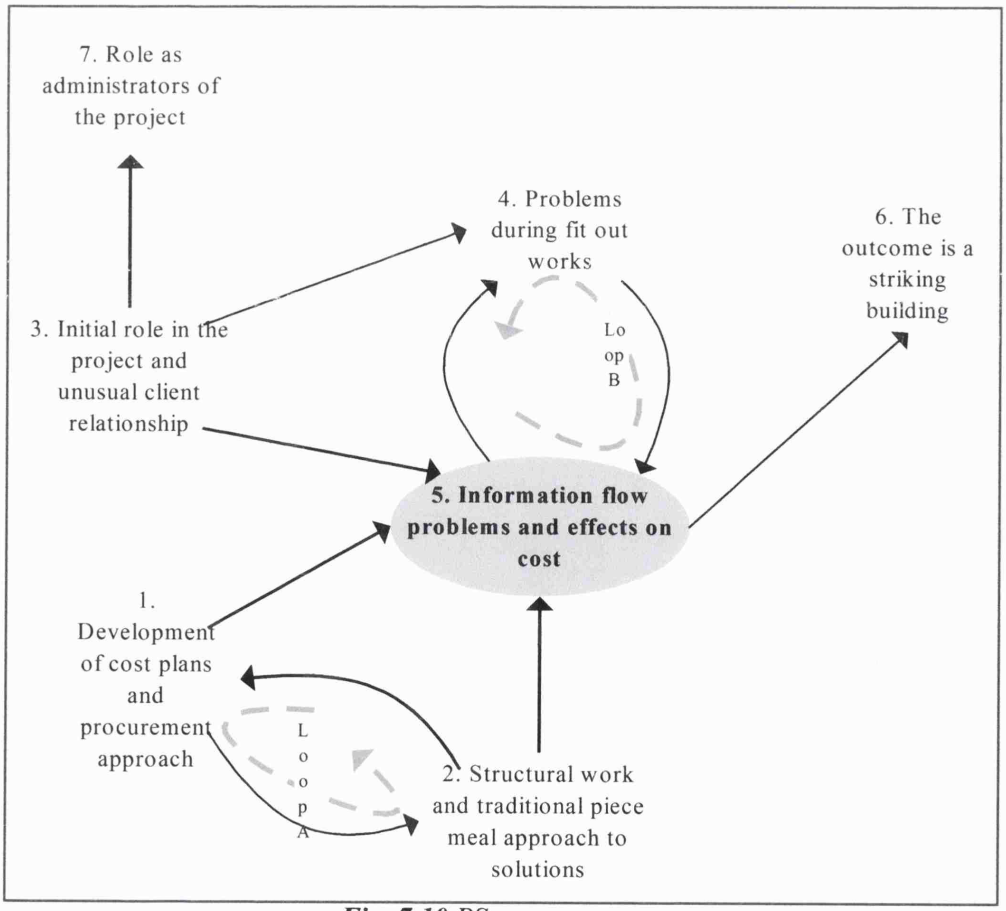

***Fig. 7.10** PS summary map*

Central theme and key elements

Cluster 5 describes the causes and effects of information flow problems. The delays in the production of drawings meant that *information was not received by the contractor on the agreed time*, this in turn *delayed the construction work programme*, increased costs as both architect and contractor required more time and money to develop the scheme. The problems of *poor information flow* experienced during the two stages of the project (shell work and fit out) were due to the complexity and nature of the refurbishment, this meant that the design had to be developed almost as things were being uncovered on site. Because of the delays in the fit out stage it was *decided that the current contractor be used for the fit out rather than going out competitively*. This decision was made as an attempt to recover some of the time lost during the shell work, and because it was thought that some fit out work could be carried out as the shell work was in progress.

Loops

There are two sets of loops in PS map. Loop A formed between cluster 1 and cluster 2 both leading to **information flow problems and effects on cost** (cluster 5) indicate how the development of the cost plans (cluster 1) were affected by the *change in approach towards the structural work*. The approach was a *traditional form of structural remediation* which resulted in increase in time and cost. For unknown costs, provisional measure were put in and these were *monitored through the evolution of the design through discussions with the contractor and design team on the best solutions when things changed.*

Loop B formed between cluster 4 and 5 indicates the delays of information flow experienced during the shell works were feed through to the fit out works (cluster 4), and how as the work developed the information which came through delayed, had in some instances problems with the design status (design incomplete, incorrect information). Solutions were solved through discussions with the contractor and the design team. However, the contractor asked for more time as the information was not being provided on time.

Remaining clusters

Cluster 3 discusses the changing role of PS during the project development. PS *initial role was to set up the project as the client wanted*, that is in a traditional way. Therefore, *the client decided to break the contract in two* (shell and fit out) and *PS role changes to assisting in these aims*. This meant that PS was the point of contact between the client and other actors, however, the architects previous relation with the client meant that they were having direct discourse with the client and not with PS as regularly, giving rise to problems between actors. The cluster describes clearly the ideas of the client being transferred into the design. The client's distinct ideas about the project links to cluster 7, as PS appointment came after the appointment of the rest of the team. This meant that PS role was assumed as administrators of the project, "a more passive role" resulting in having no control over the project, they were just part of it. Team members always dealt with the client to discuss changes, which were not discussed with PS at the same time. This resulted in roles not being clearly defined.

Outcome

Cluster 6 described the perceived outcome of the process as the client's satisfaction of the building. Although there are still things that need to be finished, the client has made money out of the project due to the condition of the property market in the area. For PS the outcome is the client's satisfaction.

g) TM, Contractor

TM's summary map (fig.7.11) is simple, it describes their initial involvement in the project through work on site and main issues encountered along the way; with emphasis on the delays suffered. Unlinked cluster 5 is a discussion on the form of contract taken for this project, it is unlinked because from his view the form of contract was not associated with the difficulties encountered, but rather it was the inadequate development of the contract which was the main issue.

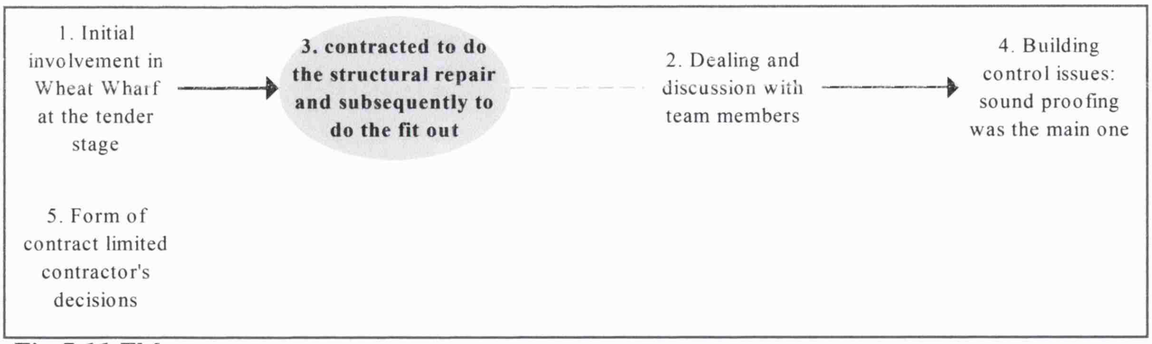

Fig.7.11 *TM summary map*

Central theme and key elements

Cluster 3 describing the **contract works** is the central theme in the summary map. It has three key elements: *the initial contract of structural repair and refurbishment of the shell; subsequent contract of fitting out the units; delays suffered.* During the initial contract the contractor was responsible for internal timber repairs, external brick repairs, window replacement, roof renewal, anything to do with the external fabric. However, their initial activities were related to bringing stability to the building, therefore, underpinning and pilling. The main difficulty with this task was related to the sequencing as columns had to be underpinned one by one. The major delays suffered came from two fronts: first, problems with the adjoining land owner, discussions about who owned the land went on for some time, which meant no scaffolding could be put up on that particular piece of land. Eventually permission was granted. The second cause for delays was problems with receipt of information. During initial repair works the contractor required information on what would be repaired or replaced and how it should be done; these tasks could not be done until they received instructions from the architect, however the information took time to be developed and received. This is explained by the nature of the building, "it was very much an ad-hoc daily, weekly basis". When the contractor subsequently got involved in the fit out of the apartments the delays in the receipt of information continued. The main problems with the fit out, according to the contractor, were that nothing in the building was straight and every flat was differently designed with purchaser options for specifications. This resulted in dealing with flats individually and in requesting detail design information; as at this time the fit out had not been properly designed. All these delays of course resulted in costs rising significantly, about 25% according to the contractor.

Remaining Clusters

Cluster 1 describes Botes initial involvement with Wheat Wharf. Botes were approached by the developer to submit a budget estimate for the building works when the developer was still thinking of purchasing the building. Subsequently they were asked to submit a tender bid. TM's initial view about the building was that *"it was better to pull it down"*, it was structurally unsound and it would cost too much to save it. However, they developed and submitted a tender package and were subsequently selected as contractors with the initial brief of doing the structural repairs and refurbishment. Here is were the link with the contract works (cluster 3) exists.

The way in which the delays of receipt of information were dealt with were by being in *"constant liaison with the architect"*, creating an associative link from cluster 2 to the central theme of contract works (cluster 3). The discussions with the architect revolved around the floors and walls being out of level. This aspect of the building was not known by the contractor at tender stage, resulting in them being resolved through the instruction of the architect as work proceeded. However, the contractor suggested to the architect to make the floors all levelled, as it would result in a better product, but the architect considered them to be part of the character of the building. This aspect created a conflict between the two actors. Compromises were made and in some areas where the floors were badly out of level the contractor was allowed to make them levelled. TM mentions that they felt somewhere in the middle, between keeping it authentic and giving the client best value. These continual conflicts between the two actors resulted in the contractor doing "just what they were told as it was easy enough" (concept 926). It seems that here is where the contractor stepped back and where the problems between the developer began; as the contractor was trying to make up for the delays by using the specifications in the contract, that is he became very contractual (see section b. KL cluster 6).

The relation with other team members is minimal, discussions with the structural engineer were related with the structural integrity of certain elements, talking to the district surveyor about sound proofing between floors (link to cluster 4) and to the client but at a lesser extent, only to find out if the works met his requirements and discussing the delays of information, sometimes even wrong information. TM mentions "we implored with the client to tell the architect what to do rather than letting the architect do what ever he wanted". The architect was kept on the project and TM considered the client should have played a more dominant role in the project.

Cluster 4 describes the building control issue of sound proofing. There were many discussions with the district surveyor about many things, however, soundproofing was the main issue according to the contractor. Due to the exposed floor joist there was not an opportunity to put insulation between them. This resulted in having to put an insulation zone on top of the existing floor boards. However, there was no certificate or proven material which could be used. Therefore, a test area of the proposed material was created and accepted by the building control officer. The difficulty lied in doing something that had not been done before.

Finally cluster 5 on the form of contract taken for this project. For this project a traditional form of contract did not allow them to make any decisions, there were only compromises. TM considered that the route taken for the project was probably the best way forward, however, the problems with the architects lack of control over the design and programme were the main difficulty.

Looking back at the work TM mentions that even though the building is unusual and unique he is "still not convinced of the merit of saving it", as nothing is levelled and purchasers had to be aware of that. It is interesting to see that his views about the building did not change after it had almost been completed. The difference in view about the building and its development between the contractor and other actors is significant. As team members find it difficult to interact or resolve problems with individuals who do not share a common objective.

h) PC, Historic Building Officer

PC's summary map (fig.7.12) is similar to that in Aberdeen Wharf (Chapter 6) in that it contains few clusters, describing the concerns for the details, indicating his level of involvement.

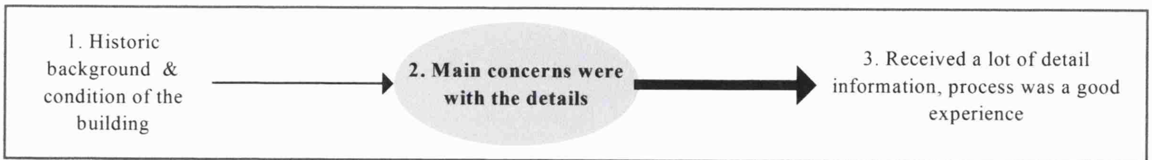

***Fig. 7.12** PC summary map*

Central theme and key elements

After a number of schemes had been proposed for Wheat Wharf the proposal for residential and commercial use on ground floor was taken further than the other previous developers. The new proposal had a lot of subdivision of very good interiors which was a concern of PC (cluster 2). ***The concerns were in regard to the detail*** of; how sound insulation, means of escape, fire protection, repair of brickwork would be satisfied; and to keep as much of the original material as possible, such as cranes, balconies, gantries, doors, window shutters, window mouldings, framing and loading bays, and fabric. All these items were *discussed before, during and after application approval* a key aspect in this process. This cluster illustrates PC's high involvement, as it contains information of the underpinning done to the building, pressurization system used to ventilate smoke and solutions to visible vent pipes. Modifications like, new window openings on the west façade and roof alterations in terms of a new roof lantern were allowed. This is interesting, as these changes were not allowed to the previous owner. It seems that this decision had to do with the quality of the modifications and their treatments rather than the changes itself. As PC points, out JD were more experienced and the discussion process with them were more productive. The aim for PC was that the treatment of these details was carried out "comprehensively".

Remaining Clusters

Cluster 1 describes why in PC's view the building was so interesting. It was an early generation inland warehouse which had survived almost intact and which had quite unique secondary details. It also gives a background of the previous options proposed for the building linking it to cluster 2.

The detail of the information (cluster 3) submitted by JD is an outcome of the discussions held throughout the design and construction phase. All solutions were accompanied by detailed drawings, JD proposals were sympathetic to the buildings which was considered very important to PC. These elements resulted in a 'good discussion process' a 'pleasant experience'. Probably this experience was because in the end it was the building that benefited from this process.

7.6 Discussion of Wheat Wharf Analysis

The conversion of Wheat Wharf is a clear example of a project carried out in an ad-hoc manner, very different from the two previous case studies. The conversion of this grade II listed warehouse experienced significant management, contractual and design problems. Considering the context in which this development took place, described in section 7.3, the areas where key decisions affected the development of the project were:

- Site and building evaluation process;
- Criteria for team selection;
- Procurement approach;
- Definition of roles and establishment of lines of communication;
- Definition of forms of contract;
- Definition of objectives;
- Management approach.

It is certain that the nature of the building would have posed problems. However, the lack of human resources from the architect to develop the proper design information, and lack of support and shared objective from the contractor, the overlap of roles and responsibilities between architect and project manager, the lack of adequate communication between team members and developer, and the lack of the set common objective of working for the project rather than for the developer, made the project's process more problematic.

From the initial stage of the project, the developer's selection of the architect, contractor and project manager were not in accordance with his stated criteria for selection. The architect had a small firm which did not have the resources to deliver good quality information on time. This could indicate that either the developer did not fully understand the amount of work and time that would be required to develop the scheme or his assessment of the firm's capabilities as flawed. A combination of both seems most likely. The contractor's selection was based more on it is low bid return rather than the combination of presented cost and deliverability. The option of not developing a second tender package for the fit out works proved to be a mistake, as the objective of saving time was not achieved: on the contrary, the project was delayed further. A reason for this could be that the fit out works started when its design package had not been fully completed, leaving many issues unresolved, therefore being dealt with in an ad-hoc manner in some cases, and at the last minute in others. The bill of quantities for the fit out was developed from one flat, and then calculated for the 25 units and roughly adjusted and negotiated for a lower price. These calculations, the knowledge of the difficulty of the building, and lack of completed design information, should have given an indication that the programme might need to be extended. Having Botes been assigned the contract meant that the repair works and the fit out works were being run in parallel, putting more pressure on the architectural side. The selection of the project manager seemed to be only based on a previous working relation, however, the fact that they are based in Berkshire meant that they had less control of the programme and less involvement with the team members. The development of his role is questionable. From the architect's point of view he was just there to "chase up", and there seemed to be an overlap between project managing and managing the site; the engineer acknowledged the overlap of coordination during project managing between architect and manager, while the contractor does not mention the project manager at all. This piece of the puzzle is still missing.

It is understood that the nature of the building and the lack of resources from the architect affected the contract works, programme and cost, which in turn caused contractual problems between contractor, developer and architect. However, the question arises of why nothing was done about this early on, during the repair phase, when these problems started to occur. Why was not the contract modified during the fit out stage? It seems that the developer became less preoccupied with these details as the units had started to sell well. He relied too much on the professional team and did not have a "dominant" role in the project, which in this case was required.

The contractor's development of his role initiated from a completely different standpoint and objective from that of the architect. One wanted to keep the building, the other would have preferred to knock it down. The continual difficulties encountered with the architect drove the contractor to do the "easy thing" of just doing what they were told, and relying on the contract specifications to justify their position. This is understandable. However, it was the project that suffered because of the lack or unwillingness to work as a team to solve the problems. The "hands-off" approach of the contractor lead to difficulties with the developer as well. In the end to solve these contractual difficulties, the developer opted to give more money to both the architect and contractor.

The desire of the developer of giving purchasers the option of specifications was considered to be a mistake as well. A lot of resources had to be put in to handling this issue and the developer and architect were not up to managing them.

It is interesting to see the difference in perception about Wheat Wharf's re-development between the vendor and the purchaser. Some of the initial vendor's reasons for not developing Wheat Wharf were certain, this could be because the vendor was looking at the estate as a whole, and re-developing did meet their aims.

Even with all the delays and difficulties with professionals, a good product was achieved. Although not to the quality the developer expected, it was enough to meet the sales specifications, which for the developer was sufficient, as all units had been pre-sold early on in the process. The success of the scheme was perceived by the actors as the end product and the process. All actors with the exception of the contractor felt the end product was of good quality. All actors acknowledged the difficulties encountered through the process as a "part of a refurbishment job". And of course, all actors learned from the project. Objectives were achieved through a prolonged and problematic process, but in the end the objective was achieved. The developer's economic success for developing Wheat Wharf may well be down to luck, since the residential market was rising at the time. In other circumstances the end of this story might have been very different.

Having analysed three distinct conversion projects through individual actor's perceptions we can begin to put the initial findings together. Through the analysis we identified key elements of aspects where decisions were highly influential toward the effective or problematic development and perception of the projects. The next chapter presents the findings at a project level and identifies the pivotal factors and issues for each conversion project.

ACTOR/ THEME	STATE OF WW	DESIGN, PLANNING & EH	STRUCTURE	SITE PURCHASE EVALUATION	TEAM SELECTION
Vendor	Technical difficulties:poor building condition and timber frame, pilling problems, daylighting problems	Planning difficulties: daylighting problems, listed building status, planning and conservation officers views made it difficult to change anything. Ltd use if space roof due to EH, low floor to ceiling heights, deepness caused ventilation problems, 25 units was few, difficulty in trying to please everyone.	Linked to state of the building	Not Applicable	Not Applicable
Developer	stabilising requirement on exchange of contract	everything had to be shoe horn into position. Design information has taken 2 years to develop. EH grally supportive.	Stabilising requirement on exchange of contract	carried an up to date appraisal: extra square footage could be generated, technical solutions were cost effective, looked at planning consent and conditions, looked at cost plans and sales, surveys. Decision to purchase was made on available information.	selected from a professionals with experience in that type of building. Decision to rely on ripe rather than small practices. Uqestioned whether are the right for the job (design and cost effectiveness, resourced, experienced, previous relation)
Architect	Necessary to do a lot of work it get building back into shape for re-use	Original design didn't make the best use of space. Client did not want to increase the number of units. Looked at the most effective ways of rectifying the problems with the building. Re-jigged the design to get better and bigger flats at the top. Put very large windows on the roof and glazed lanterns. Re-organiased the whole building. Changes took a lot of liaisons with EH and conservation officer. Impressed to authorities that all changes were improvements to the way we deal with the building. solutions to problems were based on not having to re-build the whole thing, the simplest solutions, options considered were the ones that were most acceptable to EH. Tried to keep as much of the original material as possible. Decided to have three flavours of interiors.nightmare to manage.			Architect was a close friend of developer and had worked with him before. Rople was to evaluate and improve design, produce adrawing packages and deal with authorities
Structure Engineer	complications were that the building was partially collapsed. Had to resolve problems of out of plumb columns, control movement, introduce foundations		Aim was coming to understand the building. Problems were resolved so that the client complied with his obligations under the terms of the contract. decided to re-establish a foundation at ground level.	structural solutions gave the client enough leeway in their cost to make the scheme viable	Developer had worked with engineer before. Propose cost effective structural repairs
Service Engineer	the nature of the building made fitting the services into the building tricky and difficult	dransfield design created venting problems. Dransfield smoke venting design was not accepted by building control we came with an alternative solution. Options for heating system included boiler flues, thermal stores, wet systems.			Developer had work with them before. Put together the employers requirement and checking the contractor. Did more than anticipated
Contractor	it was bettrer to pull it down, the timber frame was very dilapidated	sound proofing between floors was a major issue as there was no certificate or proven material used			Selected for the lowest bid. Initially hired for the shell work, eventually contracted for the fit out as well
Project Manager			majpr problems arose about the structural remeditaion. We had to revert t a more traditional piece meal structural remediation		Had worked with client on other projects. Initial role was to set up the project the way the cleint wanted it. we assited the design team with their aims. We were brought in after the design team was in place. we were brought in as administrators rather than managers.
English Heritage	building was in poor condition it had been empty for many years	a lot of regard for detail information		the building was interesting for technical and historical reasons	

***Table 7.1** Wheat Wharf key element matrix 1/2*

ACTOR/ THEME	TEAM BUILDING	COSTS	PROCUREMENT	CONTRACT	FUNDING	OUTCOME
Vendor	Not Applicable	Not Applicable	Not Applicable		Not Applicable	Not Applicable
Developer	Developer were aware of confrontational situations between the contractor, architect and client. Difficulties between the architect and contractor		decided (team?) to go out in a traditional form of procurement	contract was very difficult: there wasn't any straight line anywhere. Design information has taken 2 years to develop. Caused extreme delays. Problems of delivery of information from the architect. Problems with the contract strategy	need the bank as provides the most amount of money. look at return on equity as well as return on cost	contingency wasn't enough. The lack of professional inclination caused delays and over run on cost. Project was painful in terms of management. Happy when I see the last penny out of it
Architect	worked very early on with the engineers. Discussed many issues with planning authority and EH, took a lot of liaisons.Discusses structure with buildign control, EH and PA. Required constantr advice and attention. Have to think strategically. Bad managemetn hold between two stills. Project manager should have been more pro-active. we had a very difficult start with QS and project manager. Client's lack of understanding of time and cost to do the work. Builder not willing or helpful. regular fortnight mettings. the more we got into the nitty gritty the less we met with the client			Problems mostly related to the nature of the building.		detailing the building came out of just being able. Simplification of interiors would have been better. Would have chosen a different builder. the more close we are to completing it the more happy I am of being involved.
Structure Engineer	Very little involvement after the building was stabilised. We were working on two fronts: attending the development of the architectural proposal and doing the fundamental building works to bring the building into control. It was acontinual dialog. Discussed with QS cost and different solutions to problems and to make alternatives cheaper.	Discussed with QS cost and different solutions to problems and to make alternative cheaper				all together it went tolerably well. The client were let down by the the way the contractor was allowed to go. Relatively sang free. Client is happy
Service Engineer	the architect needed greater input to carry out the design. we became involved when they required ventialtion for means of escape. Worked together with the client,a rchitect, cost consultant and engineer looking at options. Discussed with buildign control. Made compormises. We did more the what the client originally anticipated.			issues coming up day to day as a warehouse has a lot of problems associated with it. lead to delays in programme and increase in cost. Client wanted a warehouse feel to the apartments		
Contractor	suggested to the architect to make all floor level. Constant liaison with the architect to deal with the refurbishemt			initial contract was to do the structural repairs and refurbishment of the shell. Subsequently got involved in the fit out. Suffered delays in both phases due to problems of receipt of information. We didn't take any decisions. The route we took is probably the only way foward. there was less risk for us as we got paid for what we did.		
Project Manager	Discussions with contractor and design team on changes and appropriate solutions. The cleint prescribed what they wanted to see in terms of contract procurement. The client had very distinct ideas of their own	costs were identified thorugh a detailed elemental cost plan. Cost arose thorugh a complete change of structural approach. Monitored cost thorugh discussion with contractor and design team on changes and solutions. Information flow problems caused delays and affected the costs	the client prescribed what they anted to see in terms of contract procurement. We adviced to go design and build. Team decided for a traditional contract	negotiated fit our works with incumbent contractor. As information request came thorugh there were more and more problems with the status of the design. Information flow didn't meet the agreed dates. The shell pakage ran into problems of information flow as well. caused delays in the porgramme. all delays affected cost		the client is content with the design but would have had it sooner and cheaper. The product is a striking building.
English Heritage	we had a lot of meetings before, during and after application approval. We had a good discussion process with the architect.					

***Table 7.1** Wheat Wharf key element matrix 2/2*

Chapter Eight

Comparison of Projects

8.1 INTRODUCTION

The previous three chapters gave a description and a detailed analysis of three distinct projects dealing with the process of converting a non-residential building to residential use in London. The use of Decision Explorer as an analysis tool allowed: a clearer understanding of the key issues for each actor; an actor's level of involvement and participation and its effect on the project process; the pivotal areas where decisions have an important effect on the development of a project; and their dynamics.

The actor's perceptions of the project's process and subsequent analysis highlighted numerous individual issues, summarised in tables 5.1, 6.1 and 7.1, now it is necessary to bring all that information together in a manageable form which represents a view of the project process as a whole. The process by which this was carried out is described in chapter four, section 4.12.

Even though the three projects were different in their detail, the initial analysis brought forth key areas of similarity in terms of their significance to the development of the project process:

- significance of the site evaluation process and decision to purchase;
- importance of definition of objectives and roles;
- the importance of the selection criteria of team members and team building process;
- importance of clear and integrated development approach of the design concept;
- the various approaches towards dealing with the design and planning phase;
- difficulties experienced in the procurement approach;
- decision of pricing and marketing strategy;
- the perception of the process success in variant levels.

The aim of this chapter is to highlight these areas through the identification of the key decision factors involved in these three distinct conversion processes. This has been carried out through the analysis and identification of four elements within the project's summary maps: first, the key decision phases for each project; second, the emergent loops (indication of process complexity); third, the decisive course of action of the project and finally, the identification of similarities and differences in views within and between the project's process with hope of giving direction to the system at play.

The areas of interest to be observed in the project summary maps are three: first, the key decision phases, highlighted in green, are the most significant aspects of the project, that is, the ones that were most influential for the project's development; second, the loops formed in the summary map and/or within the decisive course of action, give focus on the dynamics, complexity and inter-relation of the decision phases and third, the decisive course which illustrates a cause-effect relation between the decision phases and a simplified flow of the process through the most critical activities.

Finally, a comparison of the results will be presented through the significant emergent themes and the projects' decisive courses of action. From the results it will be appreciated that the project process of converting buildings to residential use is taken forward by the combination of five pivotal decision mechanisms.

8.2 INDIGO LOFT-SIDE AND NEWINGTON PLACE MEWS PROJECT

Indigo's project summary map, figure 8.1 overleaf, is a simplified representation of the project's conversion process in terms of influences and effects leading to an outcome (red concepts). Through both matrix analysis and aggregated map analysis (explained in section 4.12), the most significant elements of this particular conversion process were identified as the development of the design; approach to planning; consideration of cost and budget; team building process and procurement. These elements were considered in terms of their level of importance (green concepts), and their relation within the decisive course of action (indicated by red arrows), which can be seen were the most influential for a successful process and scheme.

By looking at the first key element (concept 1) of the decisive course of action (fig.8.2) we can see how the developer's, project manager's and other actors' views were influential in the decision to purchase the site and subsequently in their appointment to the team. Concept 3 shows how the selection of the team, the team building process and the management approach was highly influential on other key elements of the process such as, approaching planners, emergence of the design, and the decision to change the contract strategy to design and build; and subsequently for the success of the scheme.

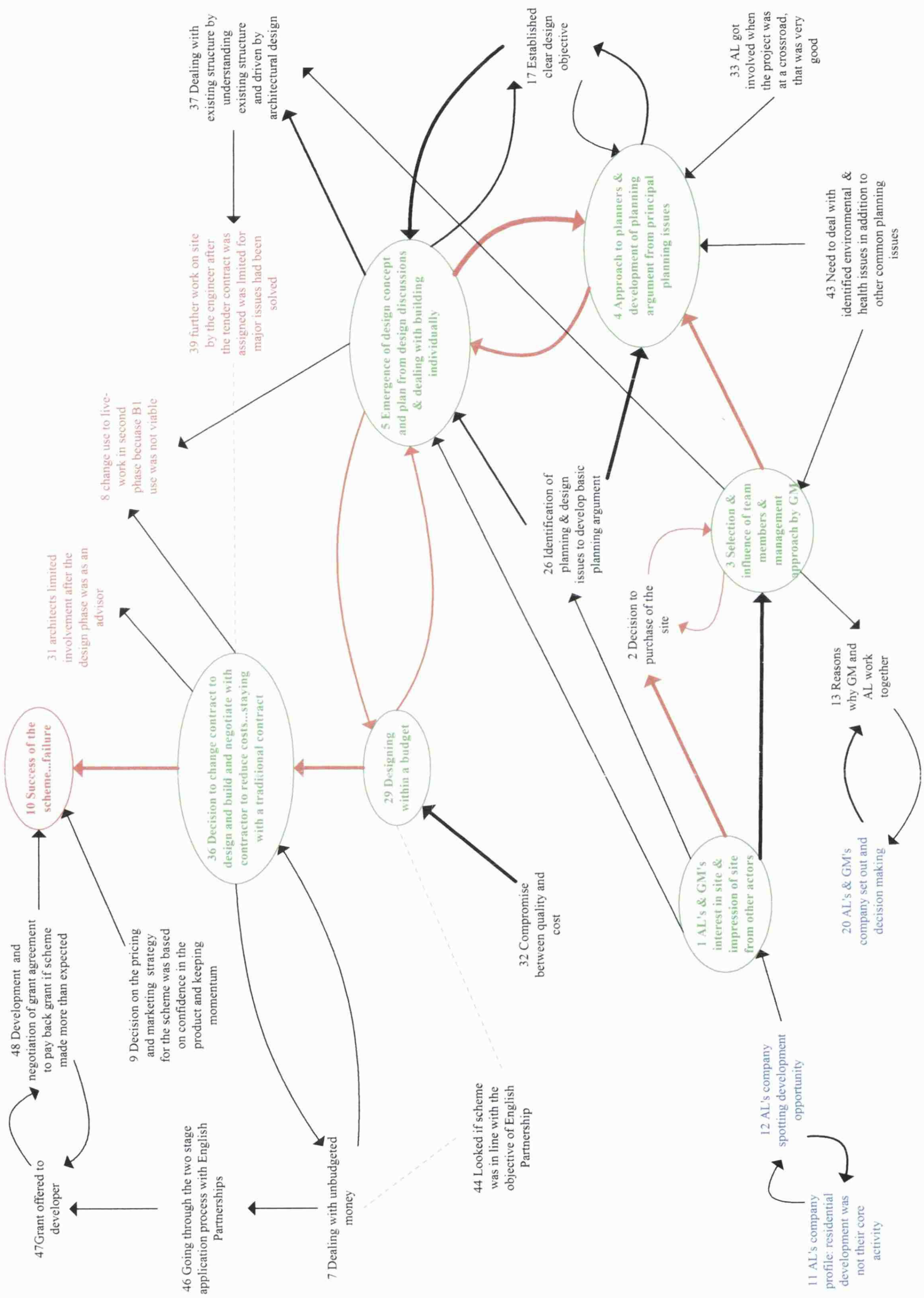

***Fig. 8.1** Indigo Loft side and Newington Place Mews project summary map*

The significance of this aspect is to consider how the selection of the professional team and team building occurred. First, team members were selected jointly between the developer and project manager. Second, the selection was based on a set criterion of the existence of a previous working relation and actor's experience in conversion projects similar to Indigo.

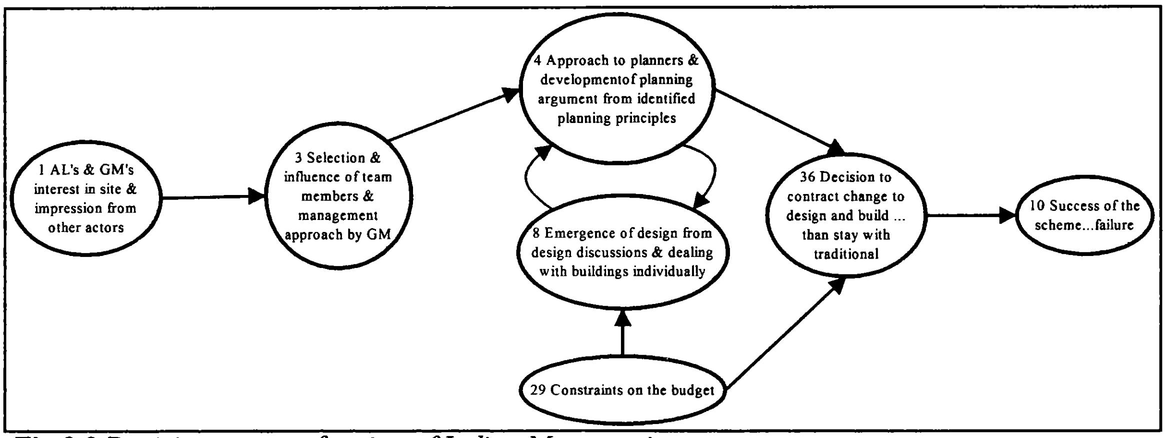

Fig.8.2 Decisive course of action of Indigo Mews project

Third, team building started early on in the process, as actors were approached by the developer for constant feedback very early on, when the site was going to be purchased in some instances; this approach continued throughout the project. It is considered that the team building process occurred through a participative management approach. The project manager and developer kept a balance between power and the functional units, kept individuals focused on the results rather than on specific activities, and facilitated openness and communication between team members. During the process team members were characterised as having high quality technical skills, as being problem orientated rather than discipline orientated, and as having a strong goal direction. These characteristics can be grasped through each actor's account of the process and their knowledge of the project's issues and process as a whole (see chapter five for a detailed explanation). The early involvement and participation of team members was important for a more balanced approach towards the running and development of the project. The criteria and timing of team selection as well as the form of managerial approach gave a good base for a successful team building process. From these points we can state that the success of the project was highly influenced by these internal factors.

The next key elements of the decisive course of action, concepts 4 and 8, form a feedback loop, indicating the iteration process between the design and planning phase, as would be expected. Both concepts are influenced by the development team's clear design objective (fig. 8.1, concept 17) and by the team's "team working" approach (concept 3). The design objective was to develop a scheme with the maximum number of units which would give the most returns, but which would not compromise the value of the scheme, and which met with the planning authority's views and requirements. Therefore, the planning argument was developed and presented in balance between how the proposed scheme would benefit the local environment firstly and how it would achieve the project's goal secondly.

The decision to change the form of contract (fig. 8.1, concept 36) is directly linked to the success of the scheme, indicating that there were no significant issues to deal with after this decision. The summary map indicates that unbudgeted money, constraints on the budget, influence of team members and planning aspects, particularly meeting with the planning requirements, drove the decision to change the contract from traditional to design and build. The significance of this aspect lies in the ability of the developer and team to be open and flexible to change so as to meet the project's overall objective successfully.

In addition to the change of contract strategy, the pricing and marketing phase and the obtaining of a grant were also influential in the success of the scheme, although not to the same degree as the previously mentioned elements. It was first critical to get the product built at a reasonable price; this would then allow pricing the units adequately and developing the marketing strategy further.

Finally, the decisive course of action finishes in the success of the scheme. In this case this is regarded as meeting the objective of the project: obtaining returns quickly, a good quality product and a good reputation for team members.

The rest of the summary map illustrates a series of cause and effects concepts related to the development of the project. Outcomes are on the top of the map and are related to the success of the project; and on the involvement of the architect and structural engineer after the decision to use design and build was taken. Finally, the change of use request for the second phase (live work) of the project is an outcome of the process during the first phase, when all the critical issues had been resolved; nonetheless it should be considered influential to the project's success, as it contributed to a percentage of the returns.

Overall Indigo Mews project summary map shows the dynamics of issues involved in this conversion process, it has highlighted the most critical decision activities and how they are networked.

8.3 Aberdeen Wharf Project

The construction of Aberdeen Wharf's project summary map, figure 8.3 overleaf, was not as straightforward as Indigo's project summary map. It was found that few themes could be merged as actors themes tended to focus on the activities and problems related to their discipline and usually they did not look across the project's process as a whole. As a result, themes were linked connotatively only where there was an obvious relation between them. This initially gives an indication of the team member's limited level of inter-participation within the process,

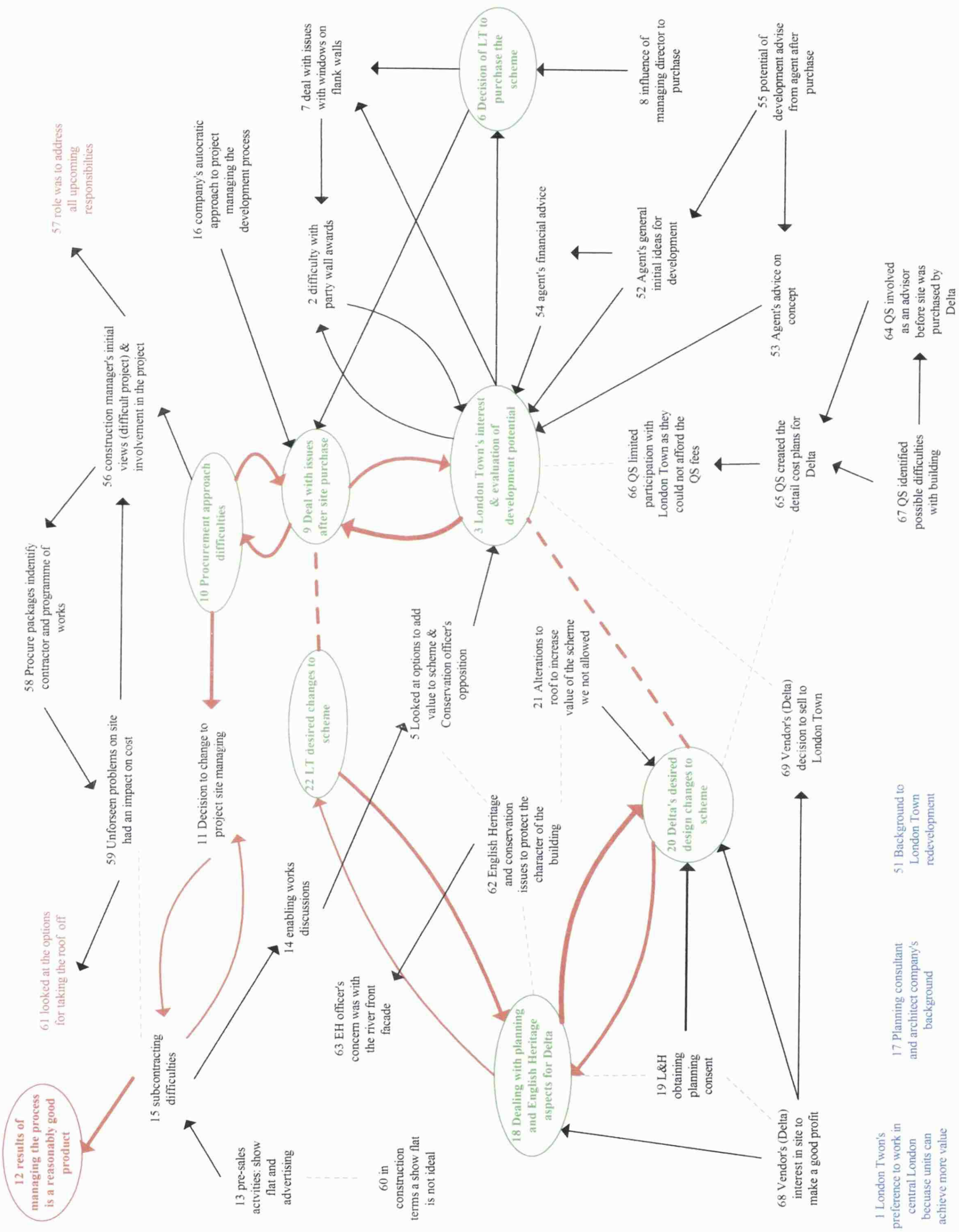

***Fig. 8.3** Aberdeen Wharf's project summary map*

a characteristic of this particular project, and can be related to team building as one of the emergent common themes.

Aberdeen Wharf project summary map highlights the site evaluation process; decision to purchase; dealing with planning, English Heritage, and design issues; and the procurement process as the most significant elements of the project (green concepts) and their inter-relation within the decisive course of action (indicated by red arrows). Of particular interest are the three sets of loops in the summary map (fig. 8.3), two of which are formed within the decisive course of action (fig. 8.7).

Loop A (concepts 18, 20, 22, 3 and 9) shown in figure 8.4, indicates how Delta's design changes and planning aspects were highly influential to London Town's evaluation of the site's development potential and to London Town's requirements for additional design changes to the scheme, these issues are explained in detail in chapter six.

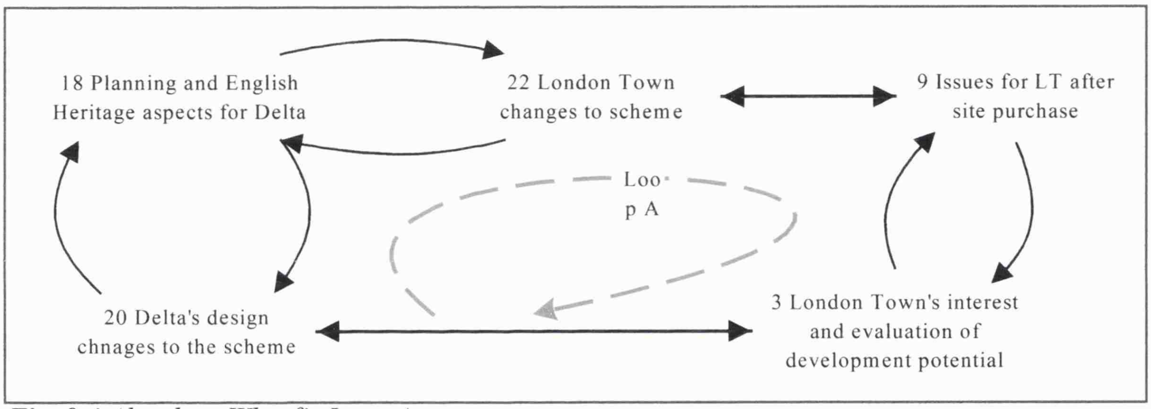

Fig. 8.4 Aberdeen Wharf's Loop A

In this case the importance of Delta's iteration process in dealing with design, planning and English Heritage issues lies on its overall influence on the process as a whole; for after the site was purchased, London Town's requirements of additional design modification led them to deal with additional planning issues (concept 9) which had an effect later on in the process, in terms of time delays and confrontational relationship with planning authority. These issues were mainly related to Aberdeen Wharf's listed building status and conservation area location.

Loop B (fig. 8.5) is formed between concepts 3, 9 and 6. Here it is important to note that the decision to purchase the site was not only a direct result of the positive outcome of the evaluation process, but also of the influence from the main director of London Town (concept 6). Even though this last issue was not identified by the analysis as a key element, it is important to consider it, as it highlights that on this occasion the decision to purchase was not only based on specific characteristics related directly to the scheme, but also on the main director's view of how the development of the scheme would benefit the company's portfolio.

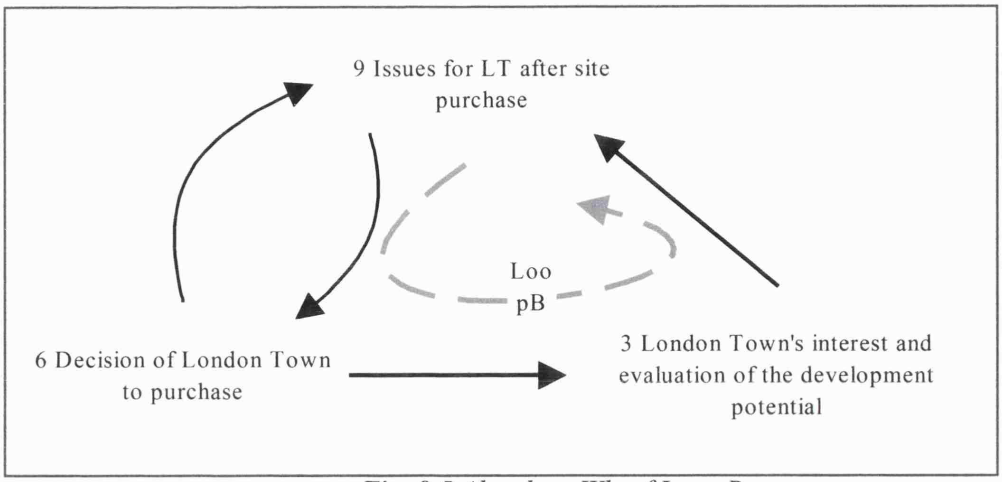

***Fig. 8.5** Aberdeen Wharf Loop B*

Finally, loop C (concepts 5, 3, 9, 10, 11, 15, 14 and 12) shown in figure 8.6, illustrates another dimension of the subsequent issues related to London Town's evaluation process. In this particular loop focus is brought on two things; first the procurement process as a significant issue after the site was purchased, because of its effects as delays to the project; and second, the feedback and flow of information during subcontracting difficulties (concept 15) to add value to the scheme (concept 5). The sudden bankruptcy of the selected contractor highlights the developer's underestimation or lack of awareness of the contractor's financial ability to carry out the work. The pressure to start work on site quickly pushed the decision to manage the site works within the company, which in turn lead to subcontracting difficulties, that affected the schedule of the programme and increased costs. And while these difficulties were encountered there was the continual determination to pursue the desired design modifications. This was influential in the delays encountered with the Planning Authority, in particular delays in dealing with the design details, which had to meet the Conservation Officer's suggestions.

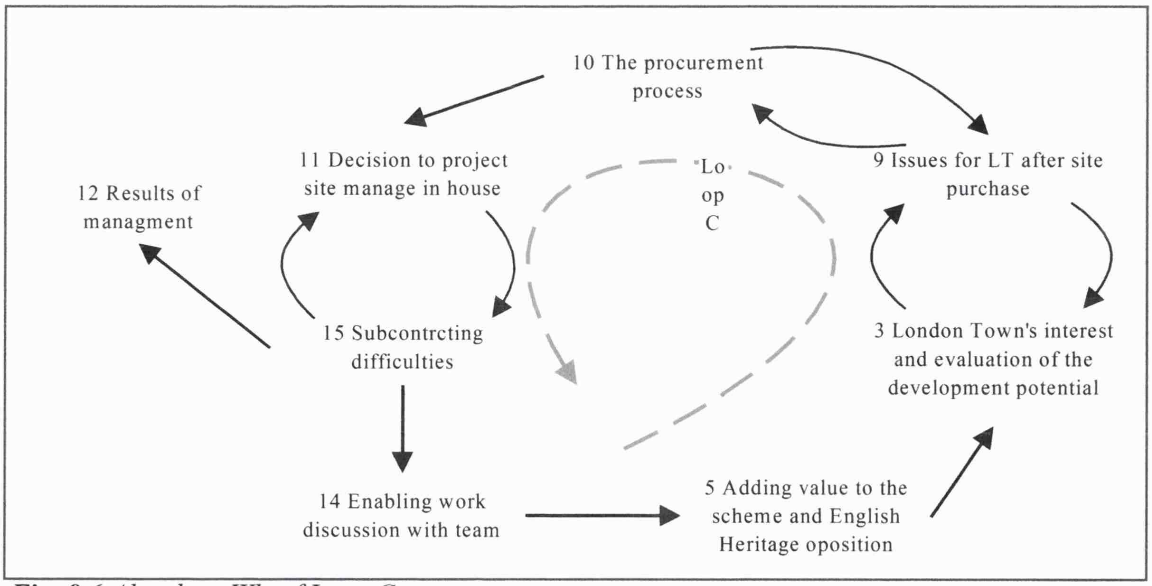

***Fig. 8.6** Aberdeen Wharf Loop C*

The decisive course of action (fig. 8.7) formed within the three sets of loops, shows the sequence of critical activities of Aberdeen Wharf's process, from its initial event, London Town's interest and evaluation, through the overall results of managing the site works in house. Aberdeen Wharf's critical activities were the evaluation process of the scheme's development potential; the decision to purchase, influenced by an existing design and planning process; the awareness of potential issues; the procurement process; the change in procurement approach and the results of the process.

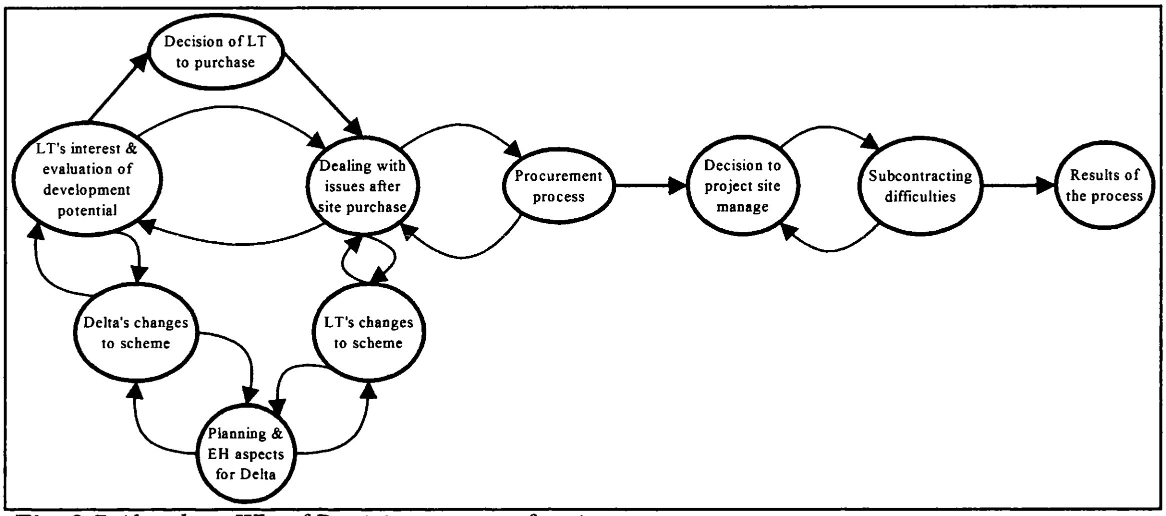

Fig. 8.7 Aberdeen Wharf Decisive course of action

The decisive course of action also illustrates the three loops found in the summary map. The first set illustrates the initial iteration process between design and planning and its influence on the site evaluation and issues after purchase; the second set illustrates the difficulty encountered during the procurement process and the third set illustrates the difficulties encountered with managing the site works in house. The end result in this case focuses on the management side of the project. The "reasonable success" of the Aberdeen Wharf project process is considered to be mainly due to three general aspects: first, delays in dealing with the detail design changes throughout the site works, mostly due to London Town's pursuit to add value to the scheme and to the Local Planning Authority's cautious position on the proposed changes; second, the emergence of unexpected elements (the contractor's bankruptcy, existing structure) and its effect on programme and cost; and third, London Town not achieving the expected profits.

The decisive course of action (fig. 8.7) shows in a simplified manner the complexity and inter-relation of issues across the whole process with the feedback loops indicating the need for more information and the need to deal with recurrent issues in order for the process to continue moving forward.

8.4 WHEAT WHARF

The elaboration of Wheat Wharf project summary map, figure 8.8, overleaf, encountered similar difficulties in merging concepts as in Aberdeen Wharf's project summary map. Actors focussed on describing aspects of the process in relation to their discipline and related problems. In this particular project the majority of the concepts describe the difficulties or problems encountered during the process, a characteristic of this project. The high level of segregation of concepts serves as an indicator of the poor level of cohesion of the team, actors' high discipline focus and poor project goal orientation. These last points can be appreciated in the head and orphan concepts (red and blue respectively), as head concepts represent the different views actors had of the outcome of the product and the process; and orphan concepts indicate that important aspects of the process, such as being over budget and the iterative process of development were not perceived as influential to the development of the process. Similarly to Aberdeen Wharf, this aspect can be related to team building as an emerging common theme.

Wheat Wharf's key elements (fig. 8.8) highlighted in green are: the selection of the professional team and the manager's limited role; the difficulties with the building due to its condition and nature; the difficulties in design; English Heritage issues; difficulties with the procurement and contract; and information flow problems and its effects on cost. Once again, as in the previous projects, we can see the emergence of the common themes.

The first point of interest came from the identification of the decisive course of action (fig. 8.9). The route diverged in the selection of the professional team (concept 67), taking two directions; first, to the awareness of the structural problems and implication of the work (concept 78) and second, to the limited role the manager had in the project (concept 108); and they converged in the problems with the flow of information and its effects on cost (concept 110).

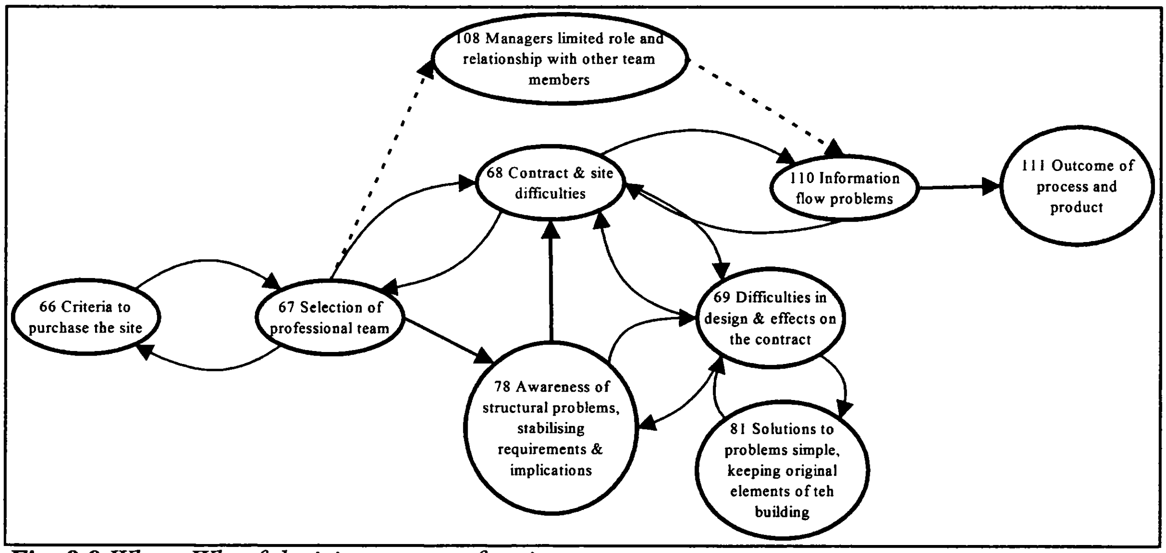

Fig. 8.9 Wheat Wharf decisive course of action

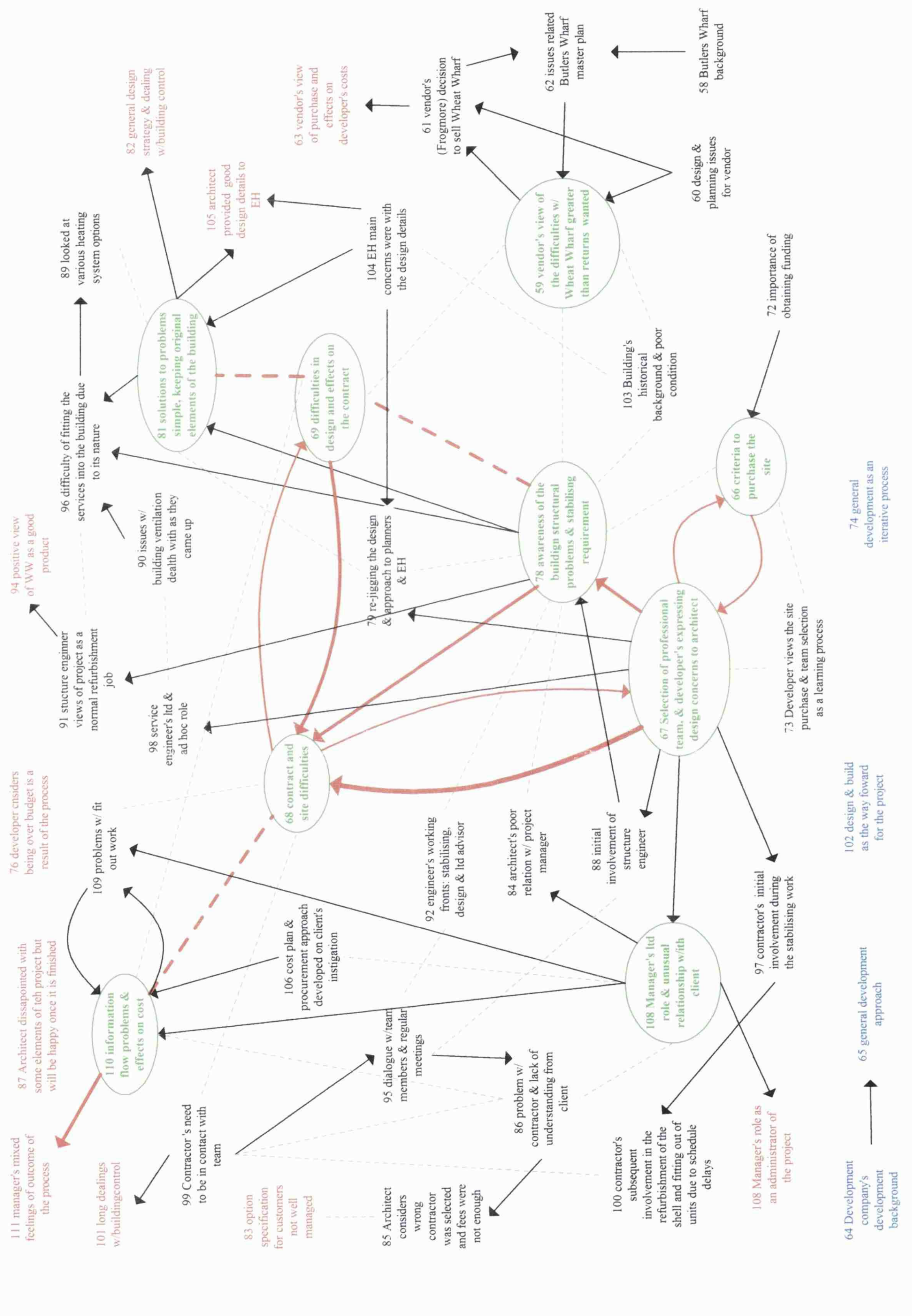

***Fig. 8.8** Wheat Wharf project summary map*

As this course is a series of "critical activities" that feed the process the question of whether the role of the manager was critical was considered. From the main path (fig. 8.9, highlighted by solid arrows) we can appreciate that the team encountered difficulties with the structural work, design, problem solving, site works and contract. The level of involvement of the manager was to an extent important, but if we take that limited role out of the project the process would nevertheless continue. Therefore, it is considered that in this case the role of the project manager was not critical. It can be appreciated that the process self organised through the other actors. However, the question of the importance of a managerial approach arises, and will be explored further in section 8.5.

The second point of interest is the series of loops formed between the critical concepts, as they highlight the dynamic aspects of the process.

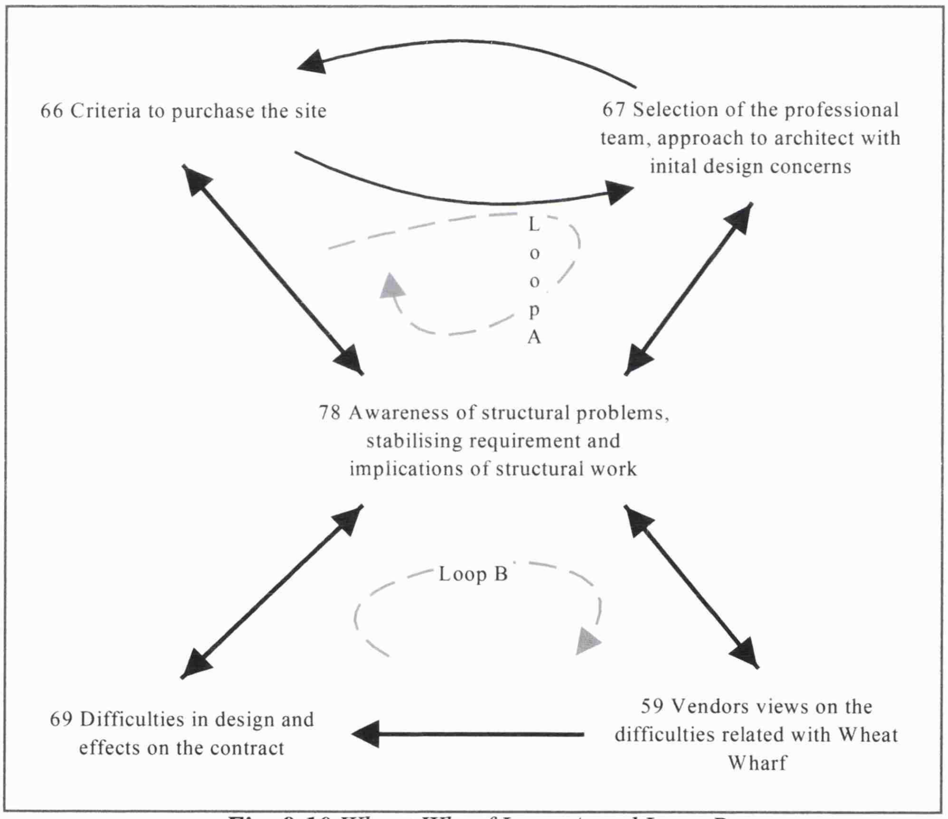

Fig. 8.10 *Wheat Wharf Loop A and Loop B*

Loop A (concepts 66, 67 and 78) shown in figure 8.10, indicates how the criteria used to purchase the site (explained in detail in chapter seven) drove two activities; the selection of the professional team; and the awareness of the building's structural conditions and implication of the work on cost, schedule and resources. It influences the selection of the team in terms of the criteria used for the identification of the professionals that will be involved in the project. The feedback is related to the information the professionals provided to the developer to ascertain the implications/risks of the project. And the knowledge of the condition of the structure and the stabilising requirement was influential in determining whether the project was viable for the developer. Linked to loop A is loop B (concepts 78, 69 and 59). This loop indicates that the structural conditions and implications of the work required were underestimated and were a cause of the difficulties encountered during the design phase, which in turn affected the contract when the design information produced was incorrect and delivered behind schedule. It also shows the difficulties related to Wheat Wharf, as perceived by the vendor. Those issues related to the structure, design and planning, all drivers to sell the scheme on, were in fact quite accurate, for the perceived potential difficulties mentioned by the vendor were experienced in high degree by the developer.

Loop C (fig. 8.11) is formed by two sets of loops (concepts 78, 69, 110 and 68). This loop indicates once again, the underestimation of the structural work, and its effects on both the design and construction phase. The difficulties with the design caused primarily by the nature of the building and by the approach taken in solving problems that is, trying to keep the building's original elements, affected the schedule of the production of the drawings, which in turn affected the progress of work on site. This aspect, plus the poor quality of the information provided by the architectural team lead to problems with the contract, for the contractor was falling behind schedule. As a result, development costs increased. The architect, it seems, underestimated the amount of work and time required to produce the drawings, therefore resulting in poor allocation of human resources to do the job, while the contractor had different views of how solutions to problems should be carried out.

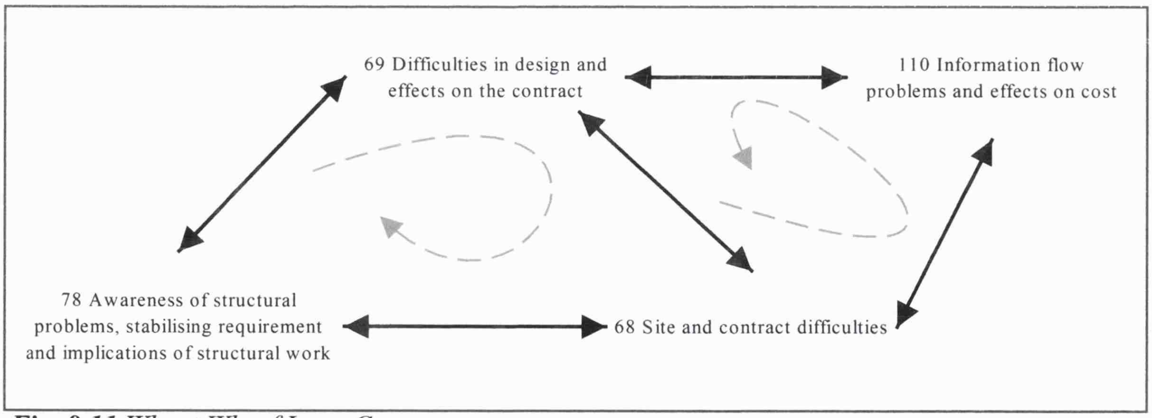

Fig. 8.11 *Wheat Wharf Loop C*

Loop D (fig. 8.12, overleaf) formed by two sets of loops (concepts 67, 78, 68, 108 and 110) shows how the selection of the professional team and appointment was influential in the limited role the manager played in the project, described in detail in chapter seven. The unsupportive (JD, concept 491) role was influential to the problems encountered related with the exchange of information. Although not the cause of this problem, the limited appointment in scope of the project manager did not encourage or help establish adequate lines of communication between the actors.

Loop D also shows that the selection criteria of the professional team, in this case of the contractor, were an important factor in the contract difficulties.

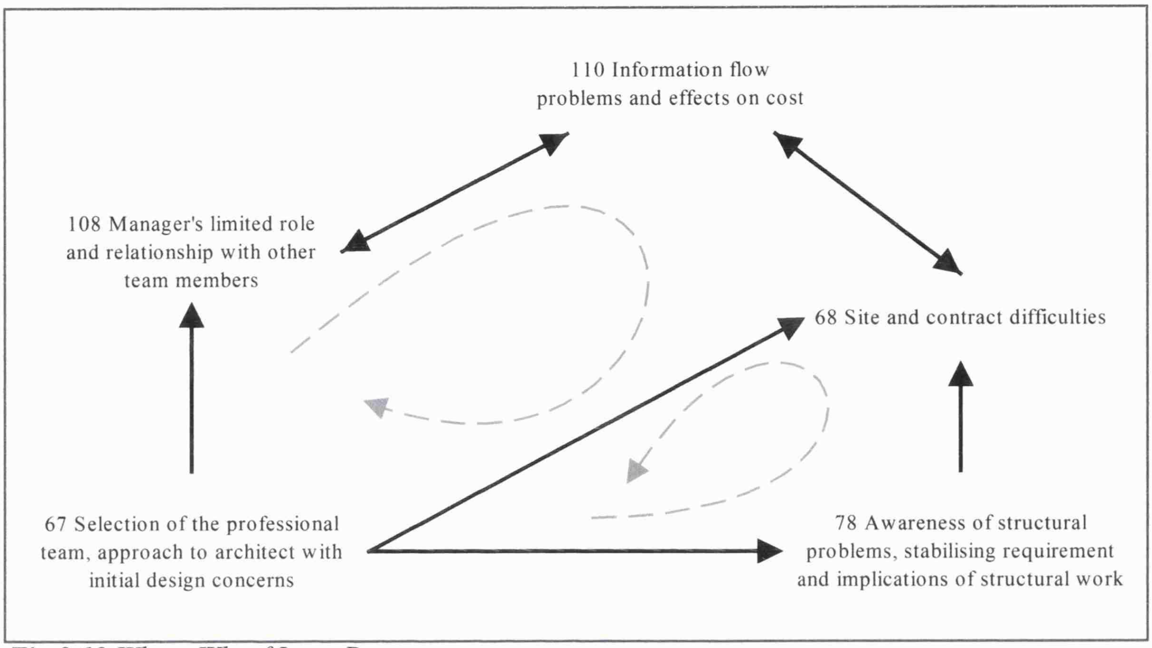

Fig.8.12 *Wheat Wharf Loop D*

The contractor's appointment to do the fit out works was based more on their low cost bid and on wanting to save time than on selecting the best contractor for the works. By that time the contractor had already experienced problems with the flow of information from the architect, so it seems this aspect was not considered thoroughly; there was the expectation that this issue would be overcome by the architect committing more human and time resources on the production of information. A solution that did not prove beneficial, as the problems continued until the end of the project.

From the analysis of these loops and the decisive course of action we can see that the problems or difficulties encountered further along in the process mainly stem from the selection and appointment of the professional team and in the incomplete understanding of the potential structural problems. The problem does not lie with the professionals themselves but on their appointments, that is their assigned roles and therefore their level of participation within the team and throughout the process. Problems could also be attributed to the lack of clarity of responsibilities of other actors, and the timing of their involvement within the process; the approach ("a need only basis") led to a poor team approach to problem solving. The awareness of the structural problems and their effects on the design, followed by the site works, was underestimated by both the architect and the developer. The inability or unwillingness on the part of the developer to be flexible over the contractual arrangements for the fit out works was clearly a mistake, for information flow problems had already been encountered during the stabilising phase and there was no guarantee that this aspect would improve. All these issues have formed a network of events that resulted in actors being disappointed with the process and the final product.

8.5 COMPARATIVE RESULTS

We have looked at the key elements of a conversion process at an individual actor's and at a project-base level. The time has come to consider the overall results of this joint level analysis by looking across the three project's process rather than product. At this point we have three types of sources of summarised information, the project summary maps (fig. 8.1, 8.3 and 8.8), the decisive course of action (fig. 8.2, 8.7 and 8.9) and matrices (tables 5.1, 6.1, 7.1). All contain very useful information for actors involved in the project and third parties wanting to understand the underlying dynamics and critical aspects of the project's conversion process. These aspects have the potential of being translated into more general conclusions, which could be applied in future conversion projects.

By observing the project summary maps (figs. 8.1, 8.3 and 8.8) we can see that the key areas were the importance of a team approach to the success of Indigo Mews; the perceived development potential of Aberdeen Wharf and the implications for design, planning and construction; and the implication of Wheat Wharf's structural works and the lack of team building and management approach. Each of these aspects had a significant impact on each of the project's process. For example, the Indigo Mews map illustrates how the selection of the team and its building and management approach were highly influential in the decisions taken in all following critical activities and for the success of the scheme's development process. Aberdeen Wharf's map reflects the advanced stage in which the site and scheme were purchased and focuses on problematic issues, mainly related with planning, that had to be dealt with after the purchase to increase the scheme's value. Wheat Wharf's map focuses on the difficulties of the process in general, and more specifically on the building structure, and on the role and unfruitful relationship between team members.

By comparing the decisive courses of action (figs. 8.2, 8.7, 8.9) of each of the projects, the significance of the results come into a different light. This action highlights that not only are the key issues for each project important in themselves, but it is the combination and network formed between them (decisive course of action and loops), and the small differences between them which offer a more complete overview. The presence of loops gives an indication of complexity in the process and an important outcome of the analysis. We can appreciate from figure 8.13, the main similarities and differences in approaches between the projects, where the key common areas of similarity are:

- Site evaluation criteria and interest as a common critical starting point;

- Criteria used for team selection and effect of team building process; linked to
- The effects of the management approach;
- The approach to the planning and design process;
- The importance of flexibility to change in the procurement process; and
- The perception of success as a process and a product as the final critical aspect

The diagram illustrates the pivotal activities of each project's process, from start (site interest) to finish (project process outcome/level of success). By the composition of each of the process paths it can be appreciated which ones experienced more difficulties and where. The number of loops within each path and their position along the horizontal give an indication of where and when feedback was necessary to overcome emerging issues and so allow the process to continue.

Site evaluation

The site interest and site evaluation process, as a common starting critical activity is not surprising, for it is where the first major decision process in a development project occurs. The decision has to consider the development potential and whether the cost and value can be balanced. Generally across the three projects similar questions were addressed.

In Indigo Mews (chapter five), the developer and the project manager, a developer himself, obtained the answer to their questions on site without any formal evaluation of the buildings, market conditions for that location, or local planning policy. The view was that the site was being offered at a very low price, the buildings seemed in good condition, a good concept could be developed and sold at a price, which had the potential of providing a good profit. As the project manager put it, "... you judge on your gut instinct" (GM, concept 473). This reference to intuition is a characteristic of expertise, which is gained through a learning process as Dreyfus and Dreyfus (1986) explain in their learning process model and as Flyvbjerg mentions:

> "...an exclusive use of analytical rationality tends to impede further improvements in human performance because of analytical rationality's slow reasoning and its emphasis on rules, principles, and universal solutions...bodily involvement, speed, and an intimate knowledge of concrete cases in the form of good examples is a prerequisite for true expertise" (Flyvbjerg, 2001:15)

In Aberdeen Wharf (chapter six), the evaluation process and decision to purchase the site was based on two things: first, the results of a formal analysis of the building, market condition, and planning permission; and second, the influence of the company's managing director to purchase the site, as it would set a good precedent for the company's portfolio.

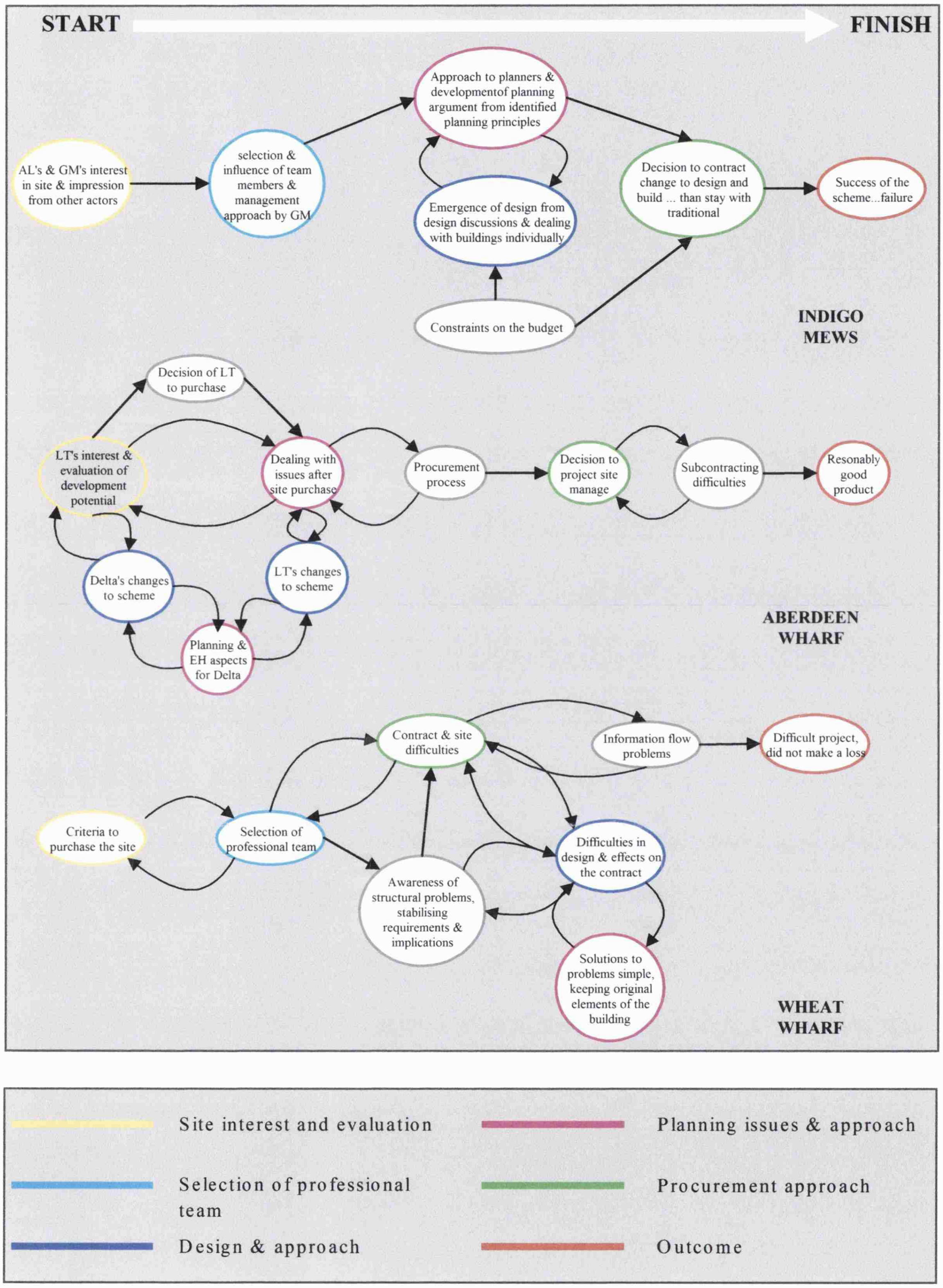

Fig. 8.13 Projects decisive course of action

Here the evaluation process was more clearly defined than in Indigo Mews, as a list of criteria that needed to be looked at closely was set out. In this case the decision is based on a combined behavioural characteristic of a proficient and competent performer. A competent performer has more experience and can recognise numerous elements in a particular situation. However, these are overwhelming, resulting in a lack of ability to prioritise. Aberdeen's competent performer (head of development) made a choice of goals and decisions having reflected carefully on the alternatives and recommending not to go ahead with the purchase as it was considered that the company did not have enough resources at the time (see PH, chapter six). The influence of the proficient performer (managing director) to purchase is evident: with more experience and an evolved perspective he has the ability to identify the key aspects of a situation (see PH, chapter six).

In Wheat Wharf the evaluation process was similar to that of Aberdeen Wharf, although the same aspects were looked at to a lesser degree and more at a rule based level compared to Aberdeen Wharf. The purchase seemed to be largely influenced by the company's desire to get into high value residential property development in that particular location; in other words it was a good opportunity for the company. In this case the behaviour of the developer is characteristic of a competent performer, described above. A clear example is the difference in perception about the building and its potential between the vendor and the developer. The developer underestimated the problems that might arise during the development of the project, which the vendor, with more experience and knowledge of the building, was able to understand.

Another factor that influenced the purchases was the pressure of time, although this varies for each project. For Indigo Mews, purchase had to be carried out in one week, for Aberdeen it was four weeks and for Wheat Wharf it was more a case of putting an offer forward to the vendor at the right moment. In these cases more time would not have resulted in a decision not to buy, but it would have allowed for potential problems and solutions to be considered more thoroughly.

Generally the aspects that are considered during the site evaluation are the same across the three projects. And the decision to purchase is influenced by many non-monetary factors: individual perception, knowledge and understanding of the location, planning policy, development potential, and the condition of the building. Financial consideration include estimated cost of development, the estimated profit, and for some the financial backing of the development organisation. This is related to the size of the organisation, as bigger or well established organisations find it easier to demonstrate a good track record, whereas smaller or new ones find it difficult. Other actors' perceptions of the site, and the level of experience of the developer in conversions to residential use are also important. The main differences were the degree or depth of research carried out to reduce the perception of risk; the time available for analysis; and the level of input at that stage from other actors.

Team assembly

The second point of similarity is the team selection, its building process and the management approach. In all three cases the selection criteria were very similar (see chapters five, six and seven for a detailed description). Generally the selection was based on the conversion experience of the actors; their quality of work; and in some but not all cases, an established working relation with the developer (which had the most influence); and the lowest bidder in case of the contractor. For Indigo Mews the selection was based on getting the best actors for the job. Wheat Wharf's selection was based on prior established relationships and on the lowest contractor bid, while for Aberdeen Wharf a coalition rather than a team was assembled, due to the advanced stage of the project at the time of purchase. In this case actors were approached because of their previous involvement and knowledge of the project rather than anything else.

The team building process in Indigo Mews occurred through the early involvement of all team members and through a participative and integrated management approach. It is clear that this management approach was beneficial for the project as all rising problems and issues were solved by feedback of information from all actors. This can be appreciated at the individual map level (chapter five), where the majority of actors describe the same issues, problems and solutions across the whole project. This was not observed in Aberdeen or Wheat Wharf; actors described issues, problems and solutions in relation to their own discipline.

Aberdeen's lack of team building process was due to the advanced stage at which the scheme was purchased. The management approach was directive that is, actors did what the developer (referred to as the client by other actors) asked. In this case there was a clear demarcation of responsibilities and aims for each actor, as the scheme only required to be built. All significant issues had been dealt with, although, some planning aspects did become issues because of London Town's desire to improve the value of the scheme. The effects of the management approach were positive, team members responded adequately and promptly to the rising problems. Even though this project was not approached as Indigo Mews, it is evident that the clear demarcation of roles, responsibilities and objectives enabled the process to evolve relatively smoothly.

In Wheat Wharf there was also a lack of team building and the management approach was less structured, as actors were called on a need only basis; the explanation for this decision is an economic one. Bringing together the team of actors from the beginning of the project is more costly to the developer, therefore team members were initially approached and contracted to do specific tasks on a lump sum basis. However, as the project developed some actors had to be involved in more areas than they were initially contracted for. For example, the role and activities of the service engineer (see SW in chapter seven). The result of this decision was that there was no clear team objective; actors became confused about the roles and responsibilities of other actors. This can be appreciated at an individual level, between the architect and project manager, where the project manager's description of his role is very different from the description given by the architect or developer (see JD, PS, KL in chapter seven). The developer also described his role as project manager, so there was clearly confusion in actor's views of each other's roles, resulting in a failure to acknowledge the problematic issues adequately. The management approach in this project was unstructured and loose, it seems that the developer underestimated the implications of the project, and in turning points of the project, the fitting out stage for example, recommendations from team members were not taken into consideration, resulting in a poorly managed process. The lack of integration of team members and differences in expectations about the project had implications for the contract; site works, and design solutions, which can be observed in the decisive course of action (fig. 8.13), resulted in problems of information flow, delays and increases in cost. Compared to Aberdeen and Indigo Mews, Wheat Wharf's approach was to micro manage rather than having a holistic management approach.

Iterative design and planning process

The third point of similarity is the iteration between the design and planning phase. The iterative process is not surprising to find, as it is well known that planning and design run in parallel. But what is interesting is the location of these iterations within each decisive course of action path (fig.8.13). In Indigo Mews for example, the iteration process is in the centre of the process, almost in balance with the first and last phases. In this case the development of the planning and design approach occurred through an early involvement with the Planning Authority, with set objectives presented as if proposed changes would benefit the local environment.

Aberdeen's design and planning approach can be seen at the beginning of the decisive course of action diagram, since London Town purchased the site when design and planning were relatively advanced. It is not only the iteration process, which influenced the project, but Delta's (vendor) as well. In this case the approach taken by London Town to achieve the additional changes they desired was not through negotiations, but through heavy persuasion and persistence, as at that stage there was hardly anything left to negotiate with (AW, concept 599). It is interesting to see through the loops, that the issues for London Town after the site purchase, those related with planning, design and in some instance procurement process, and their effects as delays were directly related to London Town's determination to pursue the desired changes in order to increase the scheme's value, set out in the initial purchasing phase. This perseverance was experienced even when the site works were at an advanced stage.

For Wheat Wharf the iteration process of design and planning developed to later stages in the process, which had significant impact on the contract and site works. The late development through the process was because the proposed design solutions had to meet with English Heritage's requirements, which needed a lot of detailed work and because the proposed design solutions were not in accordance with the existing building's structure. This created difficulties between the contractor and the architectural team; some of these difficulties however were also related to the type of contract which was used to develop the scheme. This is touched upon in the next point of similarity.

A positive outcome of the negotiation process, which occurs between the development team and Planning Authority or English Heritage in some cases, will benefit those actors who have more information and knowledge to discuss, develop and present a strong argument, or who are willing to work together and find the best solutions for both parties and for those whose relation develops very early in the process. This is why in all three cases the developers achieved their set goals with the relevant Authorities.

Procurement process

The importance of the role of the procurement process is the fourth point of similarity. Of interest is the ability and flexibility of the development companies of Indigo Mews and Aberdeen Wharf to change the approach from a traditional form of contract to design and build and site management respectively. At Wheat Wharf, even though there were problems with the form of contract early in the first phase (stabilising), the developer did not follow the advice of the project manager to change to design and build for the fitting out phase. This resulted in major delays and increased costs. The flexibility of development companies was linked not only to their level of experience and openness to feedback from team members, which allowed them to see the likely effects of not changing the form of contract, but also to the size of the development company, which allowed them to resource adequately the required changes and absorb the extra cost.

The effect of these decisions was on the cost and programme. Indigo Mews's costs were reduced, for alternative cost effective solutions were sought out. The advanced stage of the design benefited as it served as a base from which the contractor and cost consultant worked. As a result, minimum issues arose during the construction phase and the programme ran on schedule. For Aberdeen Wharf however, cost and programme were not reduced even though this was the initial consideration for changing the form of contract. Delays occurred due to subcontracting difficulties caused by unresolved design related aspects and unresolved issues with the Planning Authority. For Wheat Wharf the decision to run the fitting out stage with a traditional contract proved to be a mistake, the project was delayed at least 6 month and costs ran over budget; not even the contingency budget was enough to absorb the over run on costs.

The difficult structure of the building and the lack of resources from the architect were the main causes of the problems encountered during work on site, as well as the difficult relation between the architect and contractor. Advice on changing to design and build was not followed because of the established working relationship between the developer and the architect, for there was confidence from the developer that the architect could come through. The lack of understanding and underestimation from the developer of the project's requirements was evident.

Perception of success

The final point of similarity is the perception of success as a process directly related to the product. The description of the success of the scheme was related to the quick sale of the product and the achievement of the expected returns, in addition to how well the process developed. For Indigo the scheme was "very successful", as units were sold and returns obtained quickly; and the development of the process was a positive learning experience for all the actors, resulting in new relationships being forged. For Aberdeen it was a "reasonably successful" scheme, for units took longer to sell, the expected profit was not obtained, and it was a difficult process to control, although it was a good learning experience for future projects. Finally, for Wheat Wharf, success was seeing the product completed, the sale of all the units off plan and not making a loss out of it. Actors perceived the process as a learning experience, focussing on describing the difficulties that were encountered and how they would approach them now with hindsight.

The decisive course of action diagram (fig. 8.13) have highlighted the more complex aspects of a conversion project's processes. By observing their structure and development we can easily identify areas of similarity and divergence, where complexity (complicatedness) increased (presence of loops), how pivotal activities are networked, and how the process evolved and adapted in particular situations across the three projects. The strength of these results lies in their traceability of detail through the project summary maps back to the original interview data.

8.6 The importance of small differences and changes

The focus up to now has been on the areas of similarity between projects, which in turn have highlighted areas of difference. Similarities have pointed to sets of criteria used by decision makers in different stages of the project process, for example for the site evaluation, team selection, and selection of contractor. And although these have been the same across the three projects, the decisions taken, the effects on the development of the project and outcomes have been completely different. The key difference is in the decision mechanisms which occurred from the transition of one critical activity to the next. The decision triggers were largely determined by the combination of:

- the level and nature of input and involvement of the client;
- the level of input and integration of team members;
- keeping a balance between cost and value;
- aiming to achieve the established project's objective;
- time available.

In Indigo Mews the client, with the aid of team members, established the objectives of the project; his level of input and influence was minimum, but he was highly involved in the project's development, particularly when key decisions had to be made. For example, when environmental health concerns had to be dealt with to obtain planning consent or in the obtaining of a grant. His standpoint was respectful of other actors' views and gave freedom to the development of ideas, as they met with the project objective. In Aberdeen Wharf the level of input and involvement of the client was high, but by comparison was very influential in terms of what needed to be done and how. In this case the coalition of actors worked towards what the client wanted to achieve, while in Wheat Wharf the client level of input was minimum and his involvement can be characterised as loose. The team-working approach was fragmented due to the lack of clear project objective, definition of actors' roles and responsibilities, and financial resources.

This brings focus to the notion that pivotal decision factors hinge upon the interaction between the actors. It is important to consider how small differences or changes can have a significant effect on a project's development process, the transition from one critical aspect to the next. These small changes occur because of the interaction and relationship between actors from where a pattern emerges.

8.7 Discussion of findings

This chapter has achieved its aim of bringing individual actors' perceptions of a conversion project process into a summarised project level and identifying the perceived pivotal areas of a project process through the identification of key issues for each project, emergent loops (indication of complexity) and decisive course of action. The findings, common critical activities, network of links, decision triggers, importance of the interaction between actors will be discussed by putting them into context.

The project summary maps (figures 8.1, 8.3 and 8.8) continue to illustrate the level of complexity of the process of converting buildings to residential use (presence of loops). They have showed that even though all projects were indeed different in their details there were still common key areas for decision taking between them such as:

- Site evaluation criteria and interest as a common critical starting point;
- Criteria used for team selection and effect of team building process; linked to
- The effects of the management approach;
- The approach to the planning and design process;
- The importance of flexibility to change in the procurement process; and
- The perception of success as a process and a product as the final critical aspect

The process and the approaches to issues are developed through a series of double loops where information is fed back and forth, and this is where learning takes place. This is confirmed by Argyris and Schon (1978), when they mention that double loop learning involves learning from others rather than from one's own self-perpetuating experience. The aspect of learning in a project based organisation within the construction context is considered of importance, for it is the individual experience level (competent, proficient, expert) and the effectiveness in communication of knowledge and information feedback, which is one of the key contributors to the success of a conversion process. The analysis highlighted that it is the actors and their interaction that makes the process work and therefore their inter-relation and inter-dependence one of the important aspects to be observed in a conversion process.

To some degree the common aspects are not surprising to find, as they are activities which form part of any development process and which have been subject to individual studies. However, it is the way in which these activities are linked which is of interest, for these have not been highlighted in terms of networked criticality in the existing literature. These activities can be considered turning points within the process. The type of links (linear, single or multiple loop) formed between these activities points to the notion that the complexity lies in the transition from one activity to the next and in the internal processes within each activity. Transitions are made by the consideration of a number of issues, options for solutions and taking of decisions. The effectiveness of these decisions will logically have an effect on the development of the project. And these decisions will largely be determined by the level and nature of input and involvement of the client; the level of input and integration of team members; keeping a balance between cost and value; time available to take the decision and aiming to achieve the established project's objective with degrees of flexibility. This points to the idea that the interaction between actors is of key importance.

Finding these activities and their relation confirms the use of cognitive mapping to study this subject. Even at this summarised level a representation of actors "mental models" can be appreciated.

In the London context the individuals who have the ability and level of expertise to contextualise and prioritise the elements of a property development of this nature are most likely to succeed in the process of converting a building to residential use, even if the residential market conditions are not as buoyant as they are currently.

The final chapter readdresses the research problem and discusses the implications of the overall results for the conversion activity in London and speculates on the implications for other areas.

Chapter Nine

Summary, conclusions and recommendations

9.1 INTRODUCTION

The time has come to draw together the threads that have been running through the previous chapters. The main threads are the ones responding to the research problem set out in chapter one of understanding the process of converting buildings at an actor and project level with the aim of, mapping individual actor's cognitive understanding of the process; identifying the pivotal factors and issues that affect actors' decisions during the project process; and the implications of the research findings. The pursuit of the research objectives are presented by way of an overview in the following section. Section 9.3 presents the findings of the research and section 9.4 presents the views on the use of cognitive mapping for research in this area.

There are numerous threads that were not woven into the thesis and others which were spotted during this "knitting" process and although these cannot be fully integrated at this stage we can at least point them out. These are related to the problems of trying to cognitively understand the process and development of a conversion project, and the questions that emerged from the way in which the research objectives were pursued. These are discussed further in section 9.5 and 9.6.

9.2 OVERVIEW OF THE RESEARCH

The research objective of mapping and describing how actors involved in conversion activity understand the conversion project process encapsulated identifying the core issues and influencing factors (section 2.6.3, 2.6.4, 3.5), critical activities (section 8.2, 8.3, 8.4), and their dynamic relation within the process at an actor (chapter five, six and seven) and project (chapter eight) level.

Our understanding began in chapter two with a review of conversion activity's process, approaches and influencing factors related to both the state of the market for space and the state of the building. We saw that the understanding of this activity has been through isolated descriptions of activities and tasks; roles and functions; and listing of potential limiting issues and factors. As conversion is considered to be "complex, inter-related and dynamic", these approaches have been used primarily as a way of deconstructing the complexity of the subject matter. And although studies approached this way have made a valuable contribution, the details or subtleties that are instrumental towards the complexity and which might be of importance, go unnoticed. Therefore, the notion of the activity's perceived complexity needed to be understood.

Given that conversion activity is seen as one of many ways that can contribute to solving the housing crisis in the South East of England, the need to go further than the well known capacity and potential studies arose. There is no doubt that there have been shifts in the priority policy issues that have been considered by the government as potential drivers for conversion (conservation, regeneration, housing needs and sustainability), but what has been less certain is how the critical factors and issues influence decision makers choices to take on and develop a conversion project and how these affect the development and outcome of the project. This drove the decision to look at conversion activity cognitively at an actor and project based level.

The decision to explore conversion at a project level led to a review of management practice development and its implementation in the construction sector. Chapter three highlighted the need to go further than the well known scheduling and planning techniques and look at the softer issues of experience, behaviour, team assembly, team building, structure, decision-making and communication, as they are highly influential for the potential success of a project. The research narrowed down to looking at the human side of the project organisation and specifically decision taking. Nonetheless, the importance of considering softer issues within a project as a whole was necessary for identifying the combination of critical issues, factors and key stages of the project which affect individuals' choices, the project development and therefore the potential for success in variant levels.

The focus on individual actors involved in conversion projects was based on the notion that they are decision makers and key actors who build their own fields of decision possibilities which are then explored in the process of choice. That is, individuals tend to simplify a complex reality by constructing mental models where information is broadly categorised. The interest was therefore to explore the limits and structure of individuals' models and explore the process through which an individual decision maker goes through when making sense of problem. This viewpoint led to a review in chapter four of various methodological approaches (mapping techniques) within the area of Managerial and Organisational Cognition, developed from the application of cognition theories in the management context. And in chapters five to seven we saw how Eden's *Cognitive Mapping* could be used to pursue the research objective of mapping individual's perception of the project's process. The analysis of individual maps focused on describing the identified central themes, key issues and their relation in the process. The results were presented in a matrix format (tables 5.1, 6.1 and 7.1), which allowed to easily compare the views between actors. Each case study discussion centred on reviewing the client's perception of the project outcome ("successful", "reasonably good", "good product") and aspects, either positive or negative, which were highly influential towards this perception. Such as, clear or unclear objectives; the lack or establishment of a good team building process; hands off or integrated managerial approach; a fragmented or integrated planning and design approach; set or flexible procurement approach, among others.

Each individual map showed that the actor's understanding of the process is largely delimited by their professional background. Each discipline has its own boundaries in terms of problems to be solved and the approaches taken to solve them. The maps illustrate how the different approaches were taken, hence an actual rather than prescribed understanding was represented. This showed that those actors who could step outside the prescribed discipline understanding to problem solving put the project at an advantage in terms of its smooth development. That is, actors who could relate to other actor's roles, contextualise the problems outside their professional boundary and communicate effectively problems/solutions were issues that were strongly influential to the project's good development.

Although three case studies are not enough to make a statistical contribution, it does set a basis to explore the variety of approaches used by actors of the same discipline. To search for common "styles" which could potentially be used as a base for education and training. Of significant contribution would be studies focused on developers, project managers and architects as they were the identified key actors for the projects. This is explored further in section 9.6.

In chapter eight we brought together the individual empirical results to a project level and found that the use of Eden's *Cognitive Mapping* allowed us to simplify the representation of a complex process without losing details, as this could be traced back to individual maps. In addition, the analysis highlighted the key areas of similarity between projects in terms of their significance as:

- significance of the site evaluation process and decision to purchase;
- importance of definition of objectives and roles;
- selection criteria of team members and importance of the team building process;
- integrated approach to the development of the design concept;

- integrated approach towards the planning and design phase;
- flexible procurement approach;
- decision of pricing and marketing strategy; and
- the perceptions of success in variant levels.

The project base analysis identified two aspects: first, common sets of criteria used for certain critical activities, and the project decisive course of action.

The common sets of criteria used to evaluate the site potential, select team members and contractor were similar to those mentioned in the existing literature. Although the mentioned selection criteria's for these three critical activities was similar between projects, the decisions taken toward these and the effects on the project's development and outcome varied between the projects as could be seen in the project summary maps (fig. 8.1, 8.3 and 8.8). This confirms two things: first, the importance of the consideration of certain issues for particular critical activities; secondly, and most important for the project's smooth development, is the ability and capacity of actors, particularly the key decision makers (client or project manager) to contextualise each issue, and to consider and clearly communicate the possible effects of the options, not only on the next critical activity, but on the chain of activities that follow. The case studies showed that actors responded more effectively to issues which were taken into consideration early on in the project process. In this sense, the decisions which were made contextually, with an overall project view and with quality information were most successful during the project development. In the case where unexpected issues arose, as was the case during the construction phase, good solutions were sought with limited amount of time when they were approached through an integrated team.

The second aspect identified through the project base analysis is the decisive course of action of each project, from which the network of pivotal activities could be traced (illustrated in figure 8.13). This helped identify the key stages of the project process, how they relate to each other, where difficulties were encountered (presence of loops), causes of these and how they affected the development of the project. Even though this representation is a result of a retrospective overview of the project, it is significant for those involved in the project and other interested parties; either wanting to understand the process, or to review and assess the courses of action which were most beneficial or harmful during the project's development. Under these conditions cognitive mapping, even in its summarised form is useful as a project assessment or re-evaluation tool.

9.2.1 Decision-taking mechanism

The results have confirmed what the existing literature mentions about issues that should be considered before taking on a conversion scheme, such as location considerations, building condition, economic potential for development; and the factors that influence the activity such as, the state of the residential market, changes in legislation, changes in population lifestyle, among others, corroborating the strength of the utilisation of this mapping technique for this area of study.

Most importantly, the analysis process has brought focus to the importance of the effects of small differences and changes in the project's development and outcome (section 8.6). As the main difficulties in the project's process were encountered in the transition from one critical activity to the next, the key aspect is the decision taking mechanisms which occur from the transition between critical activities. With the consideration of the specific issues related to a critical activity (site interest and evaluation, team selection, planning and design approach, budget control, procurement approach, for example), when and how the decision taking mechanism occurred and the effects it had on the project were largely determined by the combination of five pivotal factors:

- the level and nature of input and involvement of the client (included are ability to contextualise, communicate and provide a project overview);
- the level and quality of input and integration of actors;
- keeping a balance between cost and value;
- aiming to achieve the established objective with degrees of flexibility; and
- the time available to decide and respond to upcoming issues.

Thinking of this as a series of cogwheels or gears is useful to visualise the five factors at work during each critical activity of the projects. The decision taking mechanism between critical activity ran smoothly and had positive effects on the project development, when the "cogwheels or gears", i.e. factors mentioned above, were of the right size (dependant on the level and quality of information), in the right place (dependant on the actors timely and integrated response to issues) and moving at the right speed (dependant on the established communication and information processing systems). This results in the notion that the pivotal decision factors hinge upon the level, nature and quality of interaction between actors and information. Confirming the idea presented in chapter one that actors and team coalition decisions and choices drive the project process. By looking at a larger population of developer's and project manager's (key actors) views and approaches in more depth might help to improve the decision efficiency in conversion projects. The problems areas identified in the three case studies indicate three areas in need of improvement:

- resource management;
- management of communication and information process systems; and
- the establishment of a re-evaluation exercises of project process and outcome.

9.3 The findings

The research objectives of mapping individual actors' cognitive understanding of the building conversion process and identifying the pivotal decision factors were achieved through this research; indicating that the level and nature of the interaction between actors plays a significant role in the decision mechanisms occurring in the process. Inevitably more questions emerged through this process, which are explored in section 9.6.

Understanding the process

In terms of understanding, actors involved in the activity understand the conversion process and identify key issues mainly in relation to the boundaries of their disciplines, even though they are aware of the general issues of a project of this nature, actors tend to concentrate on specific tasks and issues resulting from the development of their role in the project. It is understandable that actors are limited by these boundaries, for it is a way of simplification of numerous interrelated issues which they have to consider before reaching a decision. March (1994) mentions four simplification processes and these were present in the three projects. Issues and decision making were simplified via editing (simplify problems), decomposition (reduce problems into components), heuristics (rules of thumb) and framing (decisions framed by beliefs) processes. While the majority of actors (quantity surveyors, agent, planning officer some architects and service engineers) limited their understanding in relation to their disciplines and role in the project, developers and project managers had a holistic view of the process and issues, making them the key actors. The individual maps of these actors (appendices 3, 5 and 7) illustrate that the project processes that were most successful were the ones in which the developer and project manager provided a detailed description of the process, actor-issue relation, cause and effects of issues and description of how they were solved.

Although each actor had their own approach when dealing with an issue or combination there of, the identification of common key issues (tables 5.1, 6.1, 7.1), critical activities (figures 8.1, 8.3, 8.8) and their significance to the project process was identified by means of the cognitive mapping process.

Dealing with uncertainty, complexity and risk

The key actors did not see the conversion process as being that different from new build. In the sense that it is a property development exercise and it is carried out to improve the value of the property to make a profit. The main difference seems to be a higher perception of uncertainty, complexity and risk associated with conversion. However, the projects showed that uncertainty could be reduced with a process of information gathering and communicating. The perceived complexity of the project's process was greater when actors were inflexible on certain issues and as a result this reduced the available options, therefore becoming an issue complicated to resolve (presence of loops). This could be seen in Wheat Wharf (chapter seven) and to some degree in Aberdeen Wharf (chapter six). The opposite occurred when actors were flexible in their approaches and solutions to issues, as was the case in Indigo Mews (chapter five). As would be expected the perception of risk varied between key actors, however, the degree of risk perception is considered to be associated with the experiences gained through previous conversion work and the application of that knowledge in future projects. So, those actors who had been through the process several times would have a better understanding and knowledge of the process therefore would know what to expect and how to deal with it. This is a point on how individual's learn, which was not explored in this research but would be a great area of future study and is discussed further in section 9.6.

In terms of the process itself once the decision to purchase the site has been made the key aspect for the client during the process is being able to keep a balance between the cost of purchasing and developing the site and the value the units can reach. In this first instance external factors will be highly influential to the decision, but the combination of the remaining four pivotal decision factors and decision taking mechanisms will largely determine if the process develops at an optimum level, that is, in a way that is most conducive to a favourable process and outcome.

The process and its context

In a context of economic growth any actor with minimum experience in the construction industry can go through the process following the established criteria. Even if there is a lack of experience, it is very likely that the high property market conditions will act as a counter balance, especially in central London, for the project being successful in terms of profit. However, if the general economic context is not as buoyant then the managerial and softer issues become more important to having a more efficient process and a favourable outcome. The results highlighted that the decision to take on a conversion project is not to be taken lightly. The developer and main actors involved in such an activity should have a level of expertise that goes beyond following a set of rules or criteria. In the case where there is a lack of a good combination of experts involved, it is the condition of the residential market for that specific location which acts as a counter balance, as demonstrated by Wheat Wharf (chapter seven).

Conversion for housing provision

For the provision of housing through this activity, the potential demand is linked to macro factors these include local and regional development policies and demographic changes, and supply of housing among others; while the effective demand is more dependant on economic factors such as, level of rent, employment rate, price of housing, etc. Today the government's 60% national target for provision of housing through brownfield development has been achieved. But the housing crisis in the south east continues. Greenfield or brownfield development for housing will take place if developers can spot an opportunity: "with knowledge comes opportunity, with opportunity comes success" (Anon).

The importance of human interaction

The potential success of project process and outcome will also depend on other factors. The results have demonstrated that the nature and level of involvement of the different actors, the effective management and communication of information, and the establishment of clear objectives and their achievement through flexibility is very important for both a smooth project development and successful project process outcome. In the projects where clear objectives and lines of communication were established at the outset of the project and where actors worked integrally to solve issues, provided a strong impulse for a smooth project development. If these elements are not defined from the start then this can give rise to a wider scope of problems areas.

Conclusion: filling the gap

The literature examined related to building conversion, project management and managerial and organisational cognition shows that the specific area of interest for this research does not represent an extensive part of the literature. Building conversion has mostly been covered in relation with pacing trends for example, as a potential activity for urban regeneration, conservation, provision of housing and sustainability. Conversion process is paralleled to that of refurbishment, an area that has had limited focus to its understanding and managerial aspects. The literature acknowledges the activity's degrees of complexity, dynamism, uncertainty and risk and so the ad-hoc approached justified. Nonetheless, the case studies have indicated that complexity, uncertainty and risk are elements which can be reduced with a flexible approach, efficient quality information communication process, an integrated team of experienced actor's with an ability to communicate knowledge.

In chapter one we pointed out that three case studies were not enough to be statistically representative, however, in conclusion five general recommendations to improve the conversion project process can be made:

- clear formulation and communication of objectives and roles,
- selection of experienced team members and establishment of a team building strategy,
- integrated/flexible management of human resources,
- stream line management of communication and information systems process,
- establishment of a project re-evaluation exercises.

As mentioned in chapter three (section 3.3) studies in project management practice in construction have time and time again reinforced the importance of: an integrated collaborative approach between disciplines; balance between cost, schedule and design; definition of roles; coordination of project information; and quality and efficiency among others. In relation to these, this research demonstrates two things: first that these issues are still after thirty years, areas in need of improvement; second, they are areas closely linked, so the way in which one behaves will have an effect on another and therefore the process development and outcome. The first aspect indicates that not much progress has been made over the past thirty years to integrate the findings of numerous government reports to the practice of construction. It could be an indication of the practice side of the construction industry mistrust of the academic side of it, and the construction industry reluctance to change. These highlight the need to establish stronger links between practitioners, professionals and academics, an issue addressed by the *Fairclough Report* (2002). The second aspect, points to the importance of the relation between areas and the significance for future areas of research. But before going to this, the following sections present the significance of the methodology for research in this area (section 9.4) and reflection on the research process (section 9.5).

9.4 SIGNIFICANCE OF THE METHODOLOGY

The application of methodology proved very useful for research in this area. The combination of a case study approach with cognitive mapping allowed to explore what was actually occurring in real conversion projects, collect detail data from individual actors, easily manage and analyse vast and complex data, and construct both individual and project maps. The analysis of maps initially showed individual's experiences and views on how the process developed, these views were then integrated to form a project map to obtain a complete understanding of the project process. The facility to analyse information at an individual, project and summary level was significant, as it allowed to understand the changing objectives and outcomes at individual and project level. While the summary format presented the most important aspects, the reasons behind them could still be easily traced back to individual actors maps, reinforcing the validity of the analysis tool. Cognitive Mapping provides a way to visualise the dynamics of a process, as the relation between issues and their position within the project could be easily understood and provided the possibility of further analysis.

Another aspect is the significance of the use of Cognitive Mapping as an analysis tool in terms of its potential use as:

- a project re-evaluation tool;
- a strategic learning tool for those already involved in the conversion activity;
- an education and training tool for academics and practitioners; and
- a knowledge/ information management tool.

The significance for actors is that they can see the influences of and from each other throughout the process. The key actors can trace back the causes and effects of certain actions and decisions more easily than without the use of *Decision Explorer*, providing the potential for aiding the actors knowledge transmission to future projects and the potential of recognising their learning process. This is considered an important aspect, as generally what tends to happen in the construction sector is that the knowledge gained through the development of a project is maintained with the individual and not transmitted further to the organisation as a whole. It is uncommon for team members to review the process of the project after completion, which would give better insights into future strategic approaches. The summary maps therefore provide one form of feedback information to individual actors and organisations, aiding in their learning process and potentially their management of information.

For third parties, whether those involved in academia or practitioners, the summary maps provide a clearer understanding of the dynamic process of a building conversion project through the identification of actors, issues, problem areas and their interrelation in a different way than that in the existing literature. And it can complement the existing listing of issues and actors by providing the dynamic aspect which is currently lacking in emphasis.

For the researcher the process of analysis and comparative results provided the opportunity to formulate general conclusions about the decision taking mechanism and factors which largely determined the nature of transition between pivotal activities. *Decision Explorer* has helped us achieve the set aim of gaining a better understanding of the conversion process, its elements (actors and issues), their inter-relation and dynamics, allowing us to go further than just listing the critical aspects of the process, but bringing the understanding of the underlying dynamics of the system while opening new lines of enquiry, explored in section 9.6.

9.5 WITH HINDSIGHT

Before considering areas of further research there is a need to discuss some of the problems encountered while pursuing this research and which anyone wanting to explore certain themes further might need to be aware of.

First there is the problem of obtaining the most appropriate and complete data set from which projects and informants can be identified and selected. As mentioned in chapter one the lack of a common definition for refurbishment work affects how it is classified, categorised and made available to the general public. Furthermore, this type of information can often only be found in private company data sets and therefore is shared reluctantly; and even though a data set may be assembled from public records the information contained is not standardised across administrative boundaries, causing additional headaches for the researcher.

Second, there is the basic practical problem of contacting and persuading potential interviewees to participate. In the end although potential projects went through a filtering process the final selection resulted from the informant's positive interest and availability.

Third, the challenge of obtaining good quality information. A key aspect in the use of a Cognitive Mapping approach, as with any other qualitative analysis tool, is the obtainment of good quality information, this relates to being able to elicit from the interviewee either the causes or effects of certain decisions and/or actions with minimum intervention from the interviewer. This was possible by following the guidelines of asking how or why questions.

Fourth, is the problem of identifying the most appropriate data analysis technique for such subjective data. Even though Eden's *Cognitive Mapping* had been tested within the management of the design process context as in Edkins's (1998) work, this analysis was carried out with a certain amount of caution when dealing with the potential issue of hindsight bias from the interviewee, and matrix analysis was carried out in chapter eight as an alternative way of analysing aggregated information. However, in the end we have seen how the mapping technique allowed for the data to be easily managed and reduced in a manner that allowed for the meaning and reliability of the data not to be lost, bringing forth interesting results; while hindsight bias was minimised by the presentation of alternative solutions for important problems encountered. The subjective component emerging from the level of interpretation of the interview data was reduced with the use of *Decision Explorer*. Its use to analyse the data at various levels (overall and summarised) reduced the level of subjectivity, as the software analysis tools identified the most significant aspects and their dynamics for each actor and for each project through the degree of linkage, which came direct from the interview transcripts.

Fifth, the inputting of data into *Decision Explorer* was extremely time consuming as there were an average of 350 concepts per interview. It might be possible and just as valuable to reduce the time by sifting through the interview transcripts first and mapping the lines of argument that are directly relevant to the research questions.

Finally, the problem of analysing information in hindsight, explored in chapter four, although reduced, still remains. It would be preferable to carry similar types of studies on live projects, but problems with logistics and the organisation's time commitments are the main problem. Alternatively, scenario tools could be used, these would require the researcher to have experience and knowledge of the subject to develop them but nonetheless would probably prove most useful in this context.

9.6 Areas of further research

These are the threads that were considered of interest during the research process but which were not woven into the thesis. The boundaries of this research were clearly stated in chapter one, in terms of looking at individual actors cognitive understanding of conversion to residential use at a project base level, and within these new questions emerged which have implications on a wider context.

As mentioned in section 9.2 and 9.4 through the use of Eden's Cognitive Mapping and *Decision Explorer* the causes and effects of certain decisions and actions could be traced easily, as well as changes in objectives and outcomes. This aspect could be explored further by identifying changes in individual actors concepts across several projects. Therefore providing the potential for tracing actors learning process and aiding them in future decision making situations.

This in turn leads to several questions: how is individual actor's knowledge, gained through a project, applied to future projects and how is it transmitted, if it is transmitted to the organisation; and how and what benefits can it provide to the organisation and to the construction sector. This individual knowledge is considered the key competitive advantage, and therefore shared reluctantly. However, of interest would be to explore the benefits of knowledge transmission systems, structure and process to organisational success.

In addition, there is a need to explore the extent to which the construction sector carries out project re-evaluation exercises and the potential benefits that might arise from such exercises.

In chapter eight we identified that the team assembly or project coalition process had a significant effect on the project development, even though the selection criteria used in all three projects were similar. This indicates that there are more critically important aspects than the well known selection criteria, for example information processes, and the impacts need to be explored further. We also mentioned that the pivotal decision factors hinged on the level and nature of interaction between actors. This leads to a more sociological approach to understanding and measuring social system interaction within the construction context. Identifying degrees and typologies of interaction could potentially benefit the management of projects of this nature.

Key actor's approach to problem solving needs further study. Although this research is not statistically significant it does serve a base for further research on how these key actors identify and approach problems in conversion projects, in particular how do they deal with risk and uncertainty.

Finally, the idea and importance of small differences presented in chapter eight, can be viewed from a Complexity Theory standpoint. The findings can be supported by looking at a conversion project in terms of complexity theory. This can build upon the work of Bentley (2000) who argues that group process and team work in the construction process can be understood as Complex Adaptive Systems (CAS); and Stacey (2000) who calls for understanding of organisations in terms of "complex responsive processes". The interest is in understanding human interactions, choices and actions as essential to, as operating within, the dynamic of daily interactions between people. There is a call to move away from thinking about an organisation as a system, to thinking about organising as highly complex, ongoing processes of people relating to each other.

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Letter from Andrew Williams of Landmark Architecture to Case Officer (29/08/1997).

Internal memo from Case Officer to legal section in Tower Hamlets (26/09/1997).

Appendix 1

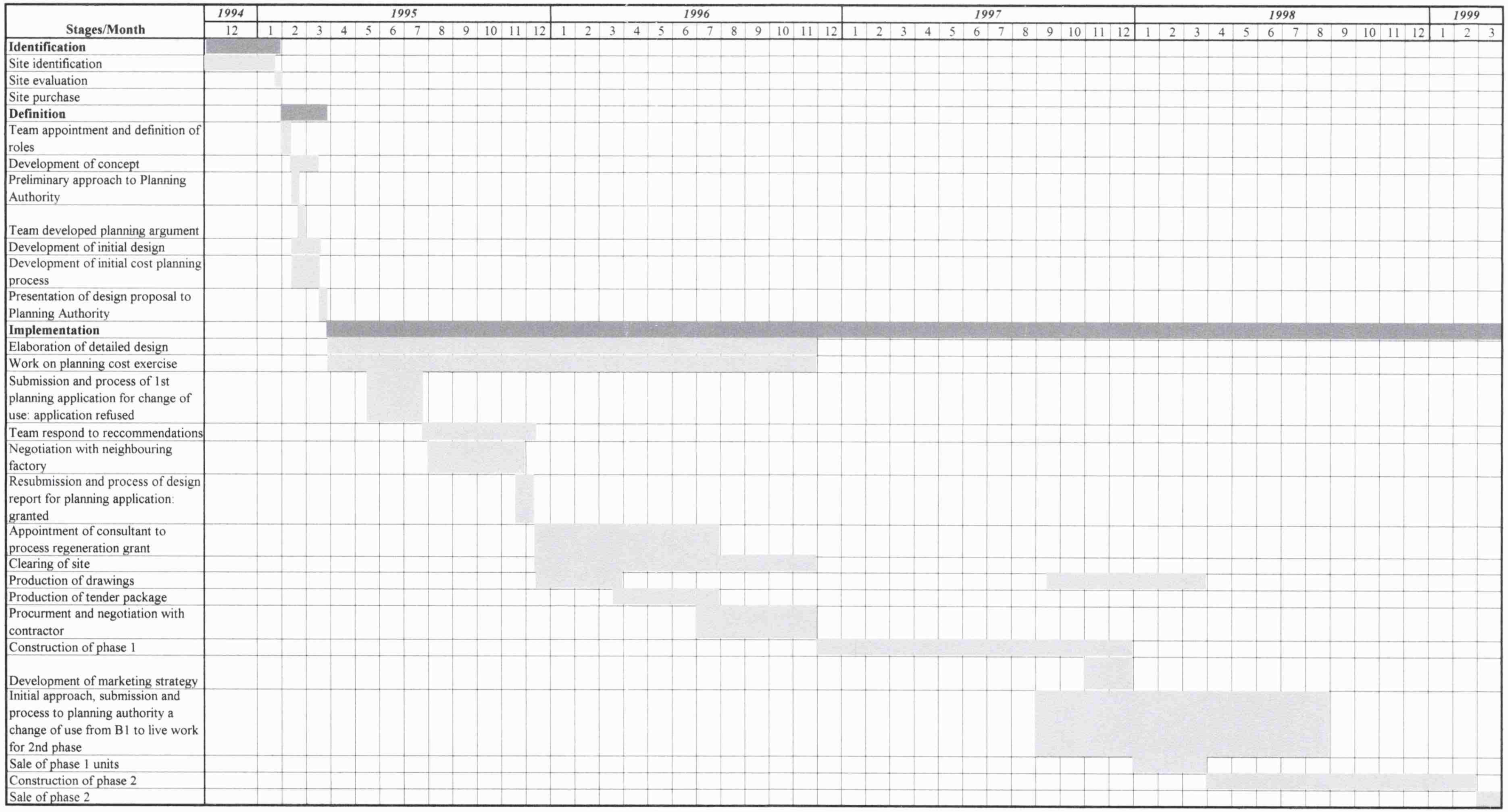
Conversion Schemes Completed and Available in London 1999

Name	Location	Planning Authority	previous land use	Construction Start	Construction End	Developer 1	PRP	PRS	Min Price	Max Price	Av Price	Min £/sqft	Max £/sqft	AV £/sqft
Burton Mews	Bloomsbury	Camden	Industrial (B2)	November 1, 1997	January 1, 1999	Gleneil Ltd (Tiger Hill Limited)	9							
53-54 Tottenham Court Road	Bloomsbury	Camden	Offices (B1)	January 1, 1999	May 1, 1999	Micro Anvika Retirement Trusts	6							
73 Maygrove Road	Kilburn	Camden	Offices (B1)	September 1, 1997	February 1, 1999	Grenada Developments Ltd	8							
Fitzrovia Apartments	Fitzrovia	Camden	Offices (B1)	March 1, 1999	September 30, 1999	Shortways Ltd	13		320000	425000	361083	318	409	354
The Montgomery Building	Clerkenwell	Camden	Offices (B1)	September 1, 1998	September 1, 1999	Berkeley Homes (Chiltern) Limited	24							
St Martin's Court	Covent Garden	Camden	Offices (B1)	September 1, 1998	August 31, 1999	Barratt West London	39	9	164995	449995	284045	304	474	367
25 Farringdon Road	Clerkenwell	Camden	Offices (B1)	August 1, 1997	May 1, 1999	Berkeley Homes (Chiltern) Limited	41		145000	425000	293362	276	345	308
The montgomery Building	Cleckenwell	Camden	Offices (B1)	September 1, 1998	September 1, 1999	Berkley Homes (chiltern) Ltd			150000	380000	252778	235	362	282
4-15 Dorrington Street	Holborn	Camden	Offices (B1)/Light Industrial (B1)	May 1, 1997	June 1, 1999	St Pancras Housing Association		27						
Admiral Napier Public House	Kentish Town	Camden	Public House (A3)	May 1, 1998	May 1, 1999		8							
The Cobourg Building (Collectors Corner)	Euston	Camden	Retail (A1)	May 1, 1998	March 31, 1999	R.A.G.S	7							
27 Minories	City	City of London	Offices (B1)	May 1, 1998	March 31, 1999	South Thames Properties	8							
12 (14) Trinity Square	City	City of London	Offices (B1)	May 1, 1998	August 1, 1999	Dencora Homes Limited	13		105000	455000	287692	332	530	384
Prospero House (48-50 Minories)	Aldgate	City of London	Offices (B1)	September 1, 1998	June 30, 1999	WillowAcre	14		145000	575000	207500	297	518	344
River House	City	City of London	Offices (B1)	June 22, 1998	February 14, 1999	Durkan New Homes Ltd	15							
Cathedral Court (68-74 Carter Lane)	City	City of London	Offices (B1)	May 18, 1998	May 30, 1999	Mordril Developments	16		125000	370000	209872	300	393	349
St John's House	City	City of London	Offices (B1)	July 1, 1998	September 30, 1999	London & Henley Ltd	28							
Bartholomew Close	Barbican	City of London	Offices (B1)	September 1, 1997	March 1, 1999	Gleeson Group PLC	39		160000	350000	243932	282	404	343
196 Bishopsgate	City	City of London	Offices (B1)	March 1, 1998	August 1, 1999	Mastelle Ltd	48		162500	172500	167500	305	320	312
Fleetwood (Fleetwood Place)	Stoke Newington	Hackney	Education (D1)	May 1, 1998	September 1, 1999	London Wharf PLC	17		130000	300000	207500	128	181	153
36-42 New Inn Yard	Shoreditch	Hackney	Industrial (B2)	June 1, 1998	January 1, 1999		6							
44-48 Shepherdess Walk	Shoreditch	Hackney	Industrial (B2)	September 1, 1998	January 1, 1999	Westcombe Homes	6							
14A, B & C Manor Road	Stoke Newington	Hackney	Industrial (B2)	December 1, 1998	August 1, 1999		9							
Indigo Loftside (Indigo Mews)	Stoke Newington	Hackney	Industrial (B2)	April 1, 1998	February 1, 1999	Dorrington Properties PLC	20		99950	179950	146200	158	192	175
5 King Edward's Road	South Hackney	Hackney	Industrial (B2)	March 1, 1998	May 1, 1999	Lemon Land	52		65000	124500	104286	115	152	128
One Hoxton Square	Shoreditch	Hackney	Leisure (D2)	July 1, 1998	April 1, 1999		8							
124-130 Tabernacle Street	Shoreditch	Hackney	Offices (B1)	July 1, 1998	September 1, 1999	City North Group Plc	10							
Abney Park	Stoke Newington	Hackney	Retail Office (A2)	October 1, 1997	September 1, 1999		50							
87-89 Paul Street	Old Street	Hackney	Storage (B8)	April 1, 1998	March 31, 1999		6							
St Marks School (N/S)	Fulham	Hammersmith &	Education (D1)	June 1, 1998	September 1, 1999	Shepherds Bush Housing Association		32						
The Chequers	Clerkenwell	Islington	Education (D1)	November 1, 1997	February 28, 1999	Westcombe Homes	21		139950	346000	239979	191	394	239
The Lab Building	Clerkenwell	Islington	Industrial (B2)	January 1, 1998	March 1, 1999	Berkeley Homes (City & East London)	35		120000	678000	233283	263	412	332
The Warehouse	Clerkenwell	Islington	Offices (B1)	December 1, 1998	August 31, 1999	Delheim Properties	10		220000	285000	239000	250	348	307
The Rooftops (15-27 Gee Street)	Clerkenwell	Islington	Offices (B1)	March 1, 1998	February 18, 1999	Bee Bee Developments Ltd	14		149950	390000	239460	221	313	268
Luke's Lofts	Clerkenwell	Islington	Offices (B1)	October 1, 1998	August 1, 1999	City Spacemakers Plc	14							
The Apex (City Point, Cardrey House etc.)	Clerkenwell	Islington	Offices (B1)	January 1, 1998	April 1, 1999	Berkeley Homes (Chiltern) Limited	34		122500	248000	176288	186	285	234
100 Drayton Park	Highbury	Islington	Offices (B1)	June 1, 1998	September 1, 1999	Durkan New Homes Ltd	84		117500	260500	175576	170	283	228
St Paul's Square (187-211 St John Street)	Clerkenwell	Islington	Offices (B1)	July 1, 1997	January 29, 1999	Bellway Homes (North London) Ltd	87		99000	315000	198309	202	365	274
Former Police Station & Depot	Barnsbury	Islington	Police Station	July 1, 1998	August 31, 1999	William Sutton Trust (HQ)		27						
Silk House (59-61 Gee Street)	Clerkenwell	Islington	Storage (B8)/Offices (B1)	April 1, 1998	August 1, 1999	Carruthers Driscoll	8							
617-625 Harrow Road	Kensal Green	Kensington &	Industrial (B2)	April 1, 1998	February 1, 1999	Westway Housing Association		8						
10 Bolton Gardens (Bolton House)	South Kensington	Kensington &	Offices (B1)	August 1, 1998	June 30, 1999	Southern Properties Ltd	7							
The Old Library Buildings	Earl's Court	Kensington &	Other Non-Residential Institutions	July 1, 1998	July 31, 1999	Tylden lofts & calvert	10		165000	295000	243500	275	380	320
10-14 Craster Road	Streatham Hill	Lambeth	Industrial (B2)	March 1, 1999	September 30, 1999	Wandle Housing Association		7						
Business 112	Brixton	Lambeth	Light Industrial (B1)	January 1, 1999	September 1, 1999	Urban Manor Ltd	6							
Wolfdene House (11 Weir Road)	Streatham	Lambeth	Offices (B1)	July 1, 1998	February 28, 1999	Sullivan Thomas (Nightingale Square	7							
134-138 Norwood Road	Tulse Hill	Lambeth	Retail (A1)	January 1, 1998	February 28, 1999	Sparepoint Construction Ltd	12							
Peacock House (The Old Ward Block, G Block)	Peckham	Southwark	Hospital (C2)	September 15, 1998	August 31, 1999	Shoreham & London Wide Properties	17		99000	134000	121938	171	216	194
Tamarind Court & Cumin Court, Butlers Wharf	Bermondsey	Southwark	Industrial (B2)	August 1, 1997	February 28, 1999	Galliard Homes Ltd	62		155000	290000	221923	216	359	258
Hope (Sufferance) Wharf	Rotherhithe	Southwark	Industrial (B2)	October 1, 1997	May 31, 1999	London Town PLC	30		110000	450000	198654	183	418	245
Former Sarsons Brewery Buildings	Bermondsey	Southwark	Industrial (B2)	July 1, 1997	September 1, 1999	Sunlight Projects	22							
Globe Wharf	Rotherhithe	Southwark	Industrial (B2)/Storage (B8)	July 1, 1997	July 31, 1999	Berkeley Homes (City & East London)	138		110000	295000	242750	175	325	231
25 Broadwall	Waterloo	Southwark	Offices (B1)	November 1, 1997	February 28, 1999	Mortimer Growth Plc	16		198000	240000	220469	267	336	297
Tower Bridge House	Bermondsey	Southwark	Offices (B1)	November 1, 1998	August 1, 1999	United Designers	10							
Berkeley Court (2-10 Lyndhurst Way)	Peckham	Southwark	Offices (B1)	January 1, 1999	June 1, 1999	Saxton & Co.	14							
36-38 Peckham Road	Camberwell	Southwark	Offices (B1)	March 1, 1998	March 1, 1999	Aztec Homes		13						
The Grain Store (70 Weston Street)	Bermondsey	Southwark	Storage (B8)	July 1, 1998	January 1, 1999	Acorn Homes (London) Ltd	16		210000	295000	226786	205	262	220
Wheat Wharf, Butlers Wharf	Bermondsey	Southwark	Storage (B8)	December 1, 1998	September 1, 1999	Angel Property Trading Limited	25		230000	500000	293250	238	296	260
72 Weston Street	Bermondsey	Southwark	Storage (B8)	February 1, 1999	September 1, 1999	Acorn Homes (London) Ltd	9							
Falcon Works	Bow	Tower Hamlets	Industrial (B2)	August 1, 1998	August 1, 1999	Aitch Properties Ltd	40	20	127500	172500	159056	160	213	189
93-95 Sclater Street	Spitalfields	Tower Hamlets	Industrial (B2)	June 1, 1998	July 1, 1999	City & Counties Housing Association		9						
Jackson & Joseph Building	Spitalfields	Tower Hamlets	Industrial (B2)/Retail (A1)	June 1, 1998	April 1, 1999	Arthouse Project Ltd	11		195000	375000	288636	155	235	183
8 White's Row	Aldgate	Tower Hamlets	Light Industrial (B1)	September 1, 1998	May 31, 1999	Delvehill Limited	9							
Cityview House	Bethnal Green	Tower Hamlets	Light Industrial (B1)	April 1, 1999	June 1, 1999	Callan Consultants	15							

22 Alie Street	Aldgate	Tower Hamlets	Offices (B1)	August 1, 1998	September 1, 1999	City North Growth Plc	9							
193-197 Bow Road	Bow	Tower Hamlets	Offices (B1)	May 1, 1998	June 30, 1999	Swan Housing Association Limited	12	16						
Old Aberdeen Wharf	Wapping	Tower Hamlets	Storage (B8) ammen from offices	May 1, 1997	September 1, 1999	London Town PLC	17		165000	550000	361471	199	402	315
Tredegar House	Bow	Tower Hamlets	Offices (B1)	August 1, 1998	February 1, 1999	Higgins Homes Limited	20		98500	210000	136222	173	244	196
Sunlight Square (Former Council Offices)	Bethnal Green	Tower Hamlets	Offices (B1)	December 1, 1997	February 28, 1999	Copthorn Homes	83	17						
City Harbour	Isle of Dogs	Tower Hamlets	Offices (B1)	September 1, 1997	January 1, 1999	Epsom Homes	86		183700	314600	222440	174	224	206
The Exchange Building	Spitalfields	Tower Hamlets	Offices (B1)	April 1, 1997	March 1, 1999	Hampstead Homes	97		173950	499950	270022	119	298	210
Skyline Plaza (Docos House)	Aldgate	Tower Hamlets	Offices (B1)	October 1, 1997	March 1, 1999	St George North London Limited	130		82950	136000	110210	183	268	235
133-139 Mile End Road	Stepney	Tower Hamlets	Offices (B1)	December 1, 1997	January 1, 1999	Springboard Housing Association		12						
154 Commercial Street	Spitalfields	Tower Hamlets	Offices (B1)/Industrial (B2)	October 1, 1998	May 31, 1999	Millenium Assets	18							
Brody House	Spitalfields	Tower Hamlets	Offices (B1)/Industrial (B2)	May 1, 1998	August 1, 1999	South Thames Properties	31		139000	685000	226452	238	377	290
St Peters Church	Bethnal Green	Tower Hamlets	Religious (D1)	January 1, 1998	August 1, 1999	London & Henley Ltd	37							
Crown Mansions (Mayfield College Site)	Putney	Wandsworth	Education (D1)	January 1, 1998	May 1, 1999	Barratt Homes South London	38							
5 Lisle Street	Soho	Westminster	Hospital (C2)	April 1, 1998	March 31, 1999	Manhattan Loft Corporation Ltd	7							
56 Regency Street	Pimlico	Westminster	Military	May 1, 1998	September 1, 1999	London & Henley Ltd	14							
31 Nottingham Place	Marylebone	Westminster	Offices (B1)	December 1, 1998	June 30, 1999	Arcwood Limited	7							
The Chancellery (18 St James's Square)	St James's	Westminster	Offices (B1)	September 1, 1997	September 1, 1999	Berkeley Homes (West London) Ltd	10							
Garrick House	Covent Garden	Westminster	Offices (B1)	February 1, 1998	April 30, 1999	Ho Bee Holdings (PTE) LTD	24		199000	998000	366000	425	725	489
176-184 Vauxhall Bridge Road	Victoria	Westminster	Offices (B1)	August 1, 1997	July 1, 1999	Network Housing Association		29						
17-19 Great Westwern Road	Westbourne Park	Westminster	Offices (B1)	March 1, 1998	December 31, 1998	Nottinghill Home Ownership		6						

Appendix 2

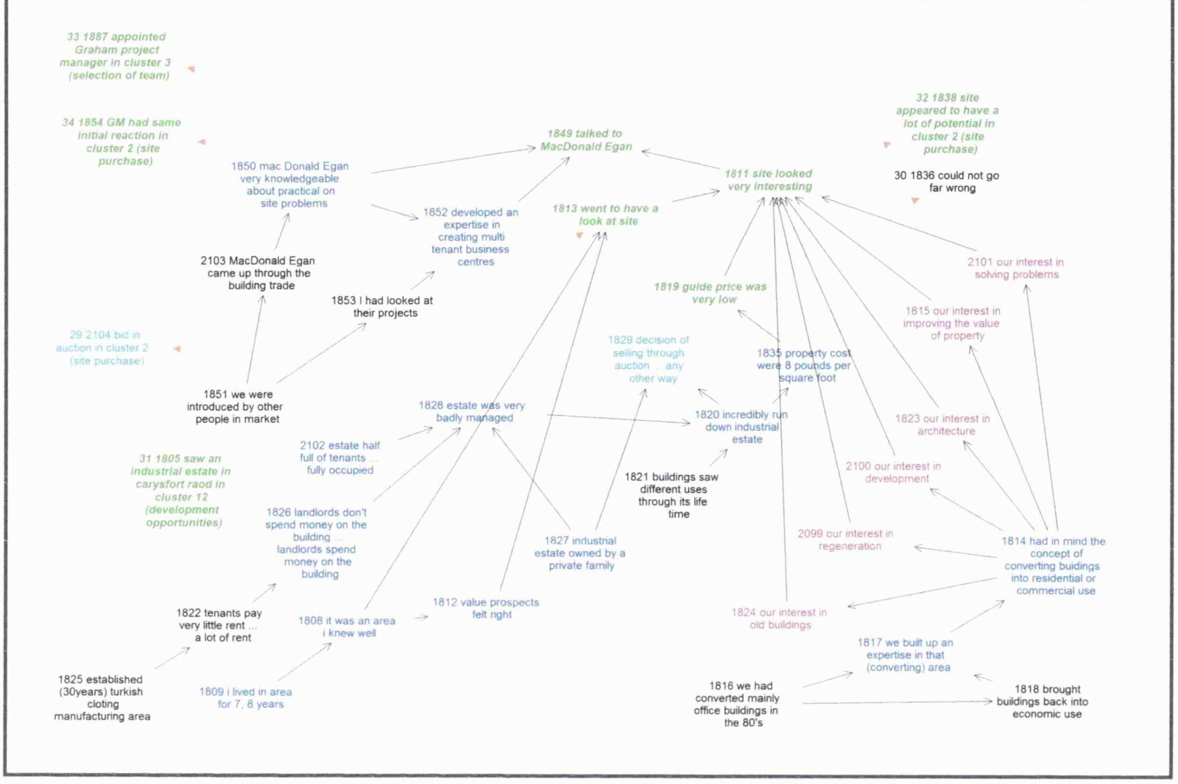
Indigo Loft-side and Newington Place Mews
Project time line


Stages/Month
1994
1995
1996
1997
1998
1999
12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3
Identification
Site identification
Site evaluation
Site purchase
Definition
Team appointment and definition of roles
Development of concept
Preliminary approach to Planning Authority
Team developed planning argument
Development of initial design
Development of initial cost planning process
Presentation of design proposal to Planning Authority
Implementation
Elaboration of detailed design
Work on planning cost exercise
Submission and process of 1st planning application for change of use: application refused
Team respond to reccommendations
Negotiation with neighbouring factory
Resubmission and process of design report for planning application: granted
Appointment of consultant to process regeneration grant
Clearing of site
Production of drawings
Production of tender package
Procurment and negotiation with contractor
Construction of phase 1
Development of marketing strategy
Initial approach, submission and process to planning authority a change of use from B1 to live work for 2nd phase
Sale of phase 1 units
Construction of phase 2
Sale of phase 2

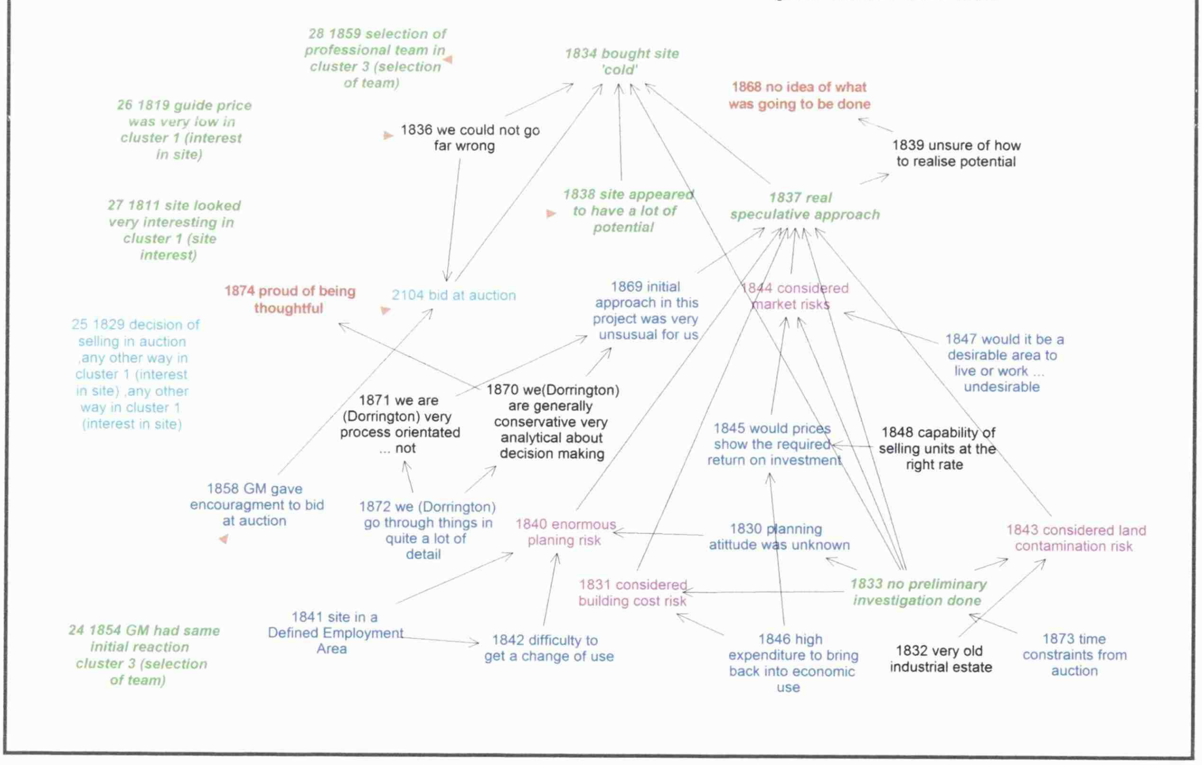
Appendix 3

Indigo Loft side and Newington Place Mews actor's clusters

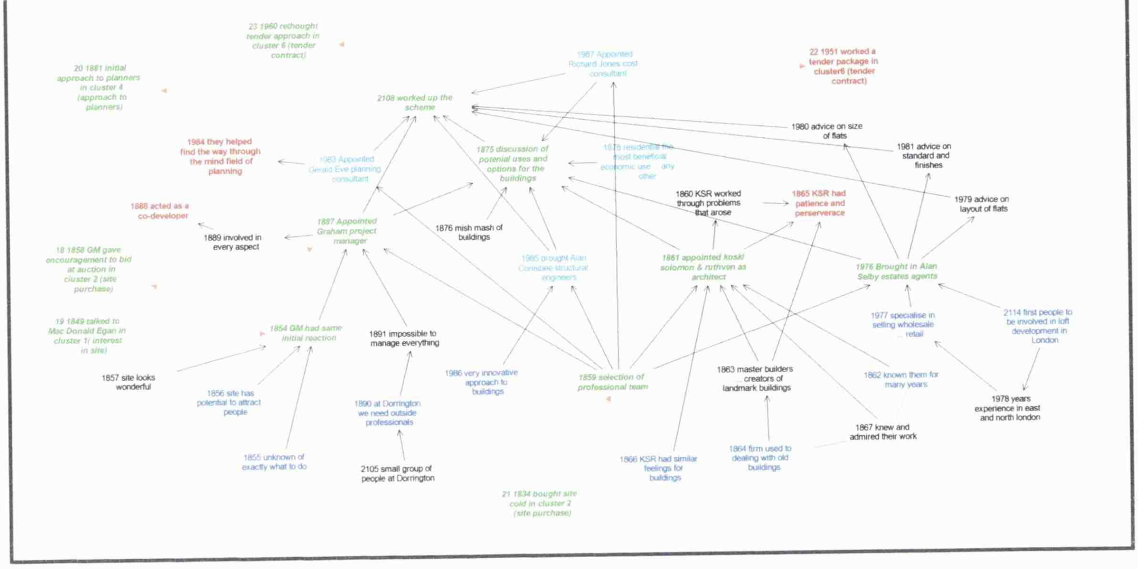
AL Cluster 1 Interest in Site



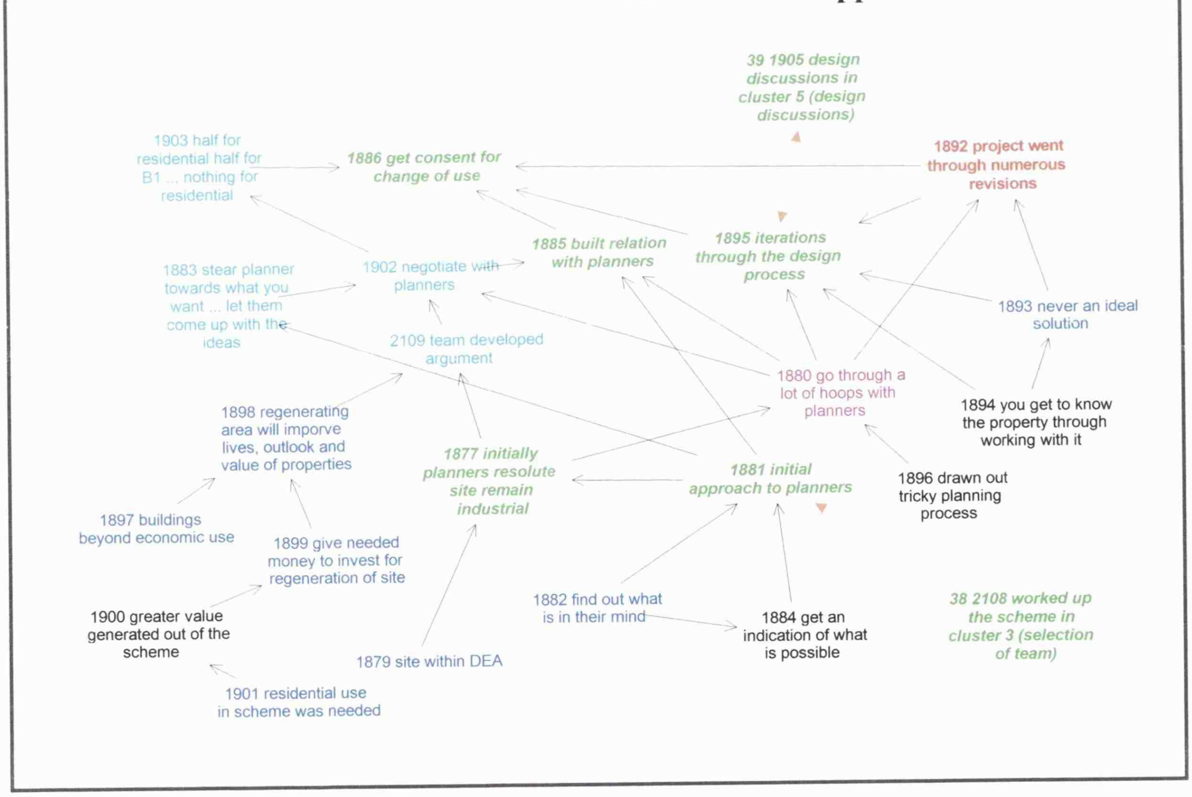
AL Cluster 2 Decision to purchase the site



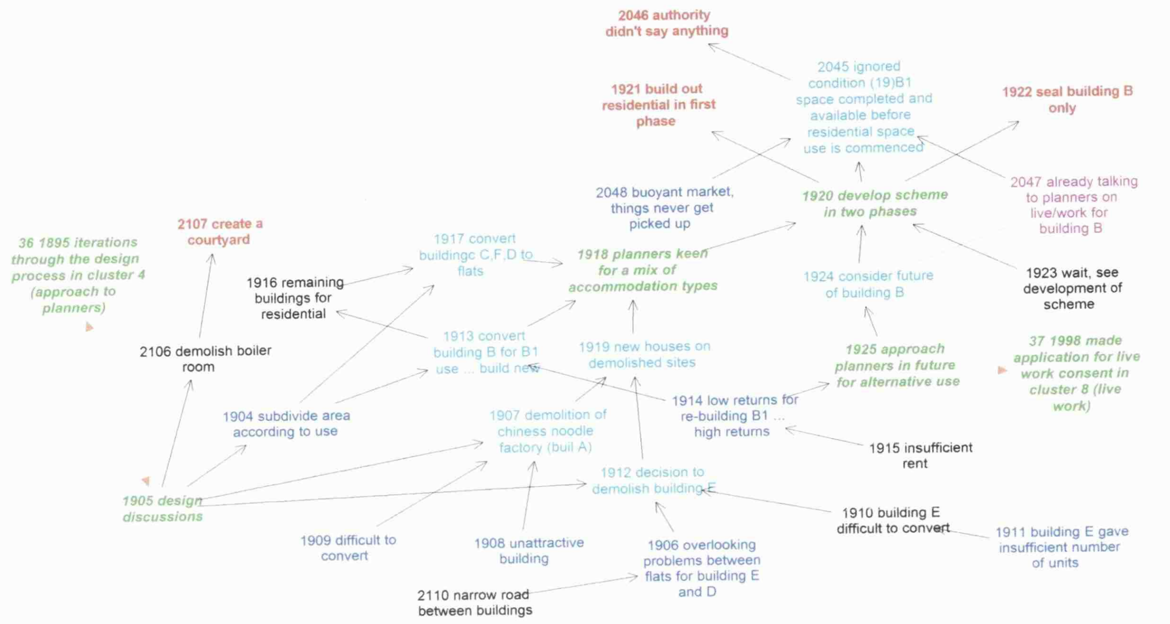
AL Cluster 3 Selection of Team



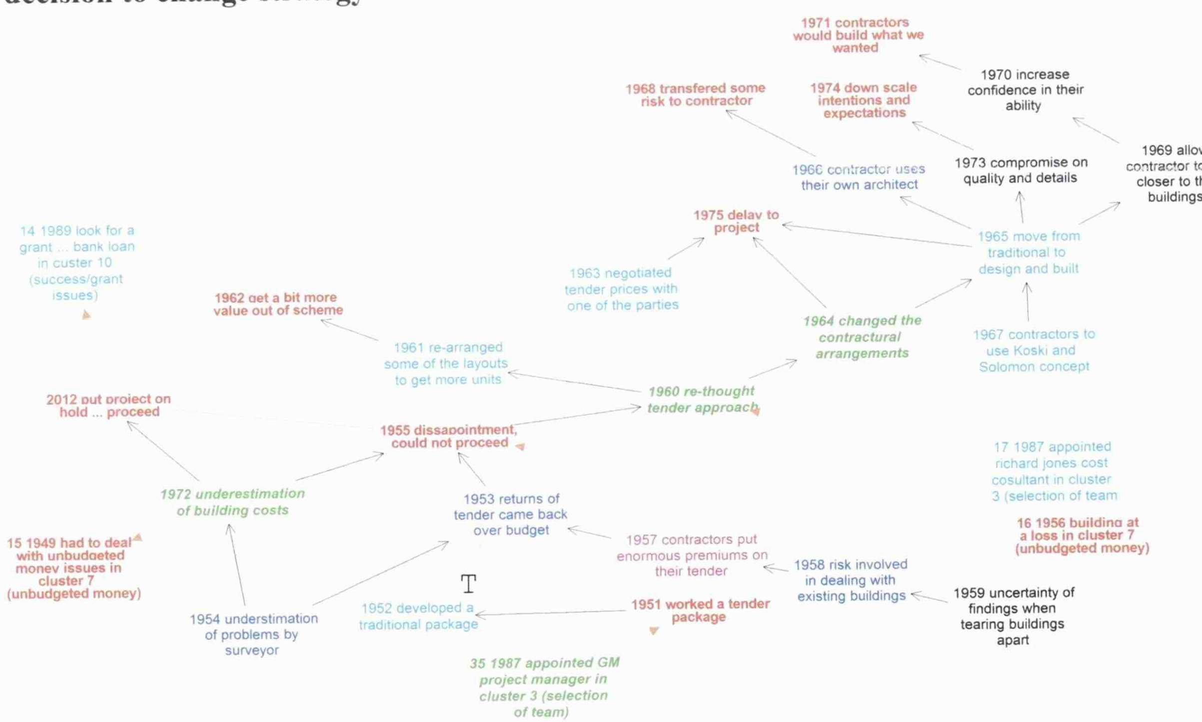
AL Cluster 4 Approach to Planners



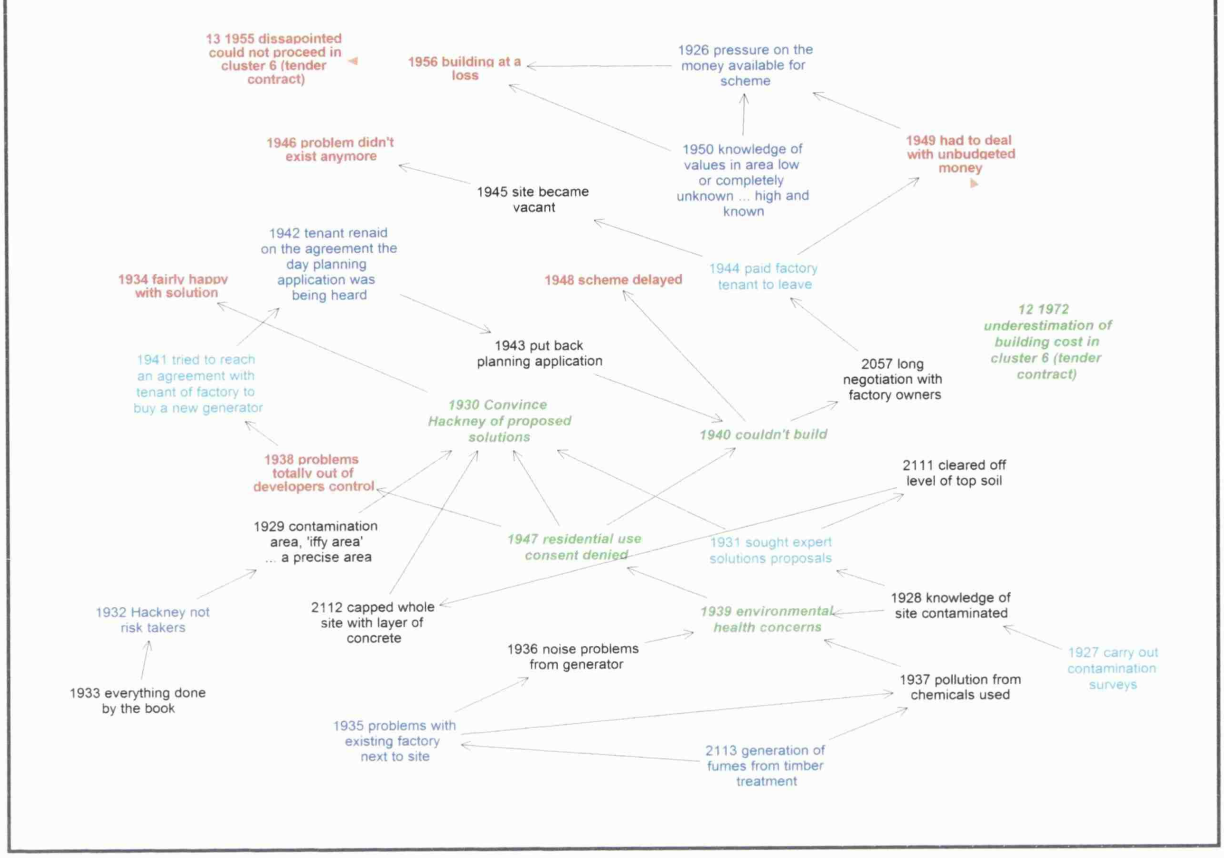
AL Cluster 5 Design Discussions



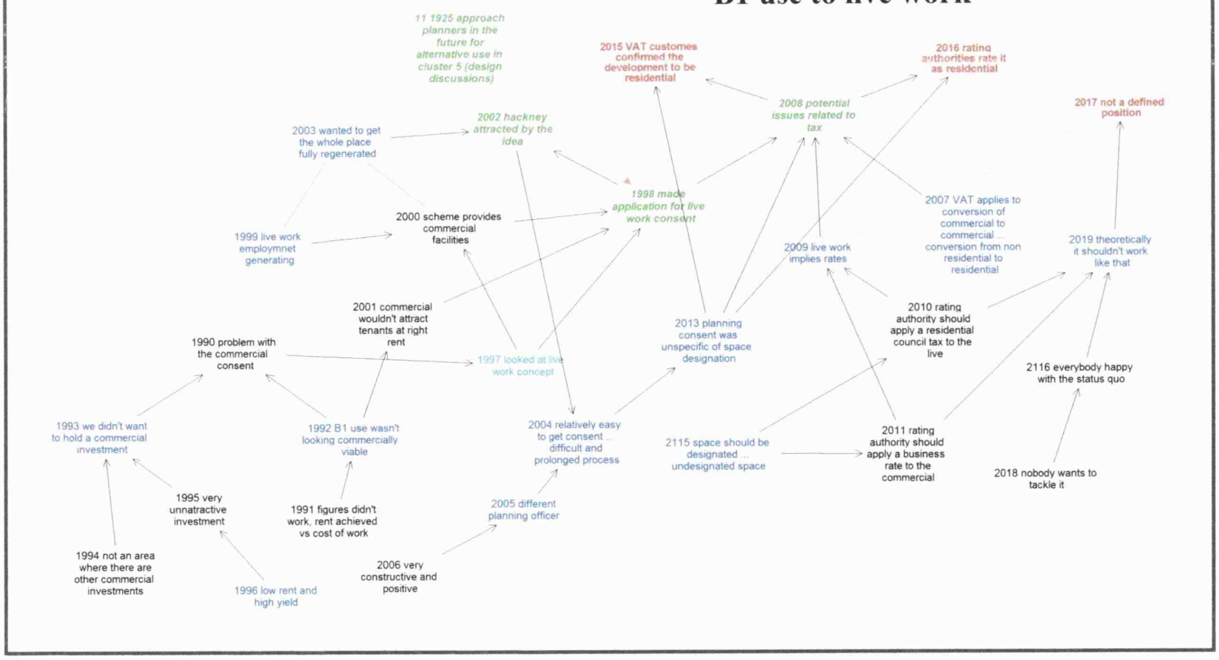
AL Cluster 6 Procurement approach & decision to change strategy



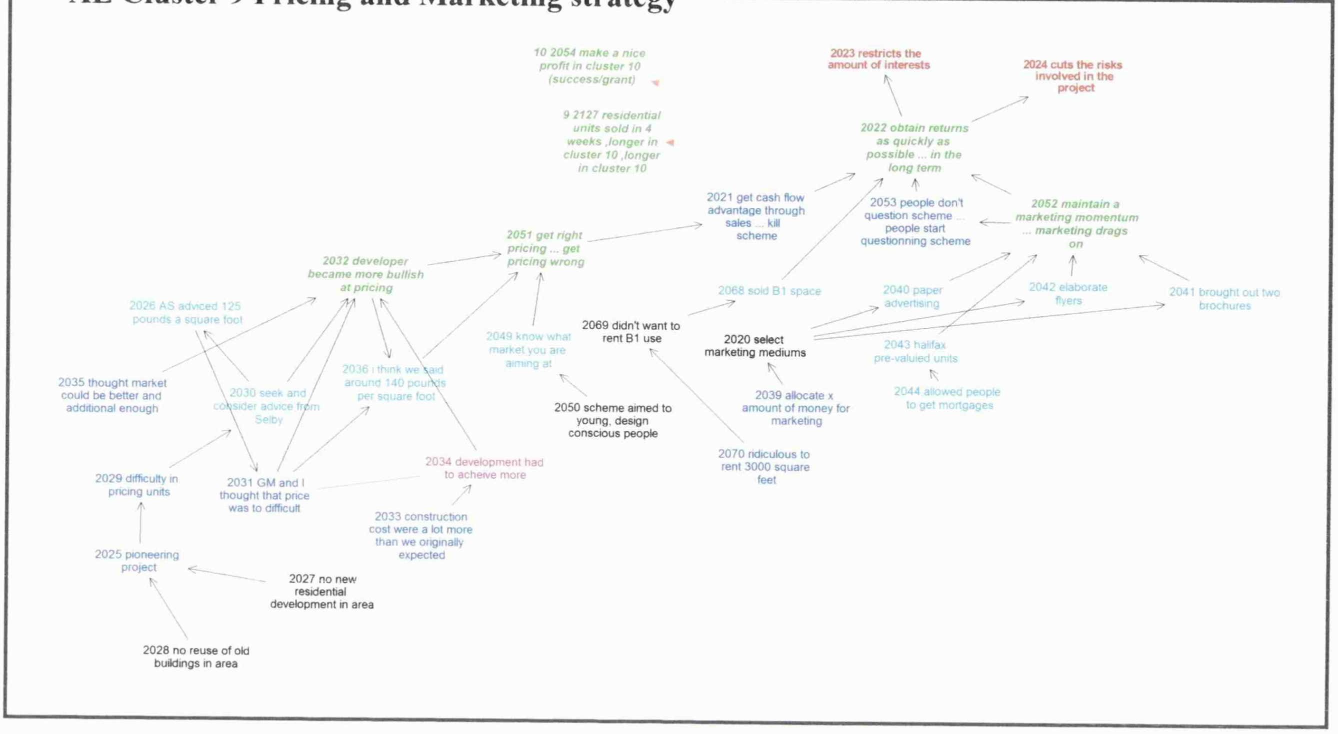
AL Cluster 7 Unbudgeted Money



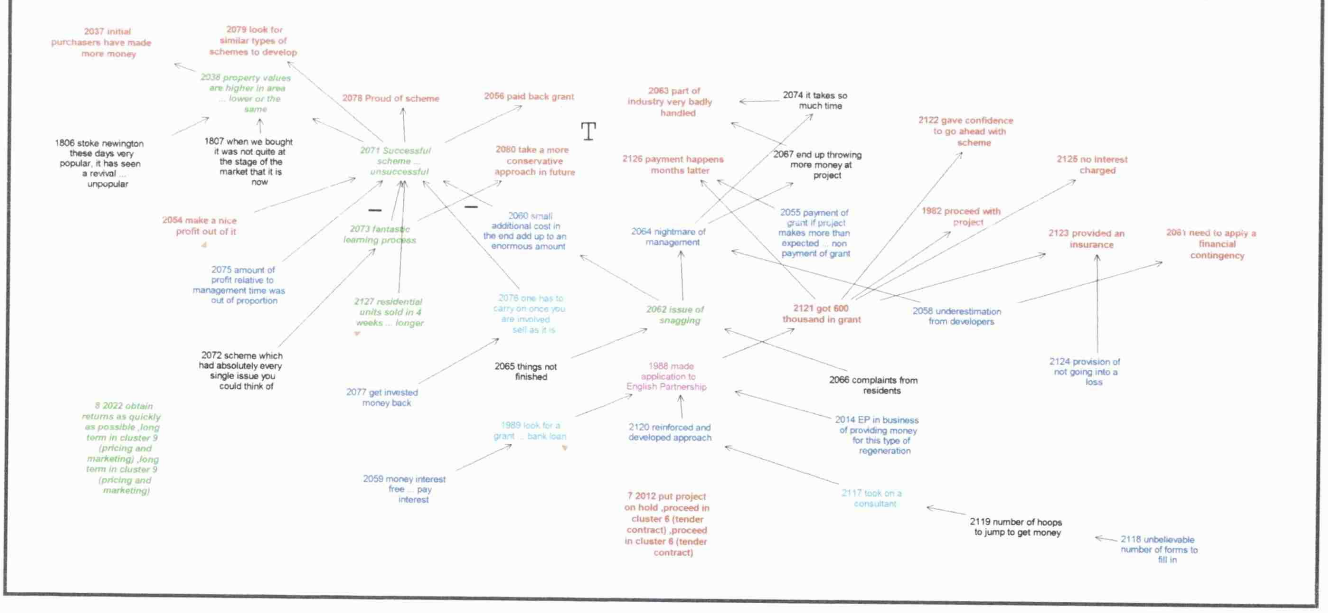
AL Cluster 8 Decision to change B1 use to live work



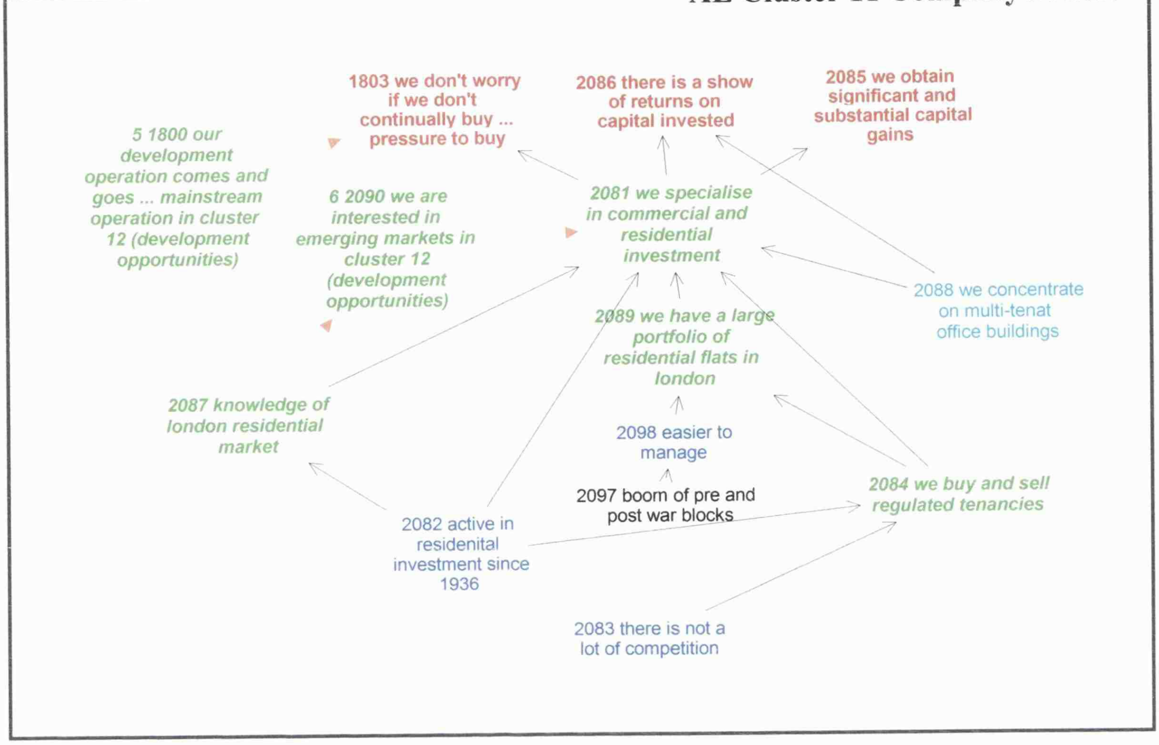
AL Cluster 9 Pricing and Marketing strategy



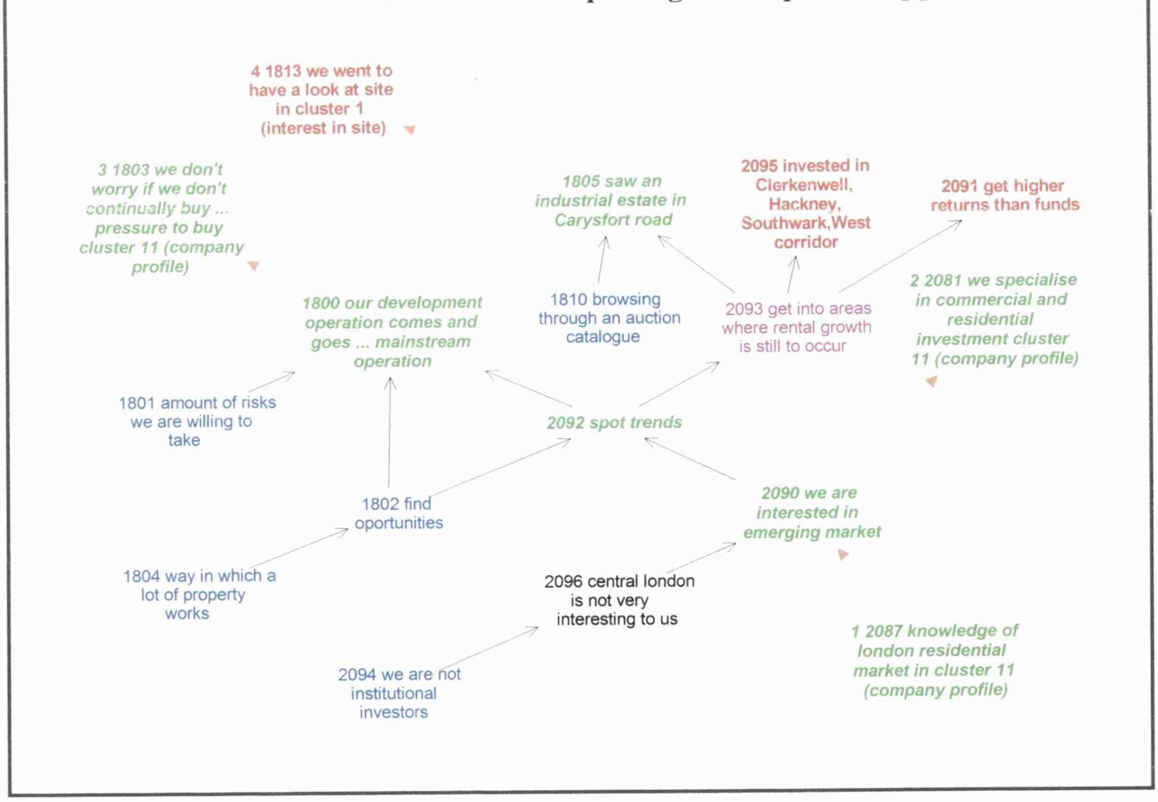
AL Cluster 10 Success of Scheme and Grant issues



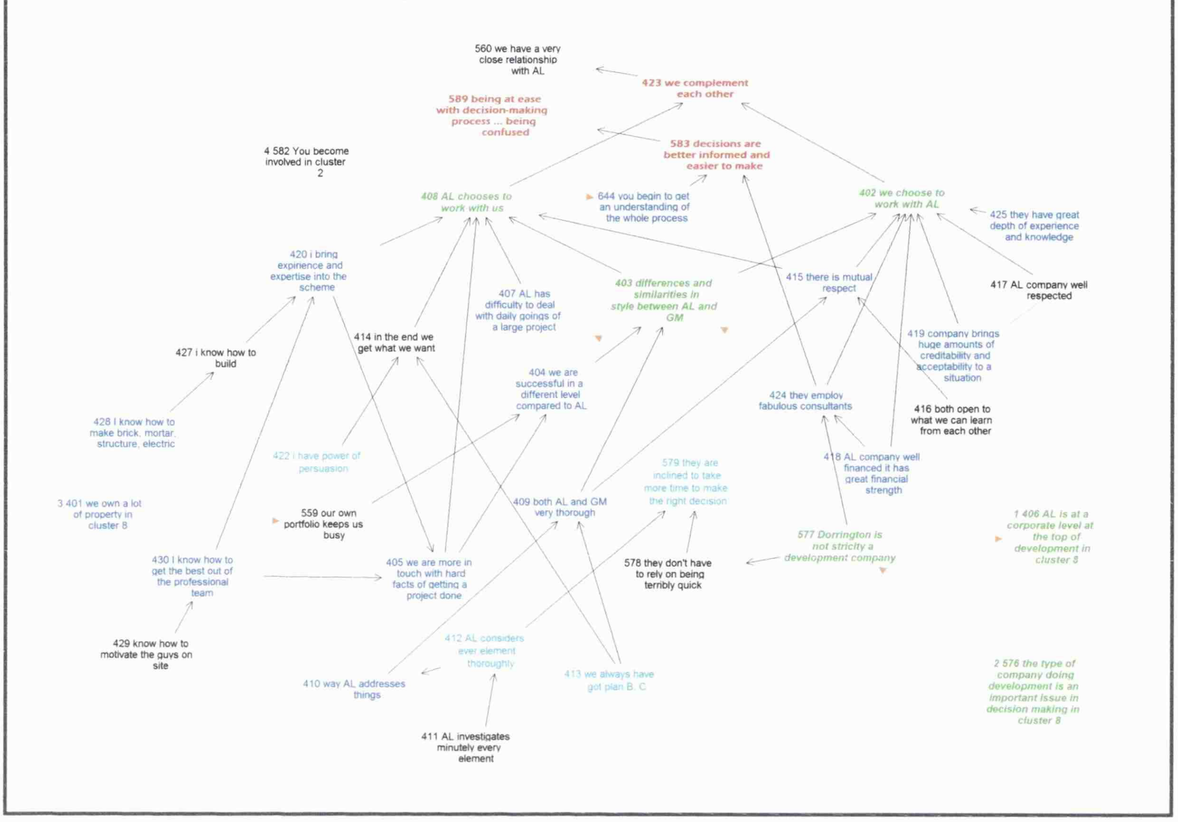
AL Cluster 11 Company Profile



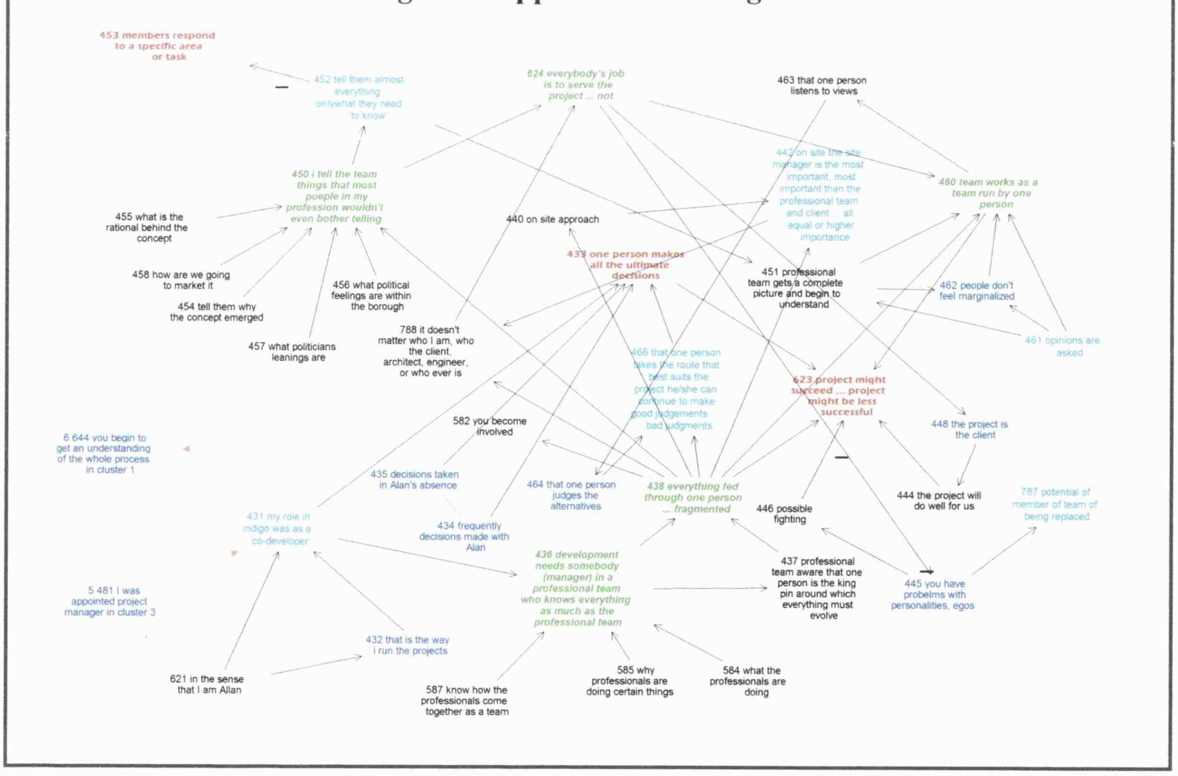
AL Cluster 12 Spotting Development Opportunities



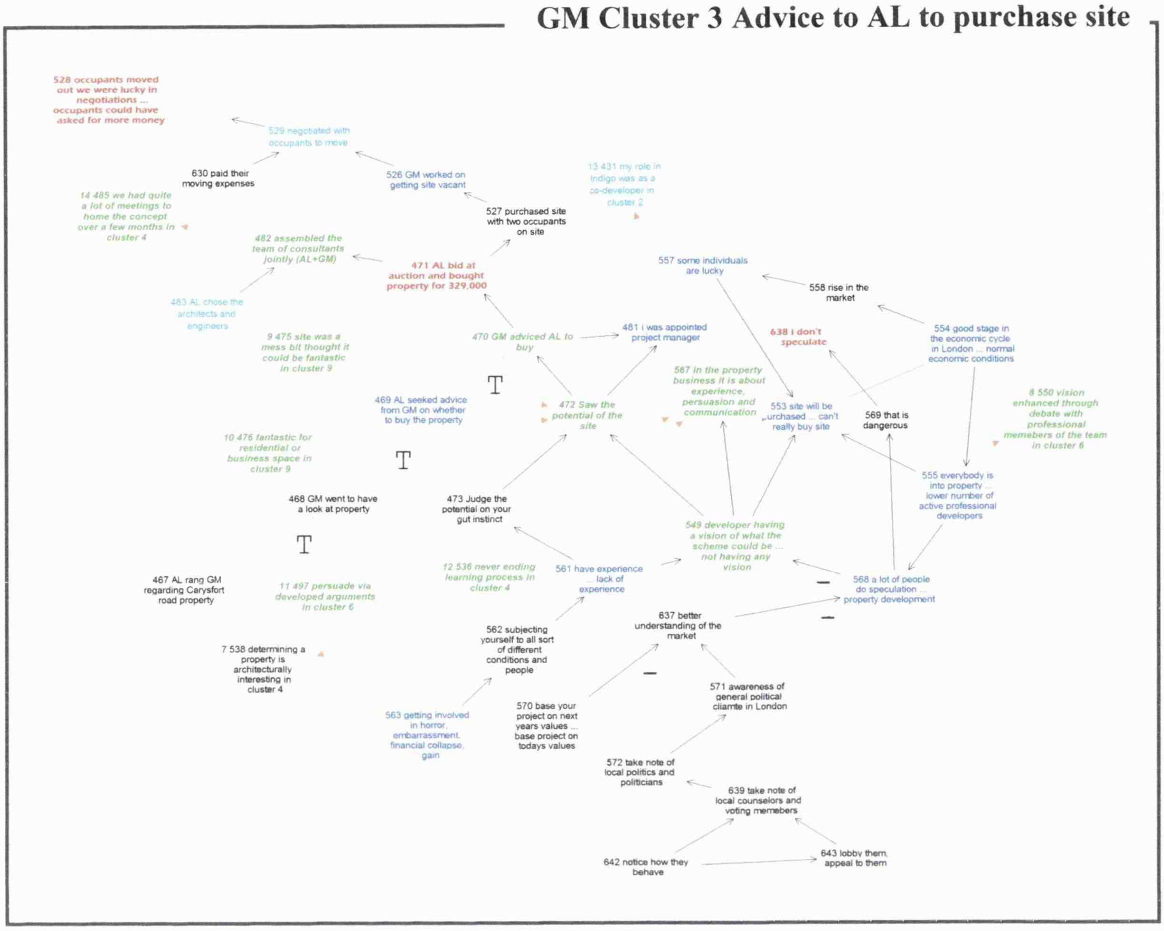
GM Cluster 1 Reasons why GM and AL work together



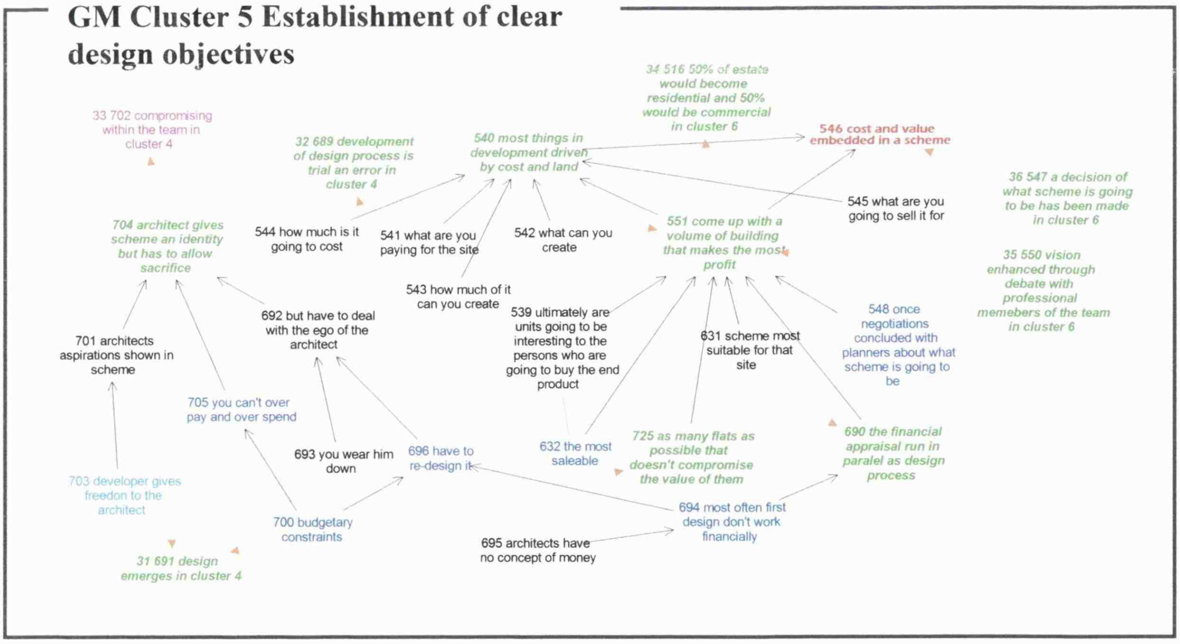
GM Cluster 2 GM's integrative approach to management



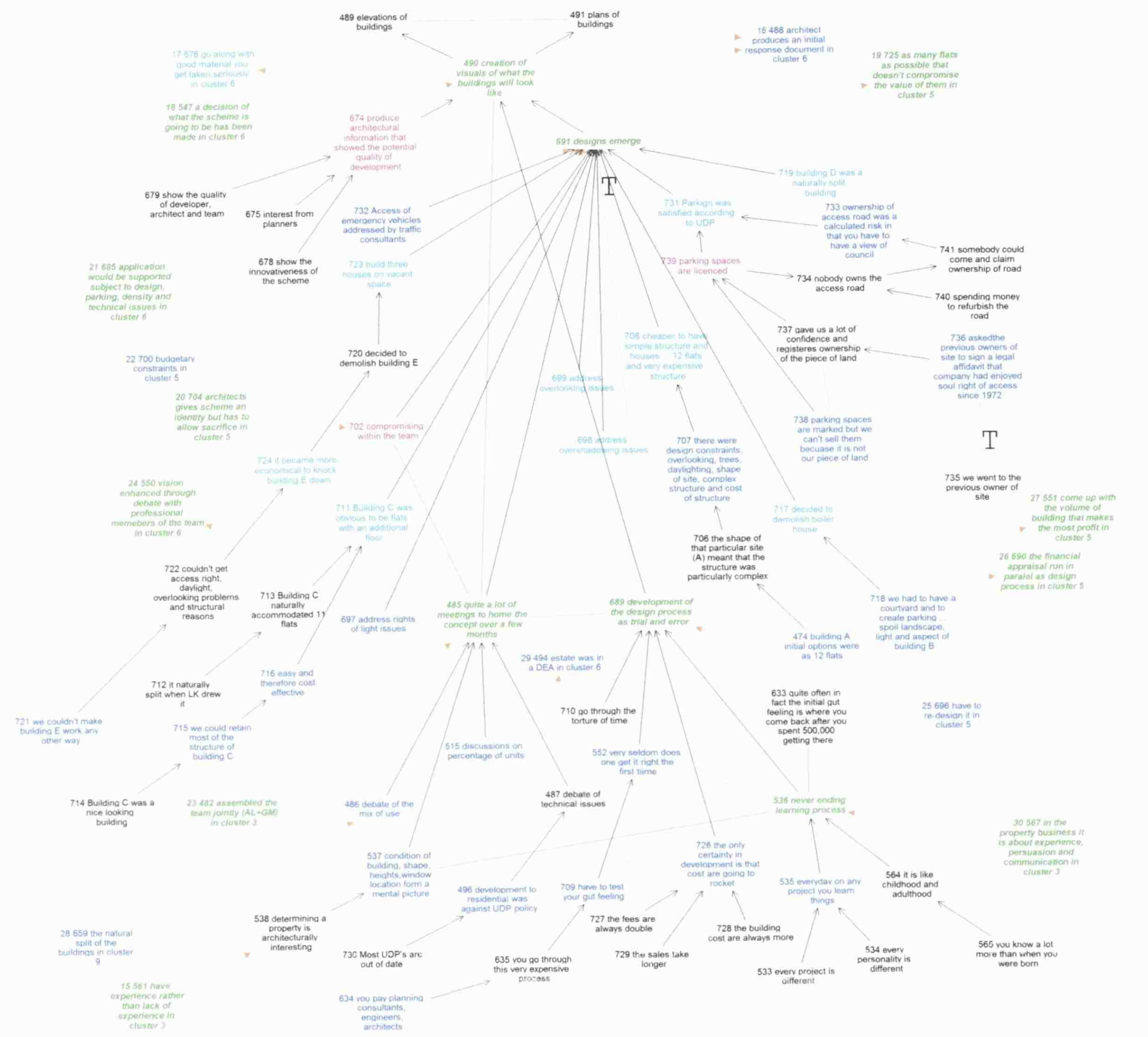
GM Cluster 3 Advice to AL to purchase site



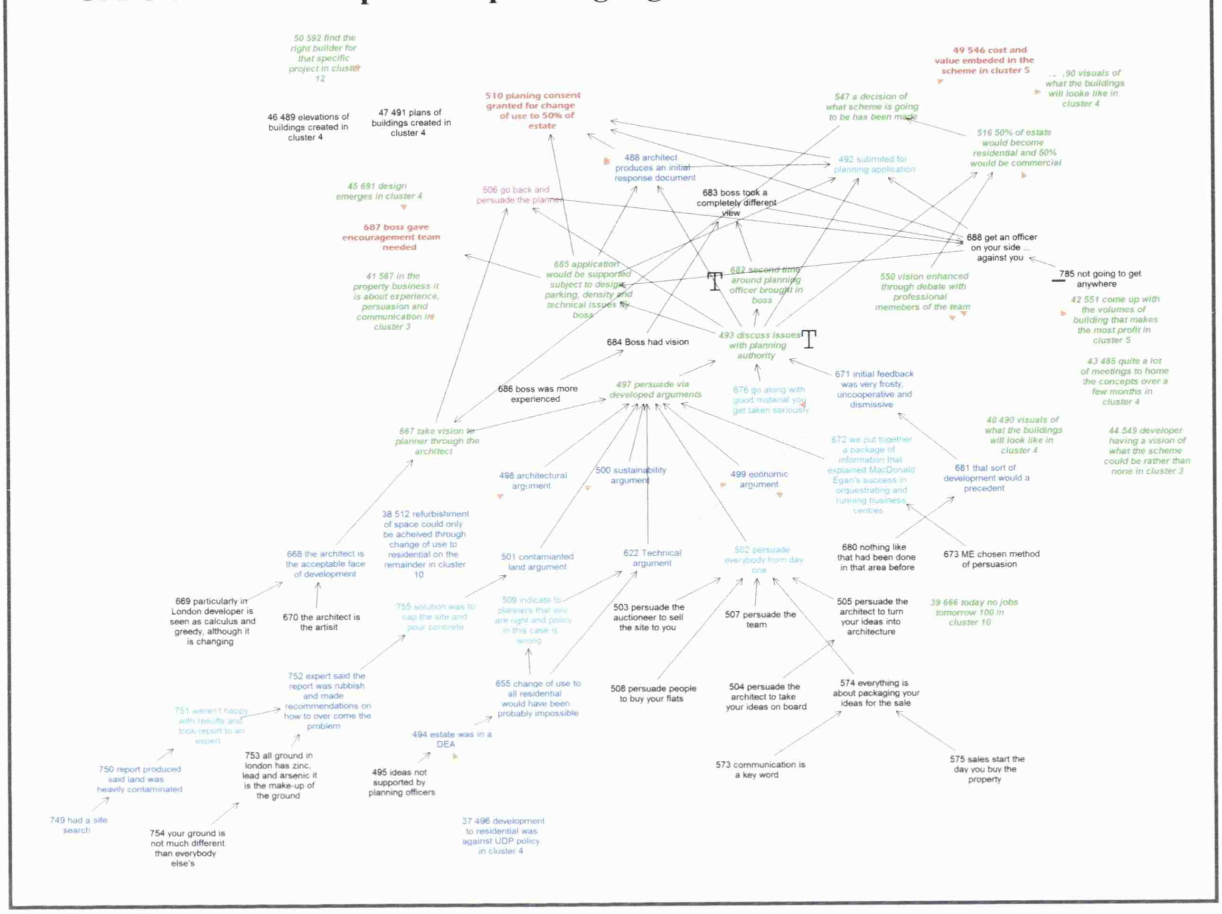
GM Cluster 5 Establishment of clear design objectives



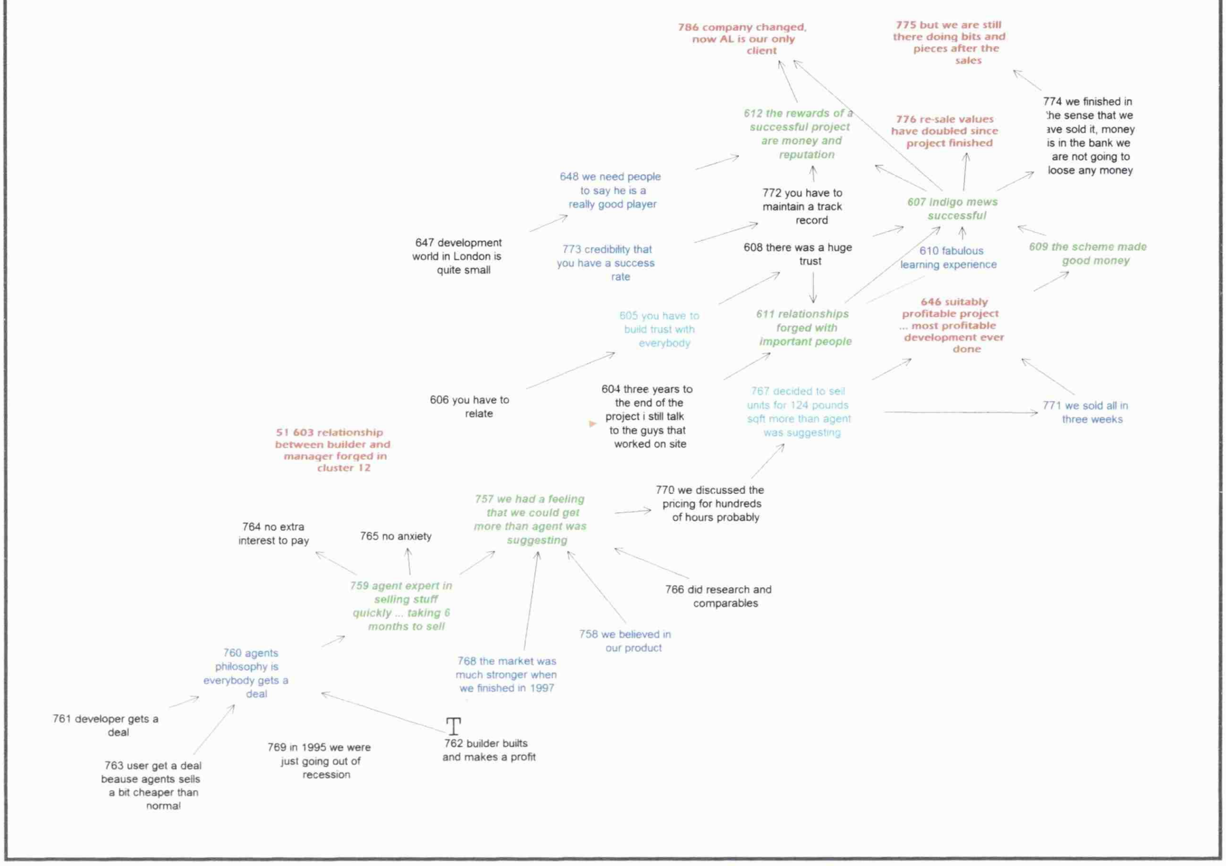
GM Cluster 4 Emergence of the design through a trial and error process



GM Cluster 6 Development of planning argument

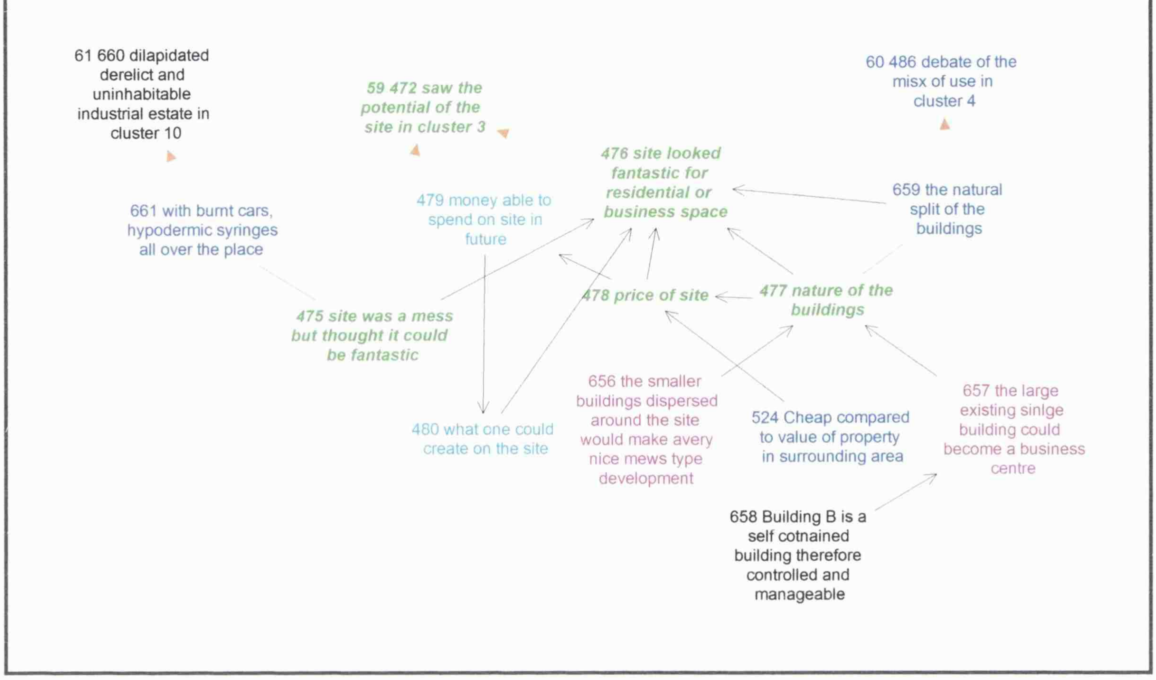


GM Cluster 7 Pricing strategy and Success of scheme

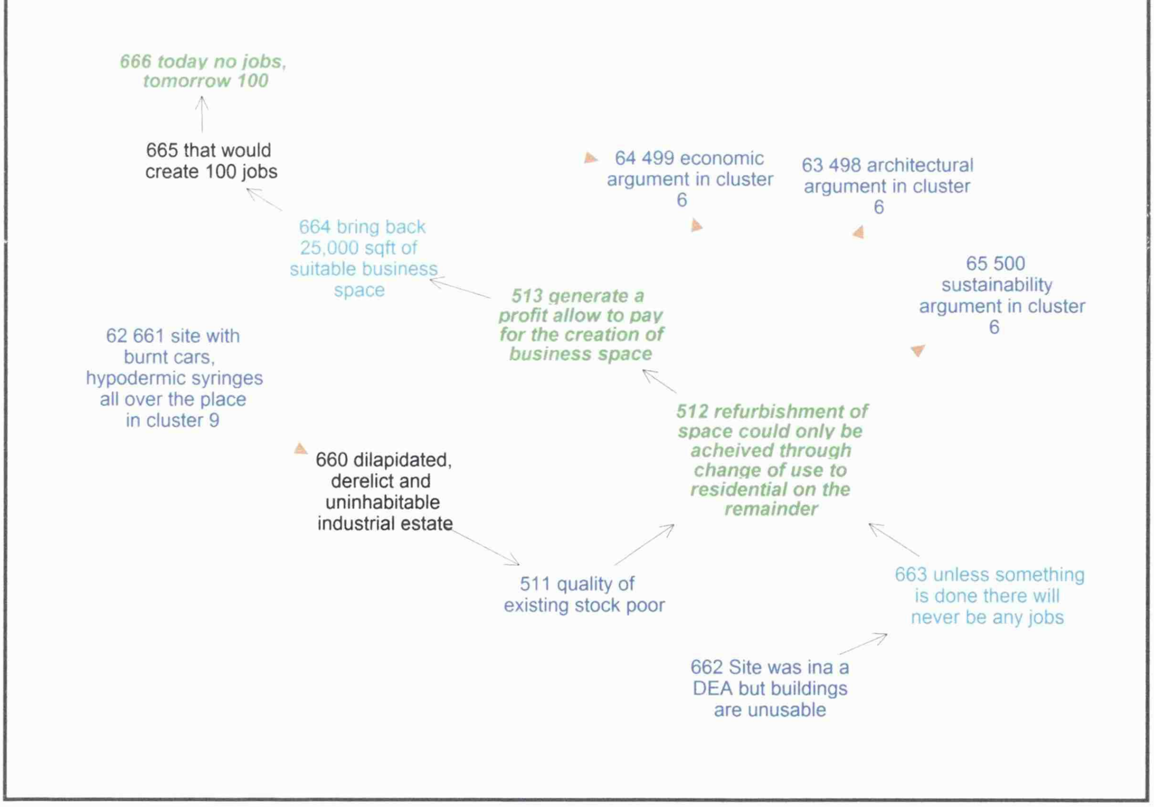


GM Cluster 8 Company set out and approach to decision making

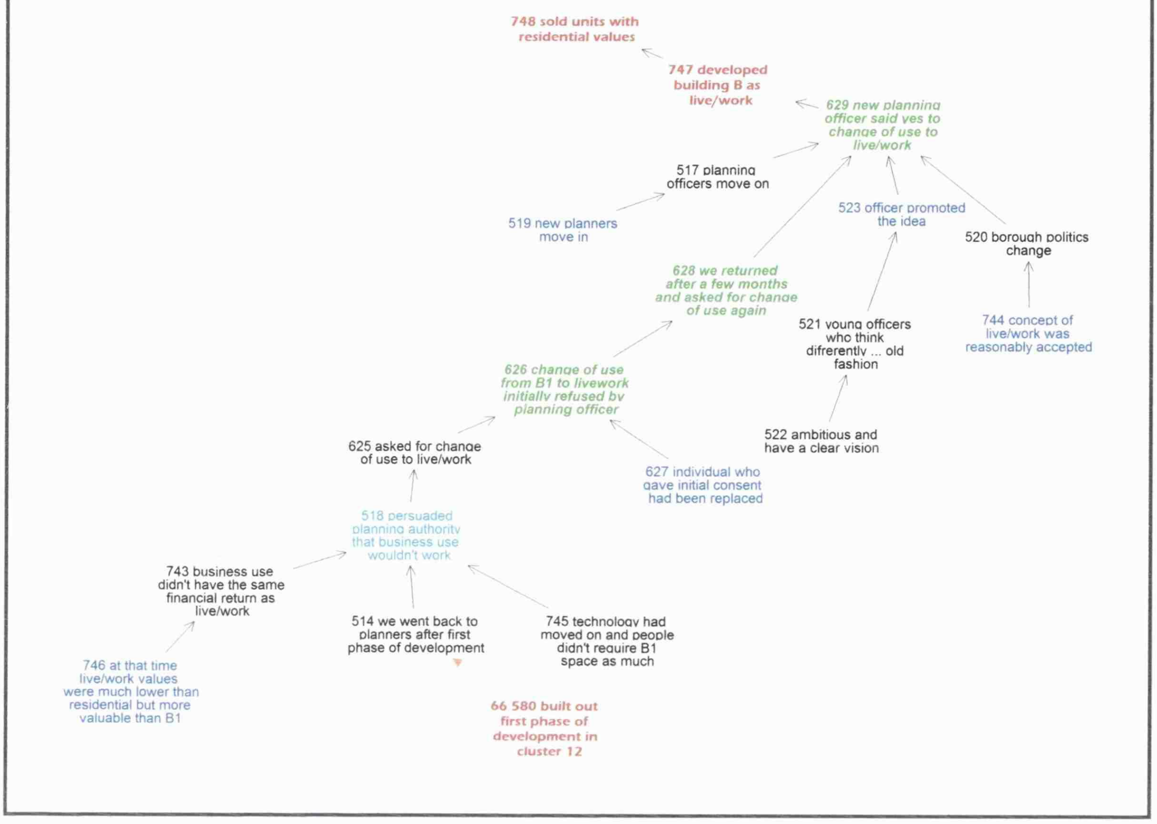
GM Cluster 9 Interest in the potential of the site



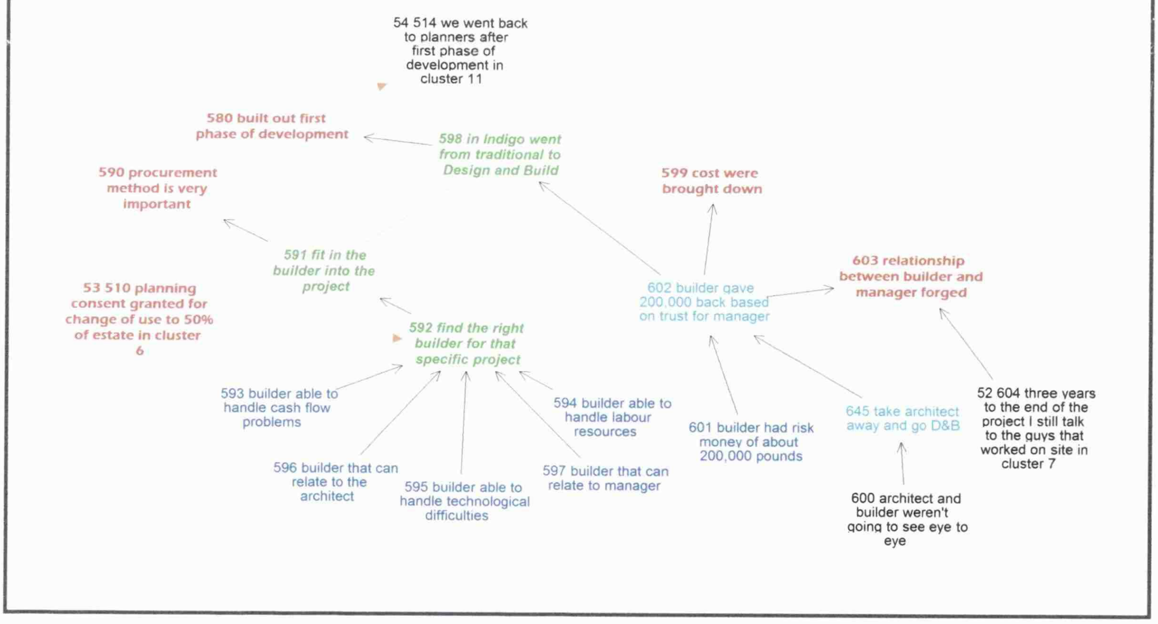
GM Cluster 10 Identification of basic planning argument



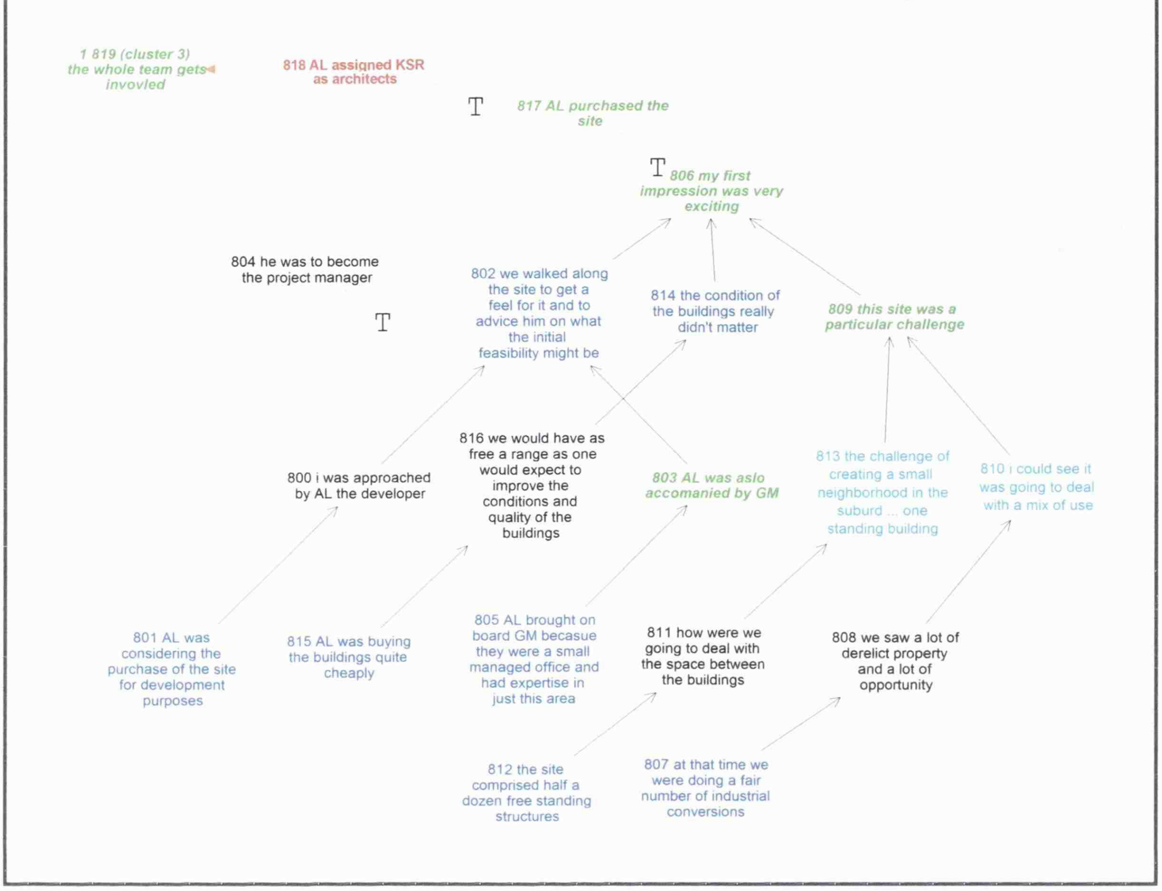
GM Cluster 11 Decision to change B1 use to live work



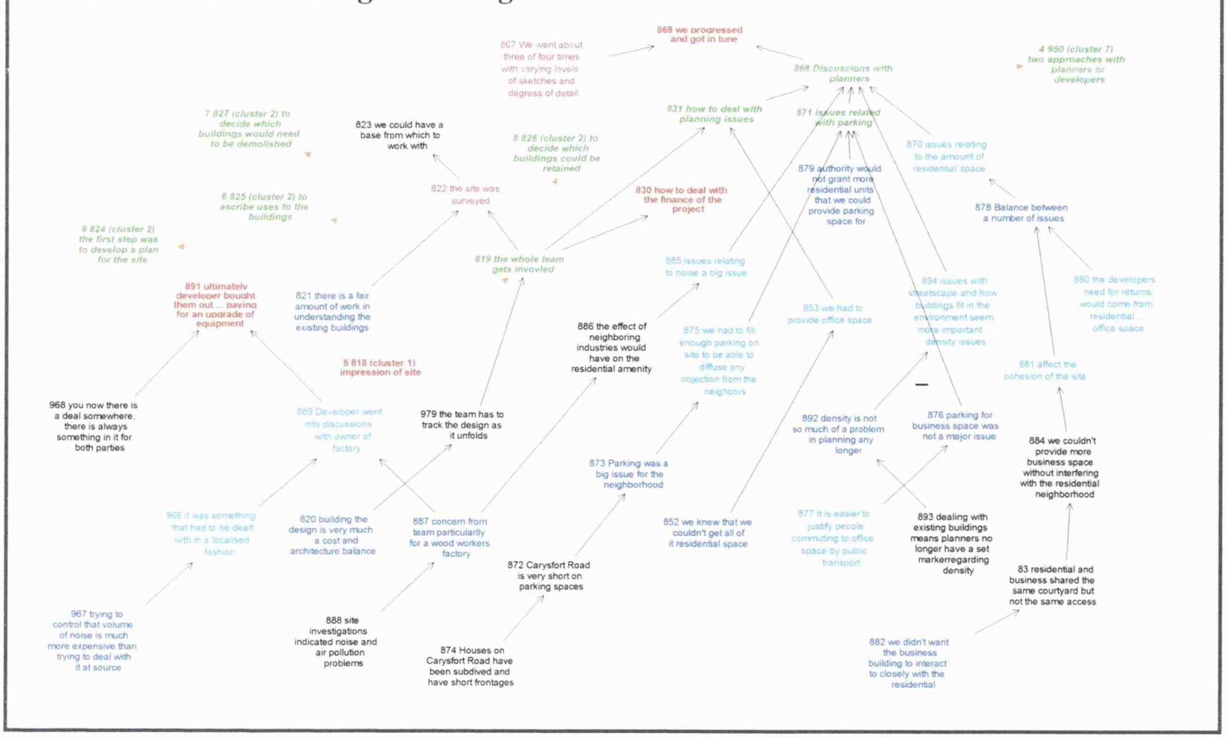
GM Cluster 12 Procurement approach



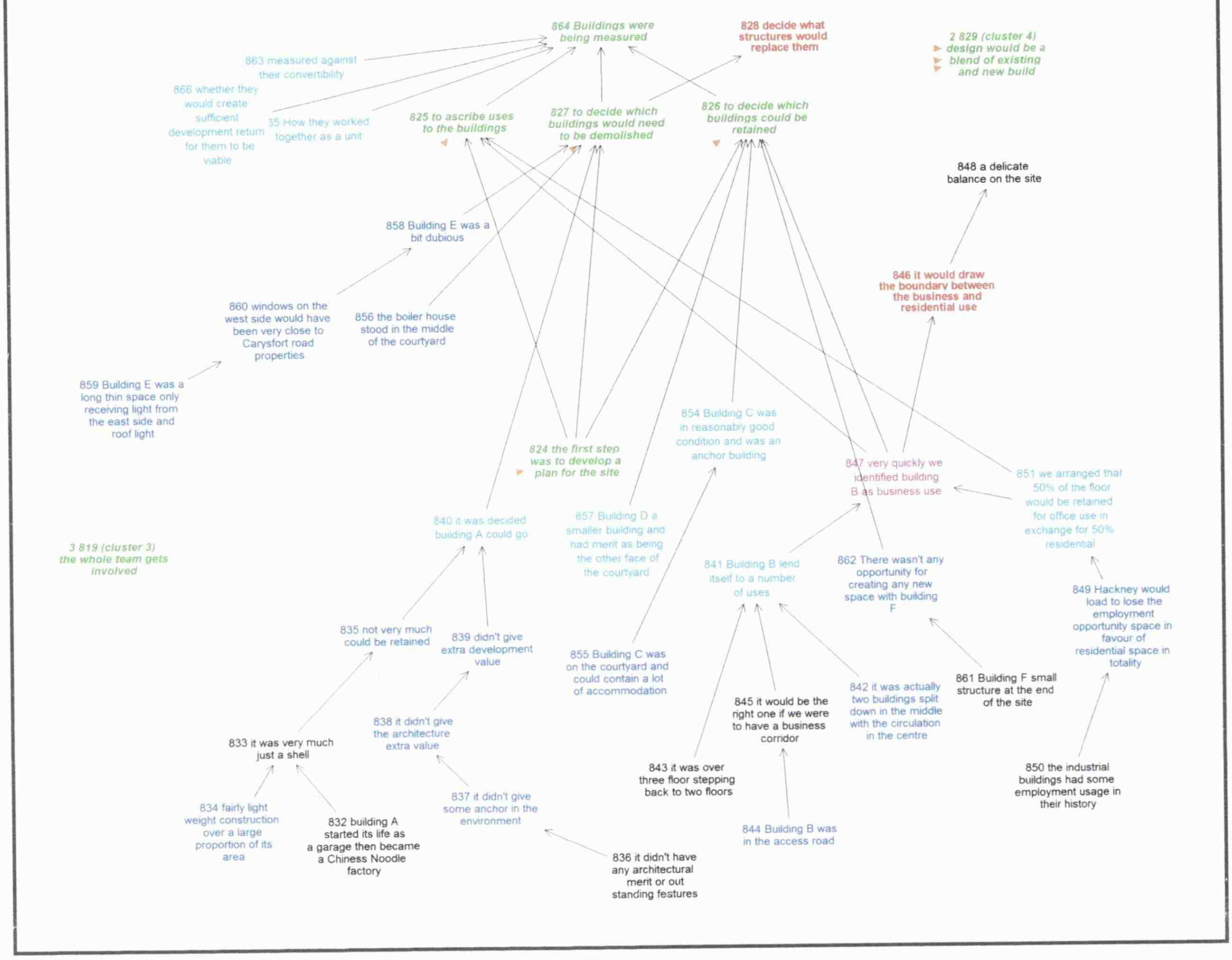
LK Cluster 1 Impression of site



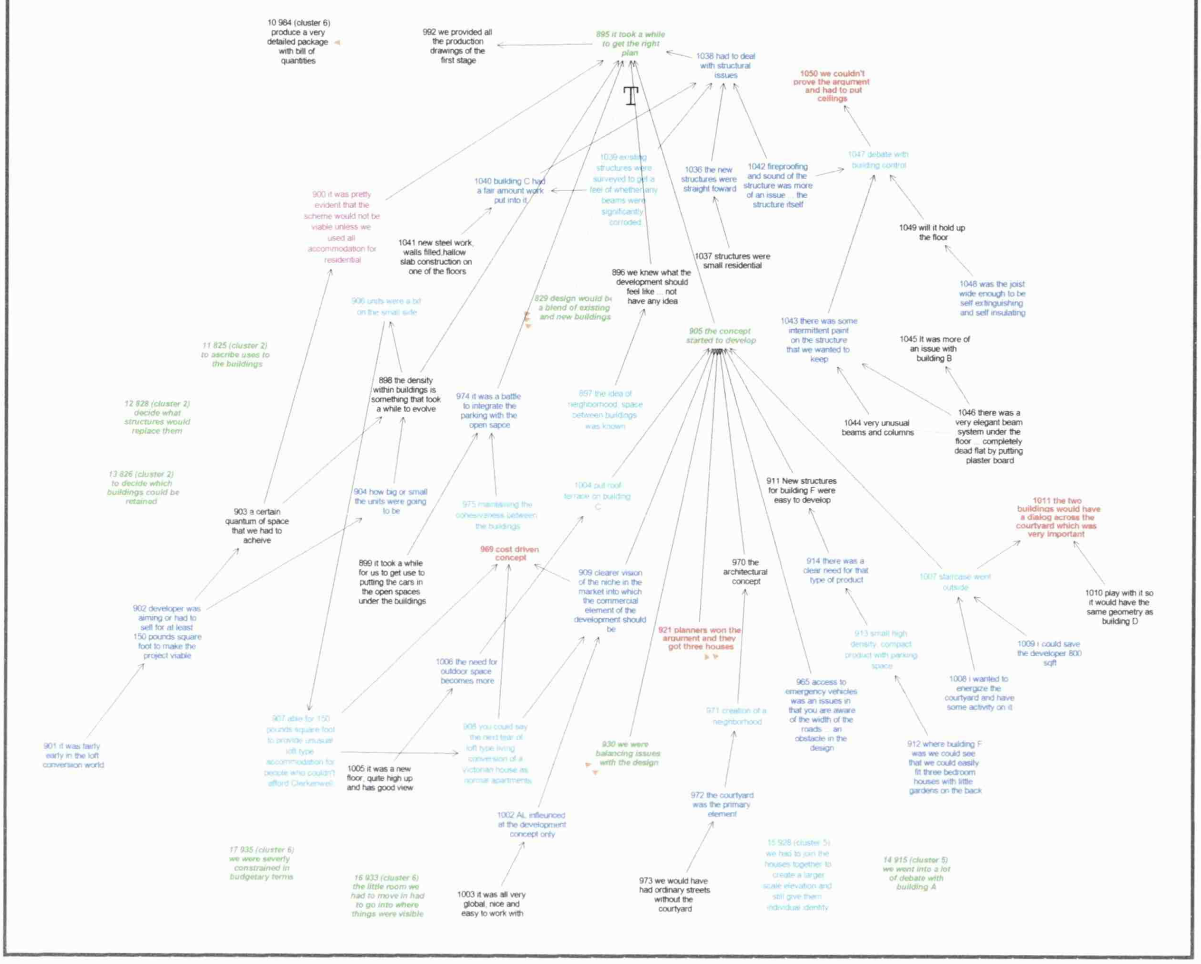
LK Cluster 3 Planning and Design issues



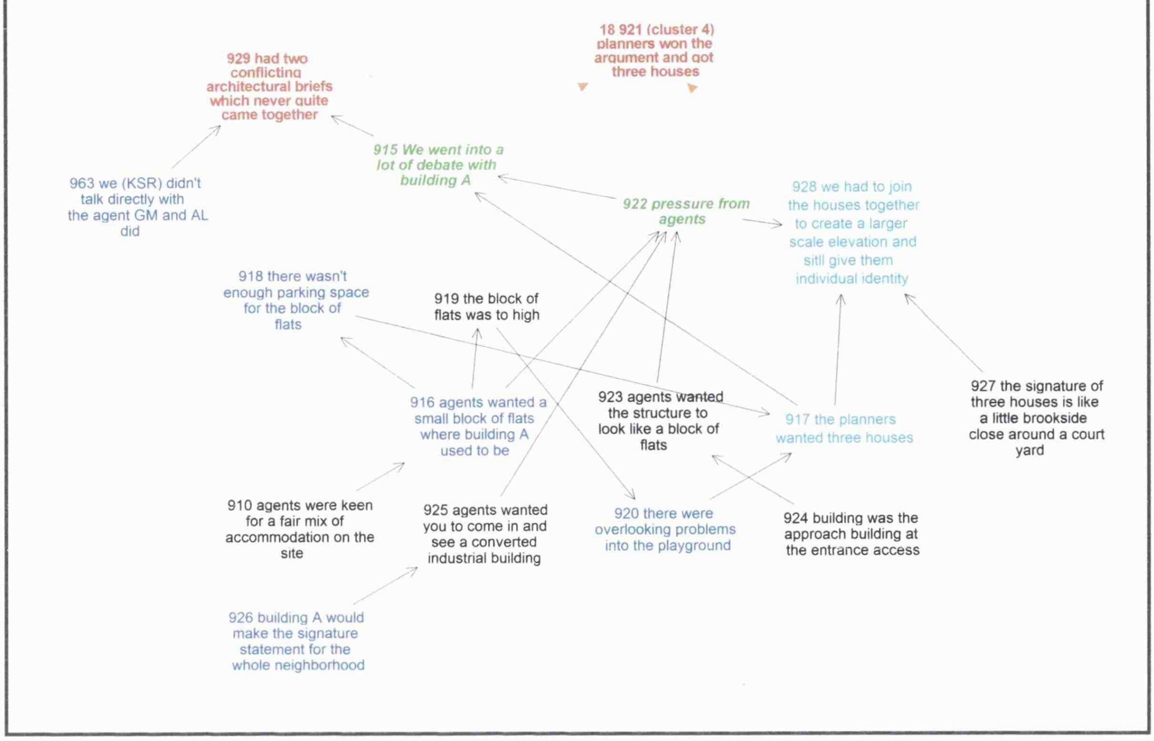
LK Cluster 2 Development of plan for site



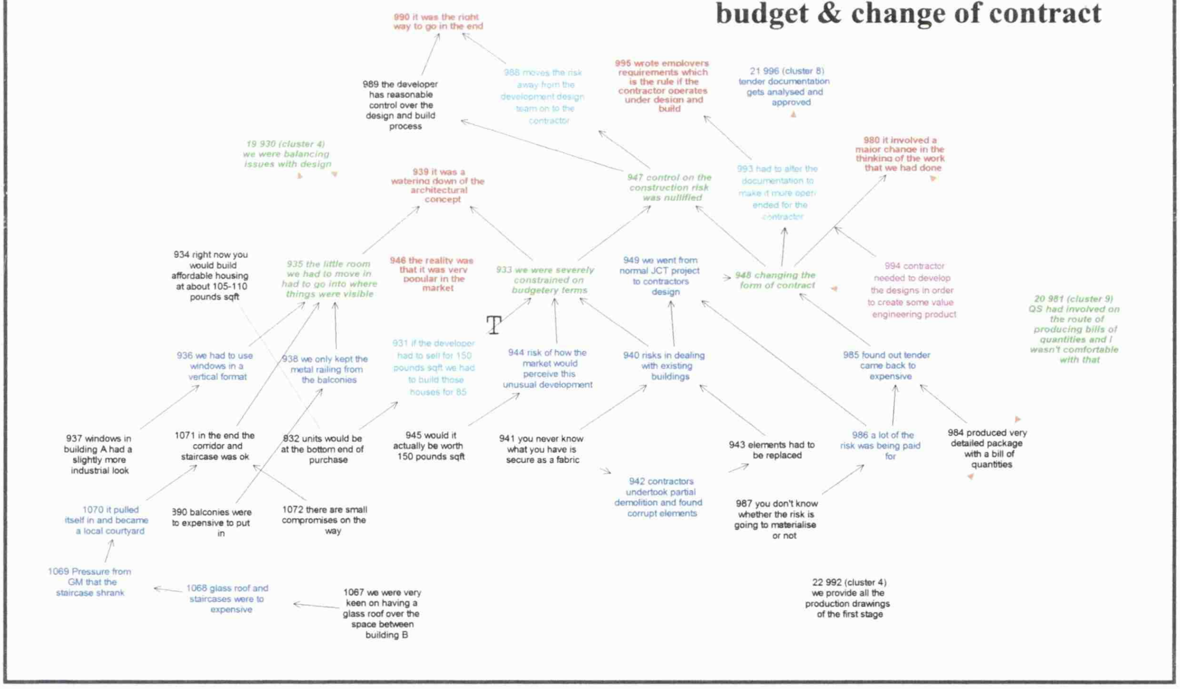
LK Cluster 4 Development of concept



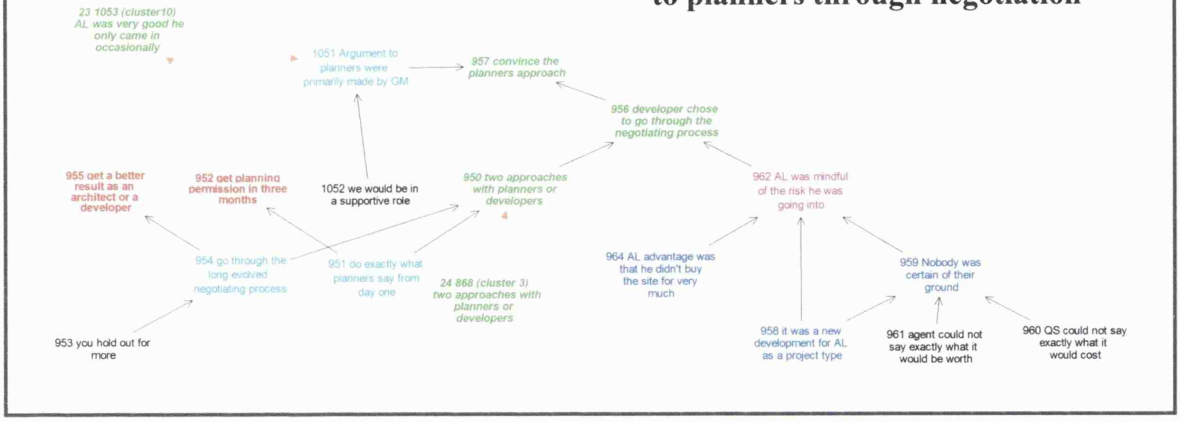
LK Cluster 5 Issues with building A & solutions



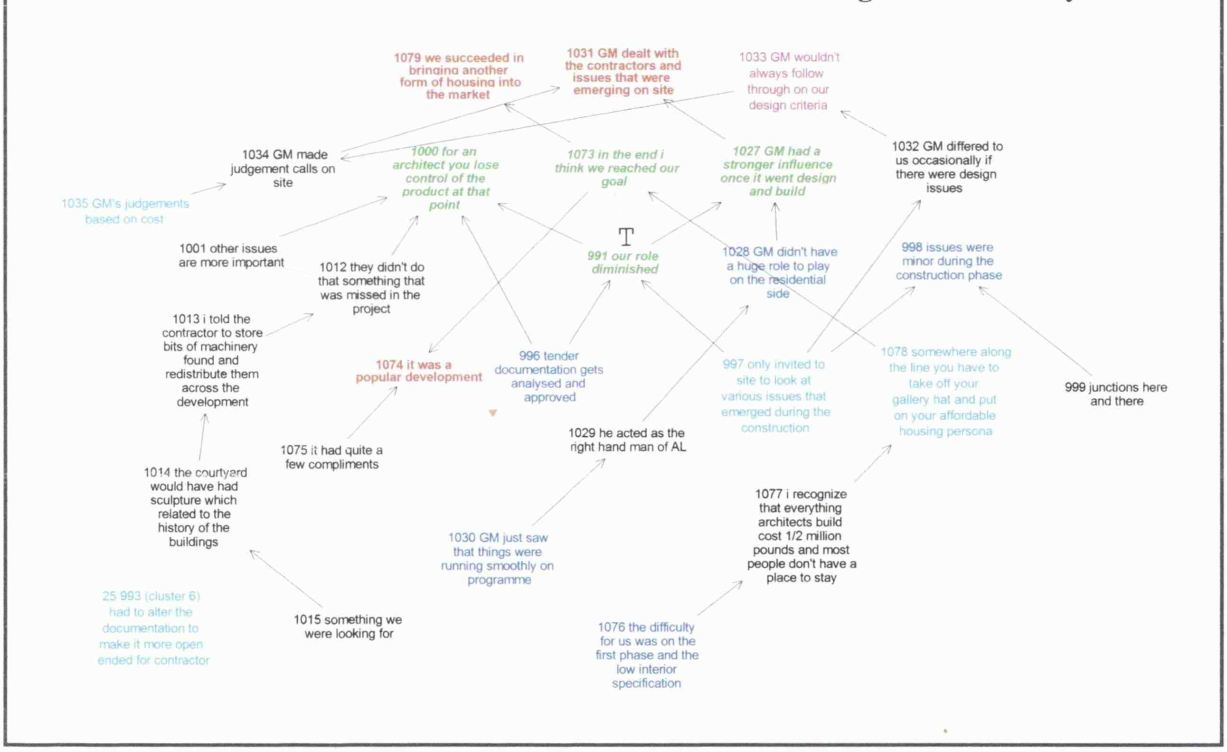
LK Cluster 6 Designing with a budget & change of contract



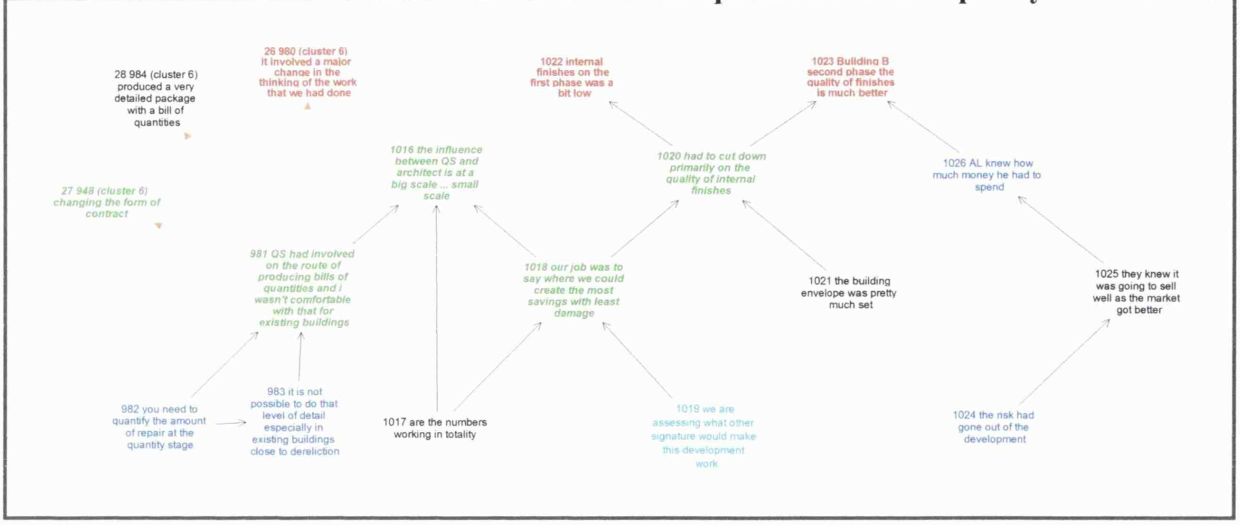
LK Cluster 7 Decision on approach to planners through negotiation



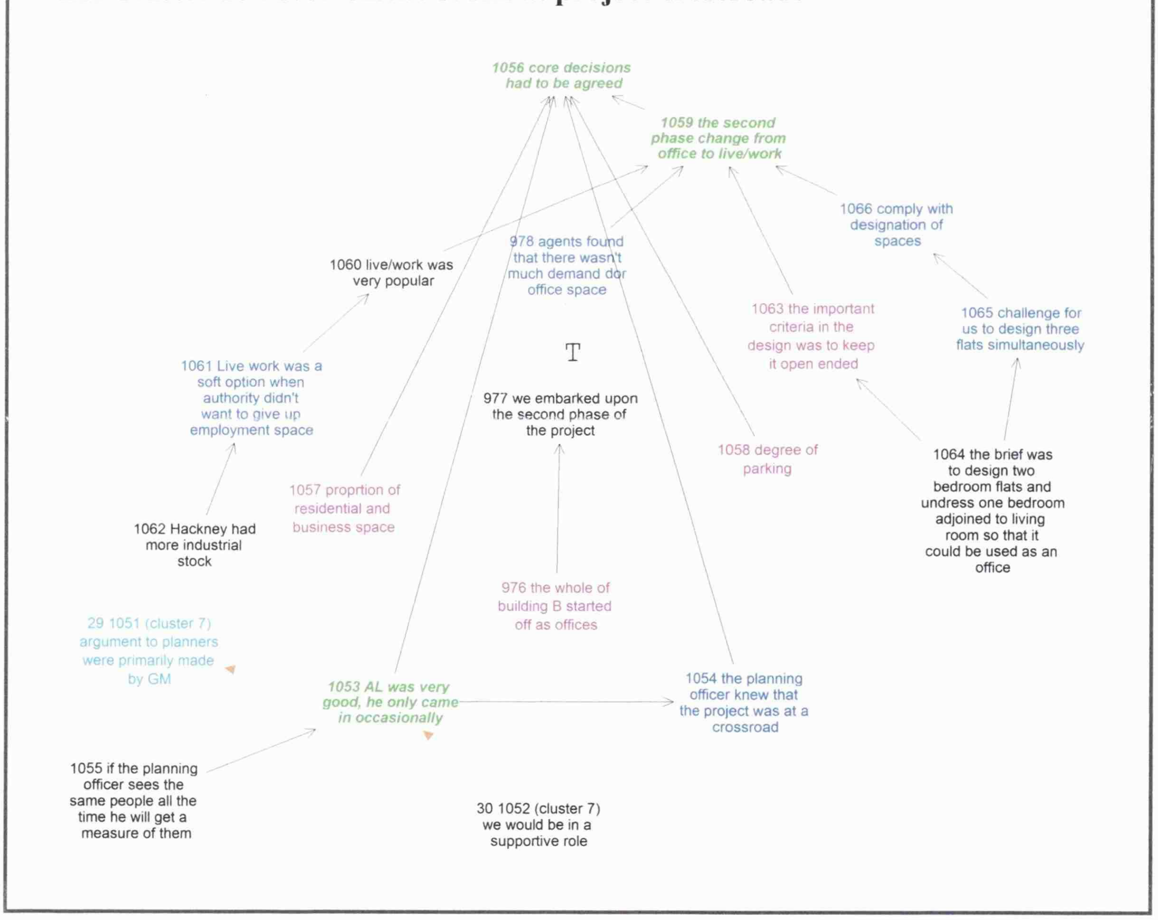
LK Cluster 8 Taking on an advisory role



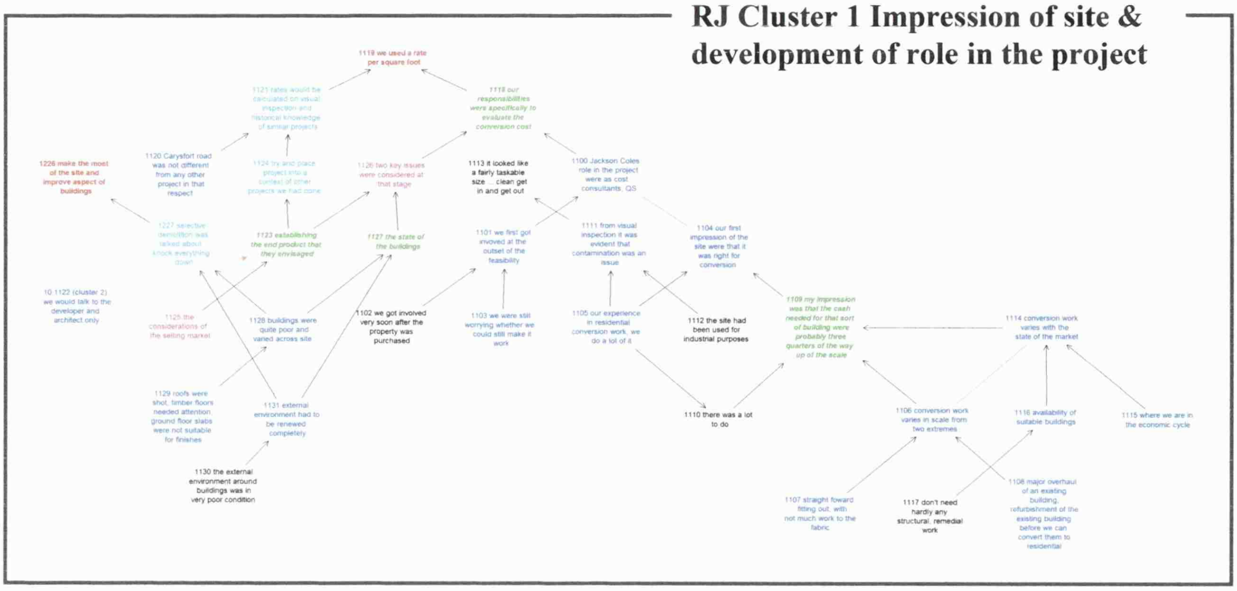
LK Cluster 9 Compromise between quality and cost



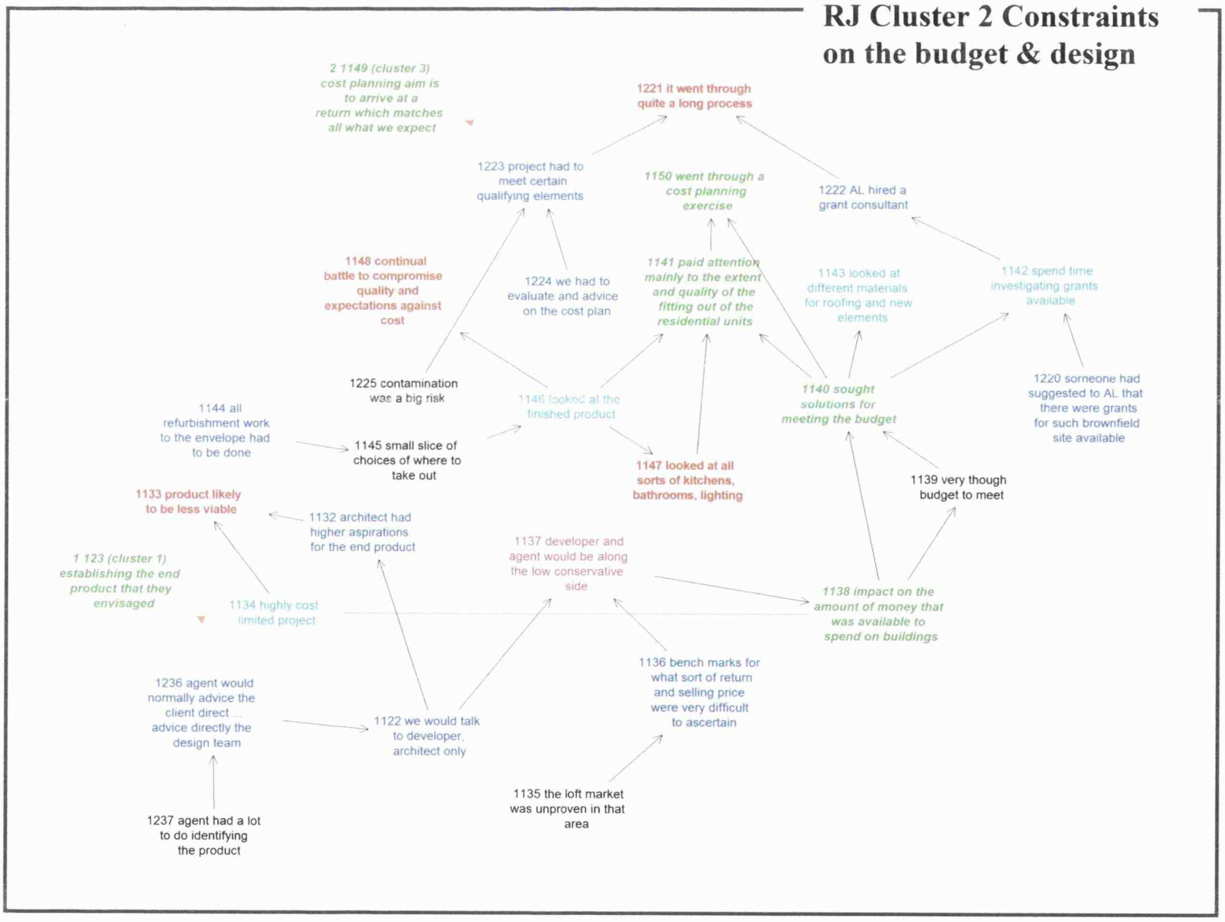
LK Cluster 10 Involvement of AL at project crossroads



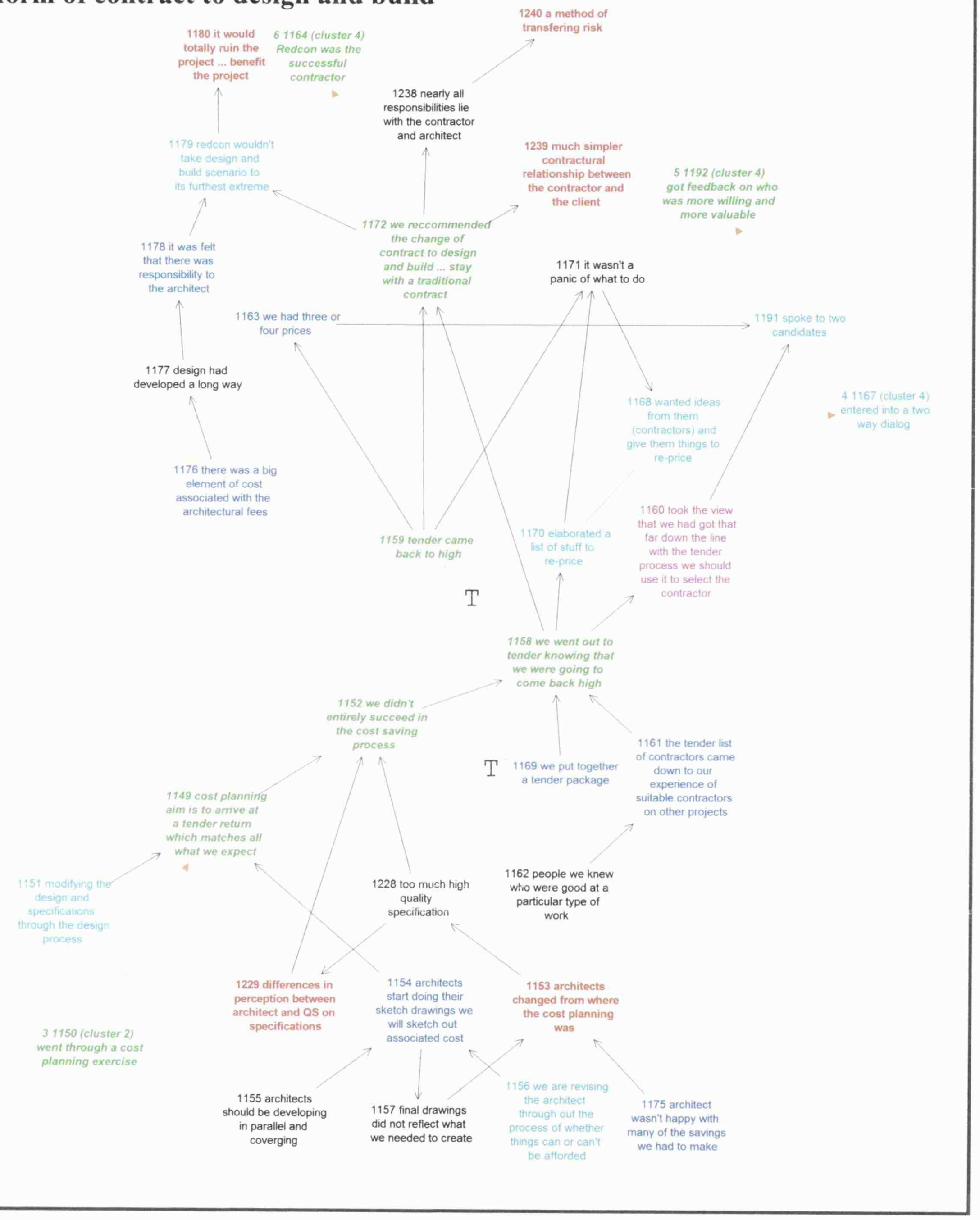
RJ Cluster 1 Impression of site & development of role in the project



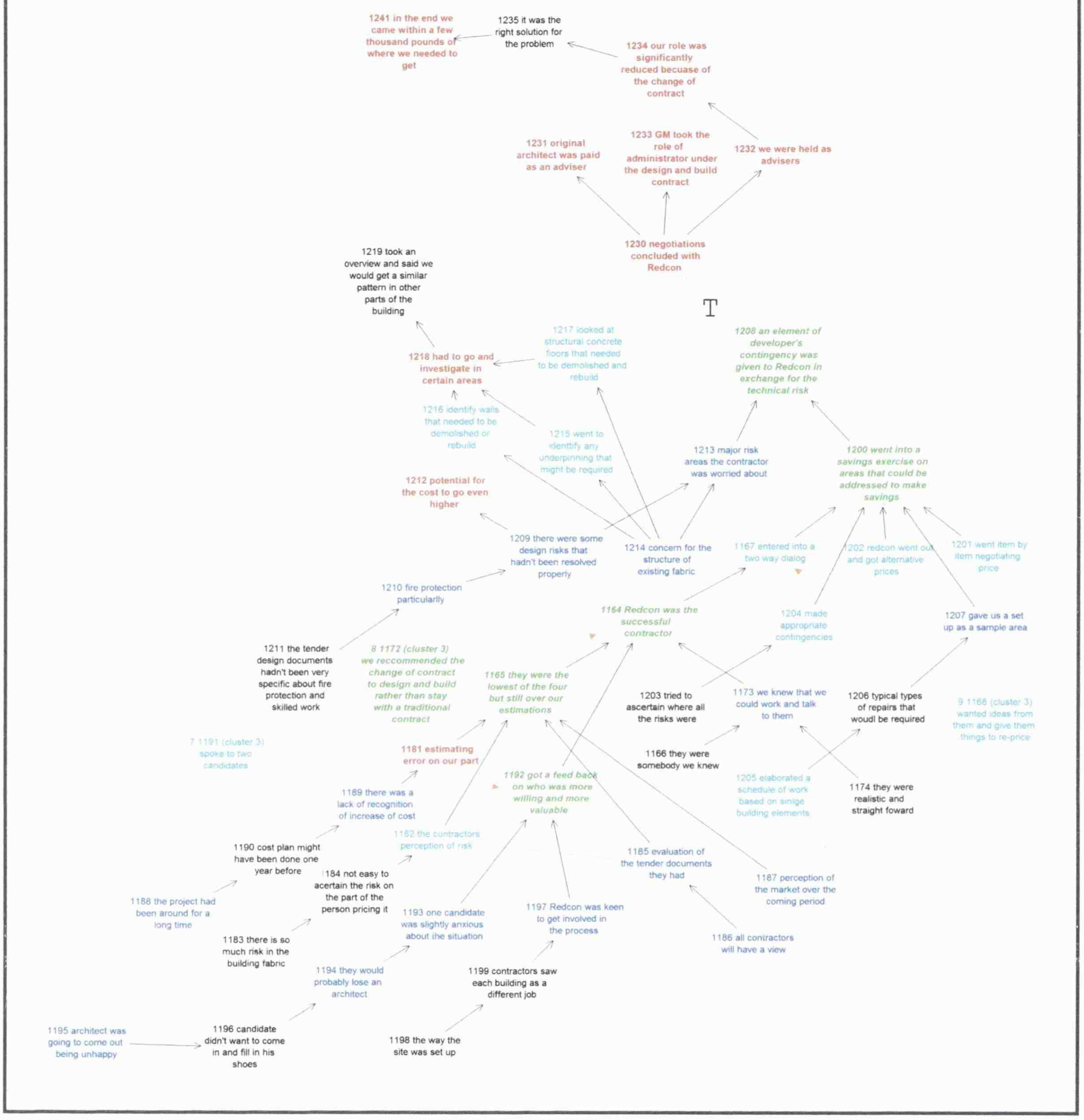
RJ Cluster 2 Constraints on the budget & design



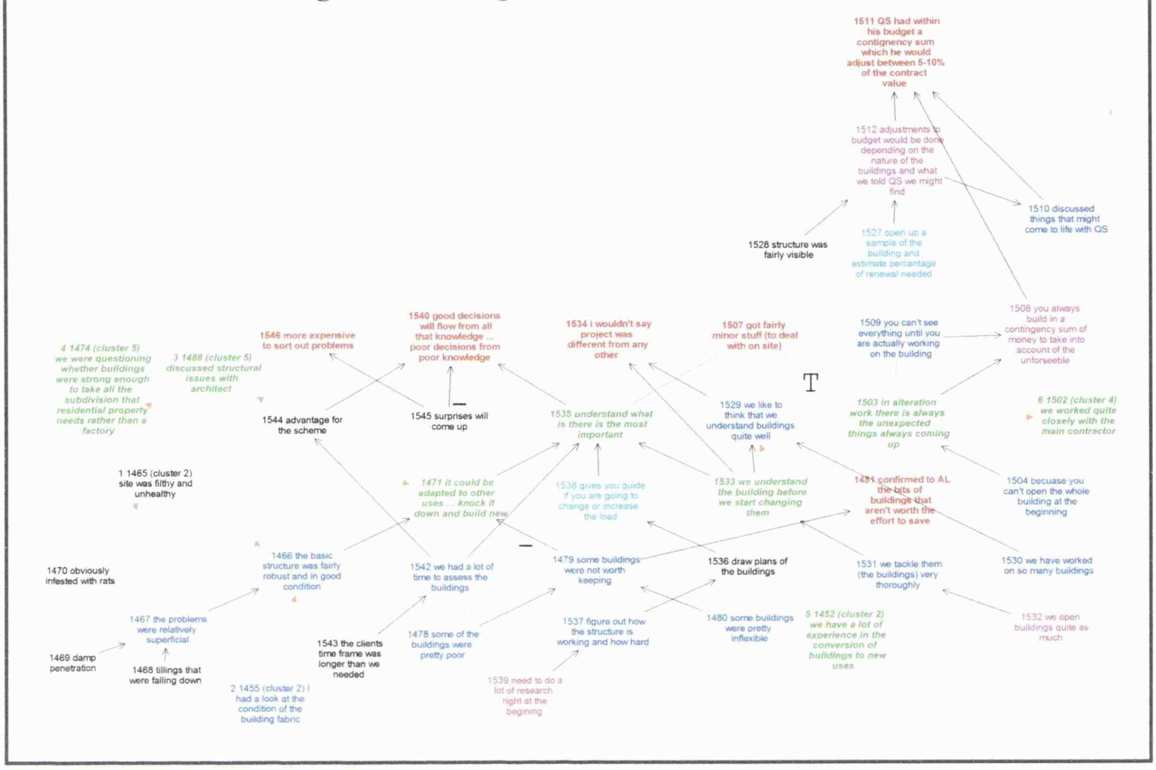
RJ Cluster 3 Decision to change the form of contract to design and build



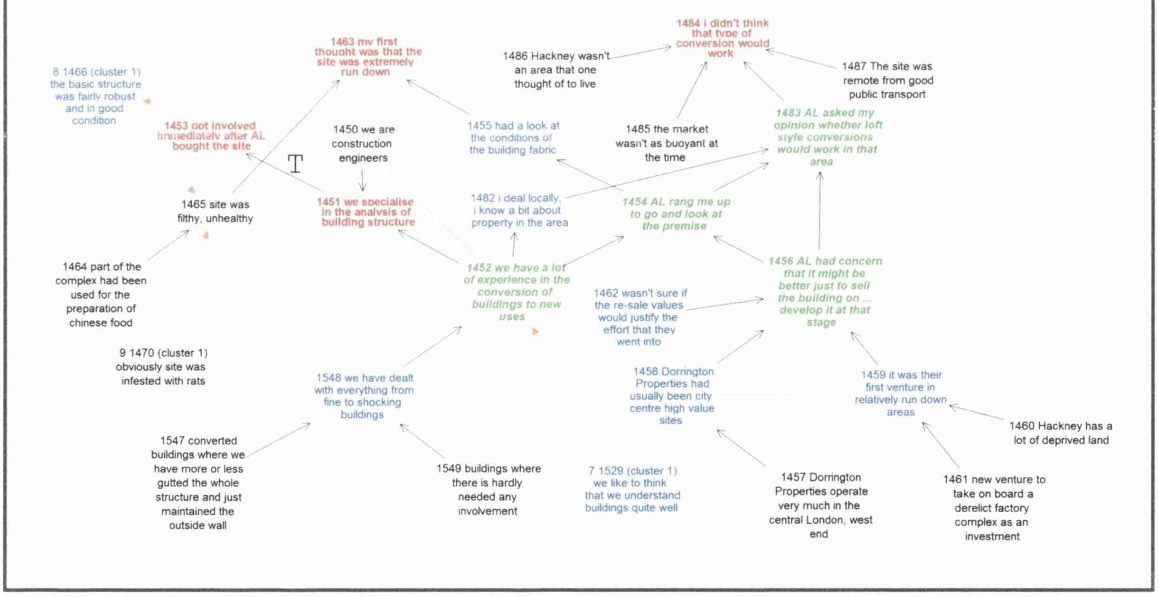
RJ Cluster 4 Negotiation of contract



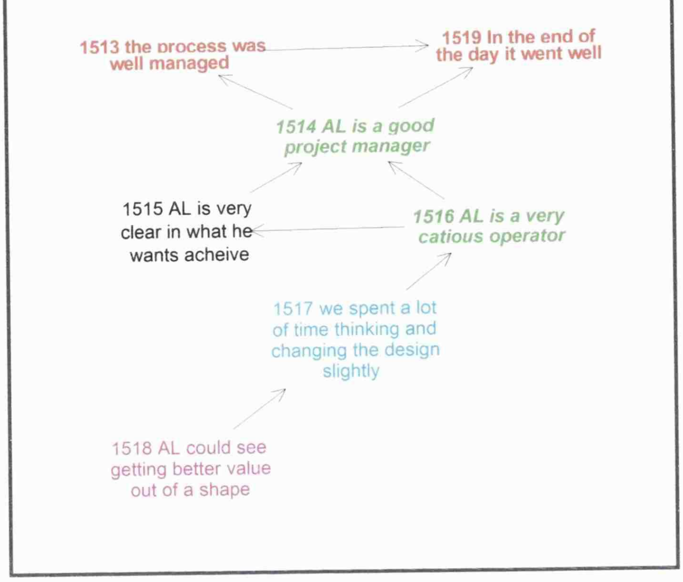
AC Cluster 1 Dealing with existing structure



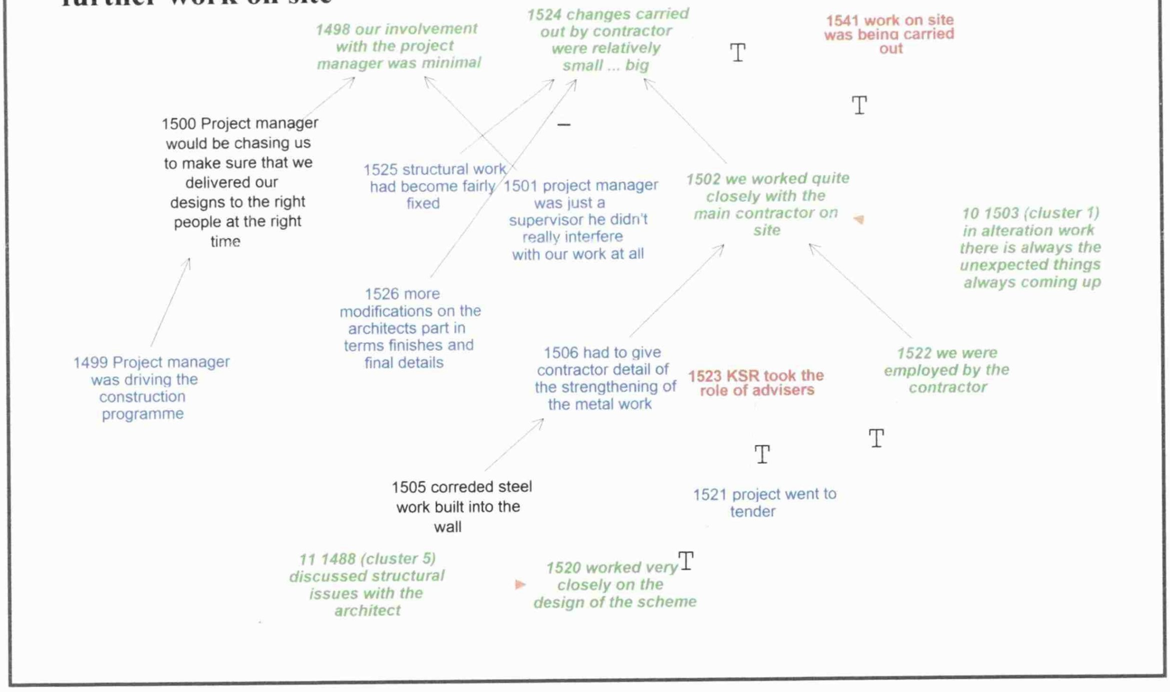
AC Cluster 2 Initial approach by AL for advice



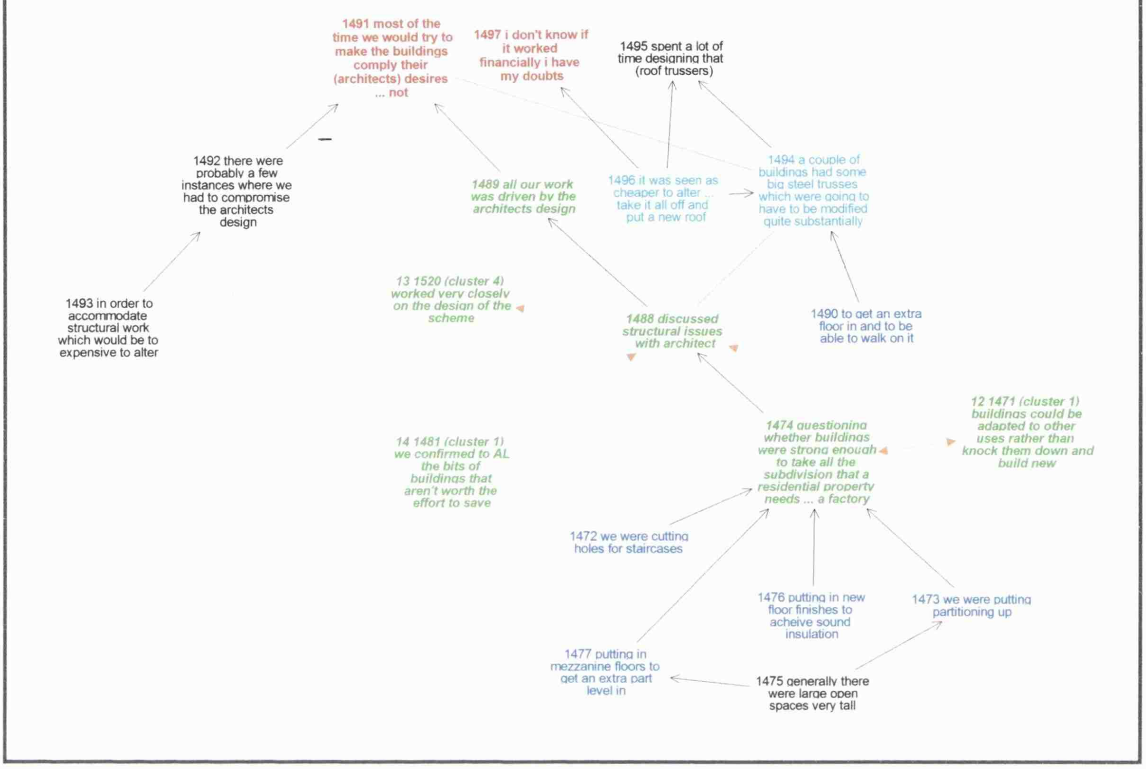
AC Cluster 3 Views on management



AC Cluster 4 Change of role & further work on site

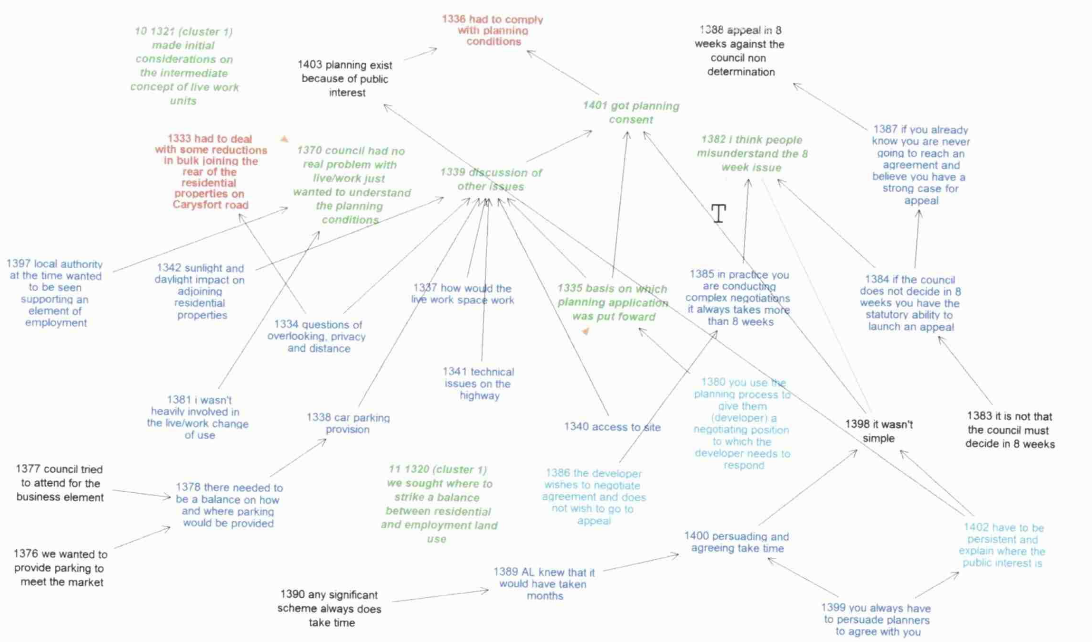


AC Cluster 5 Structural issues & design



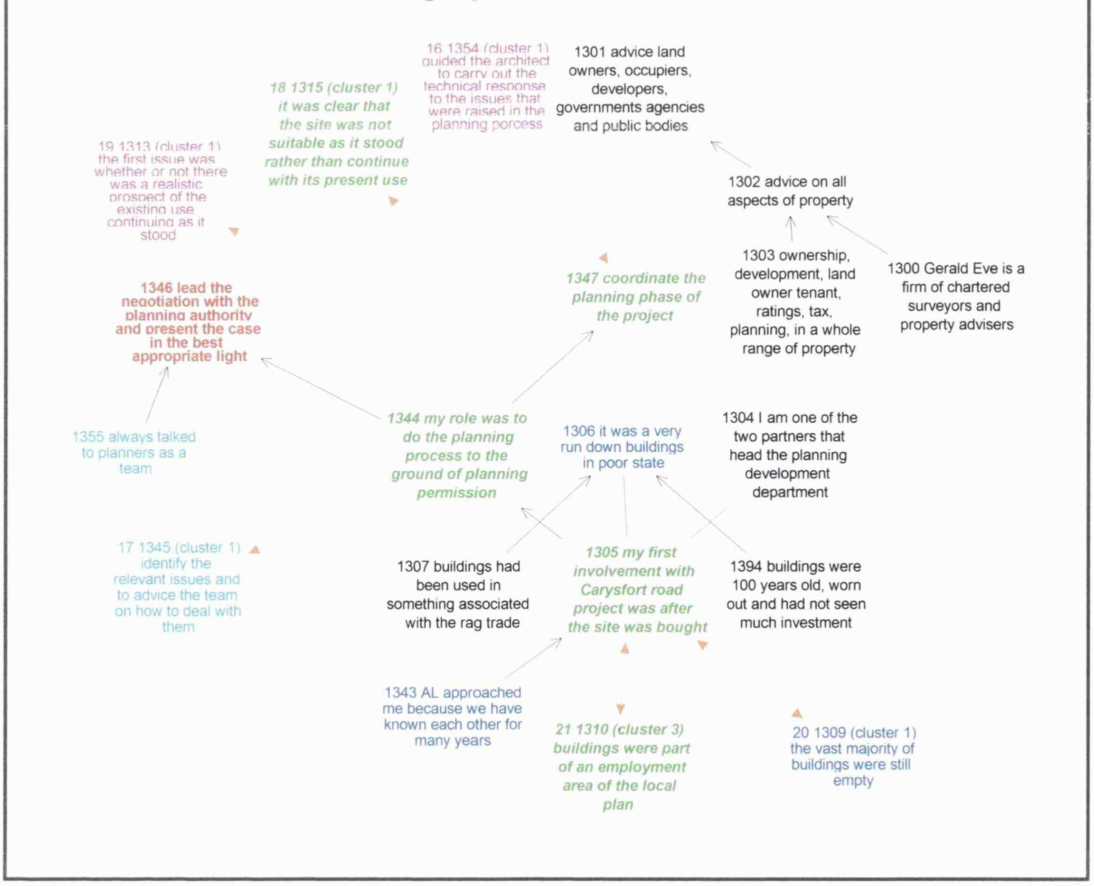
HB Cluster 1 Identification of principal planning issues

HB Cluster 2 Discussing & addressing other planning issues



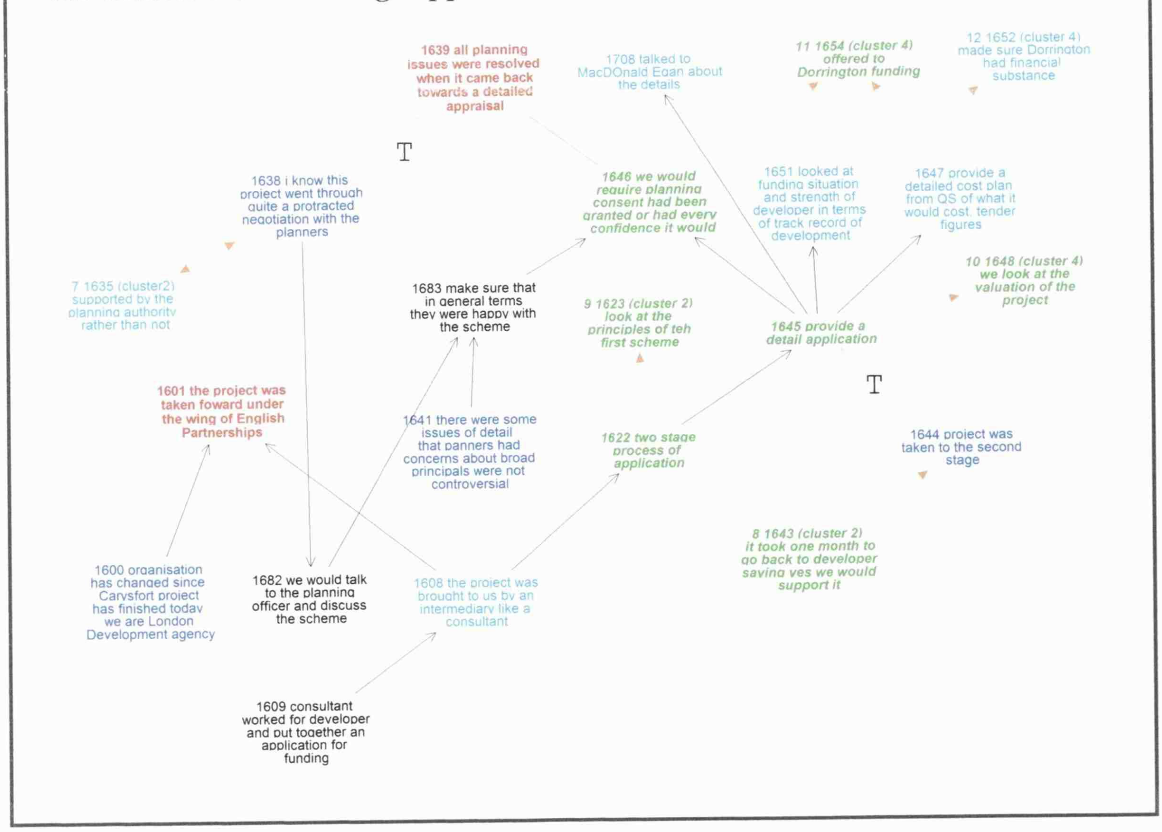
HB Cluster 3 Dealing with environmental health issues

HB Cluster 4 HB role in the project

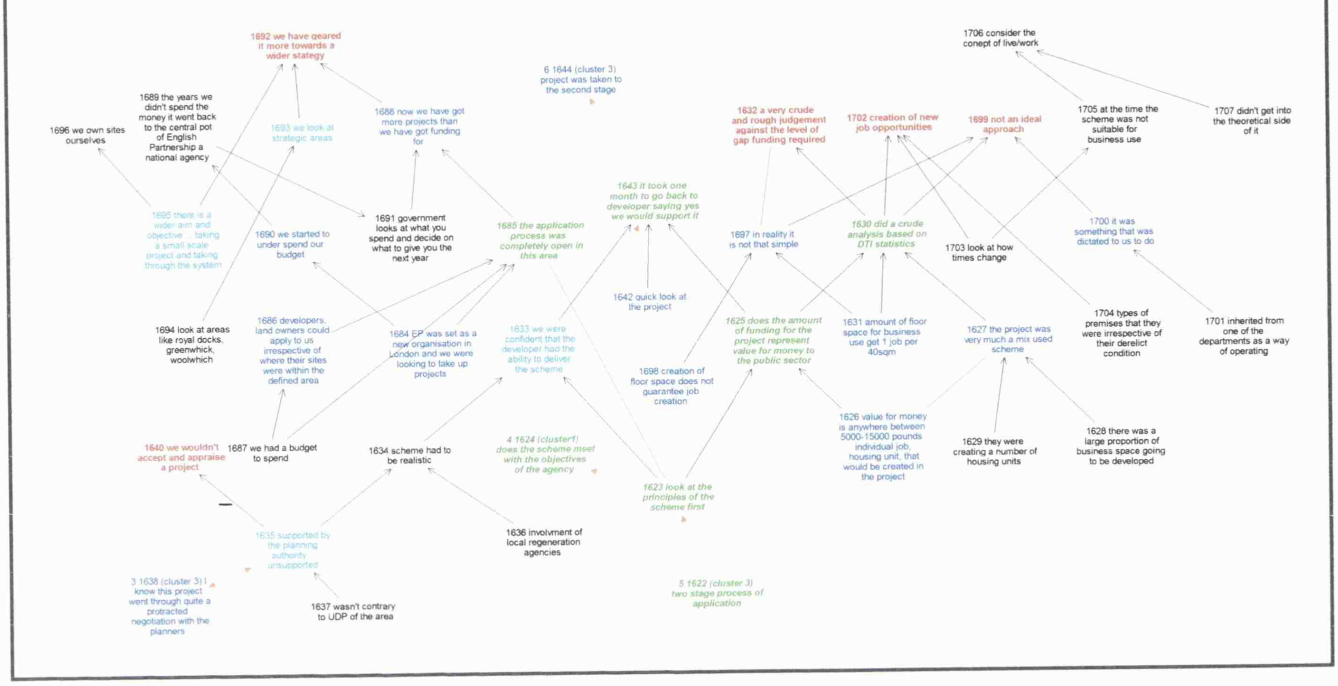


AS Cluster 1 Objective of English Partnership

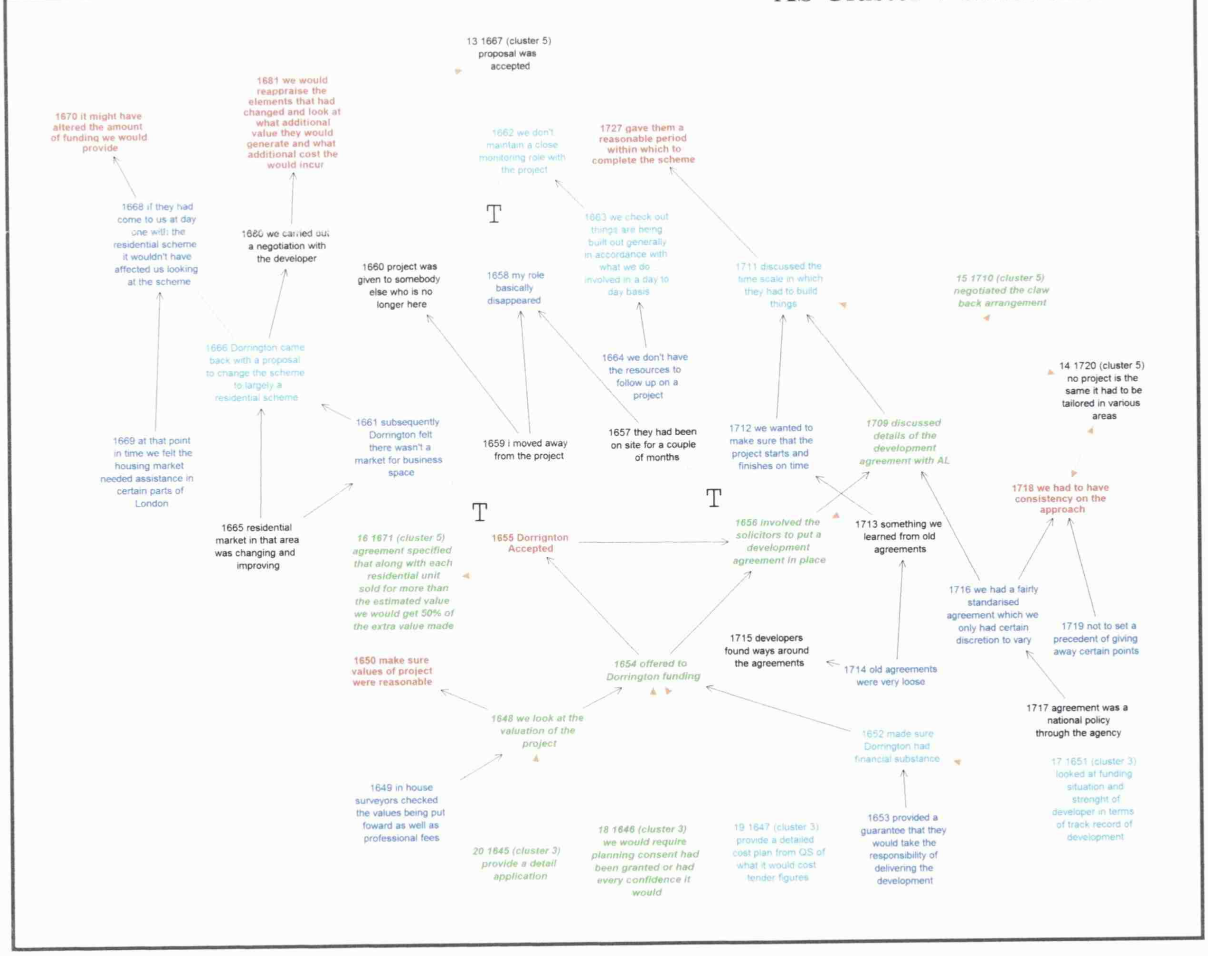
AS Cluster 3 Second stage application



AS Cluster 2 First stage application



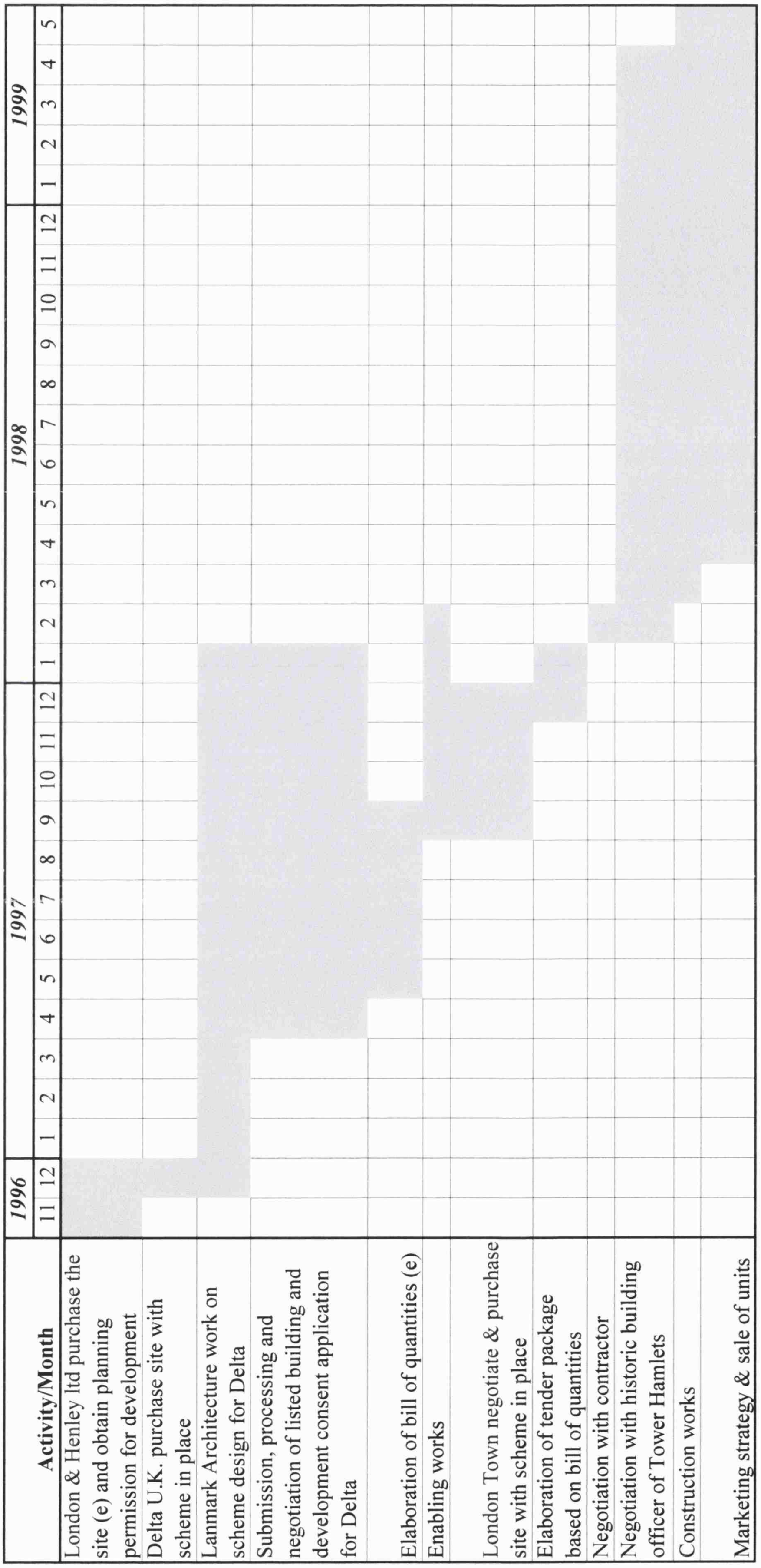
AS Cluster 4 Grant offered



AS Cluster 5 Negotiation of grant agreement

Appendix 4

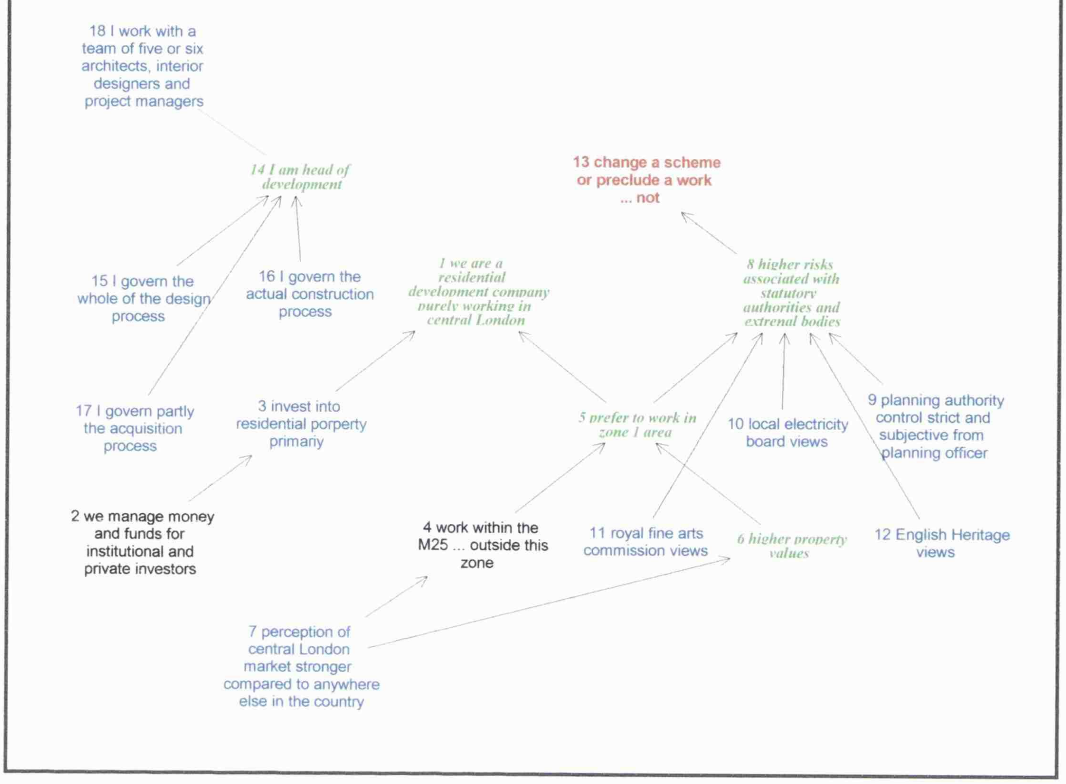
Old Aberdeen Wharf
Project time line


Activity/Month
1996
1997
1998
1999
11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5
London & Henley ltd purchase the site (e) and obtain planning permission for development
Delta U.K. purchase site with scheme in place
Lanmark Architecture work on scheme design for Delta
Submission, processing and negotiation of listed building and development consent application for Delta
Elaboration of bill of quantities (e)
Enabling works
London Town negotiate & purchase site with scheme in place
Elaboration of tender package based on bill of quantities
Negotiation with contractor
Negotiation with historic building officer of Tower Hamlets
Construction works
Marketing strategy & sale of units

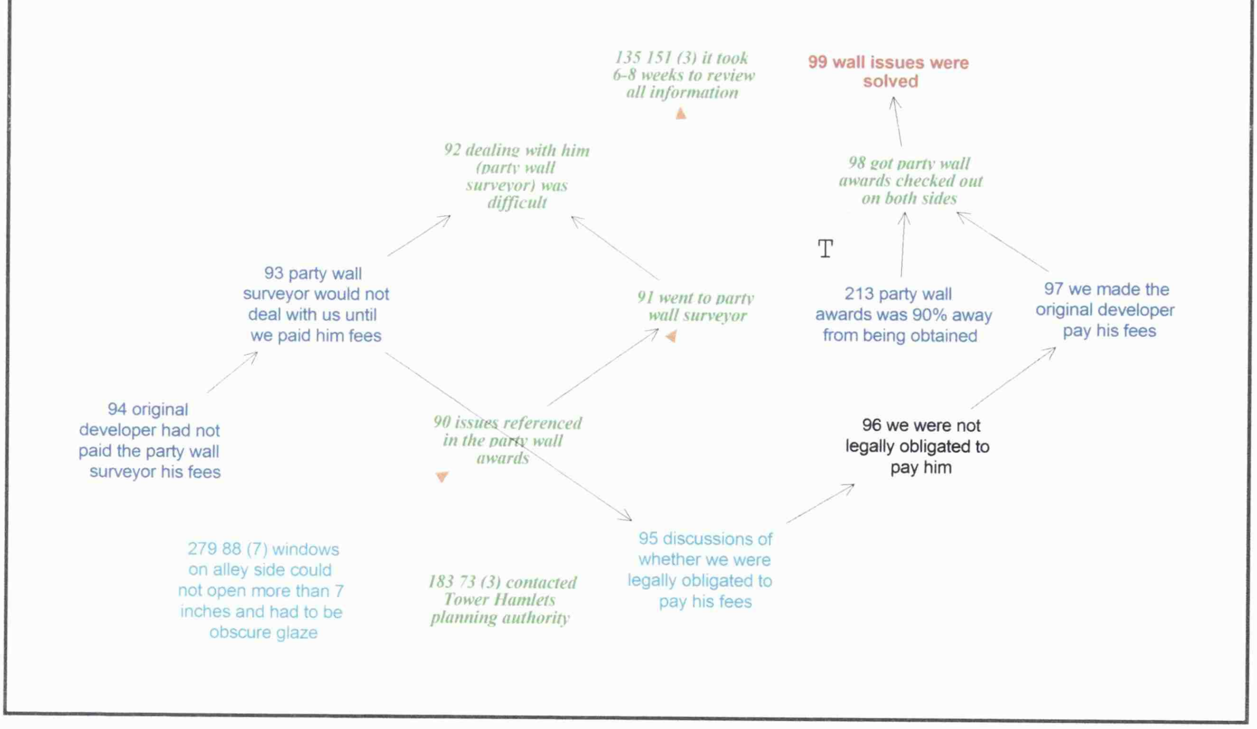
Appendix 5

Old Aberdeen Wharf Individual Actors' Clusters

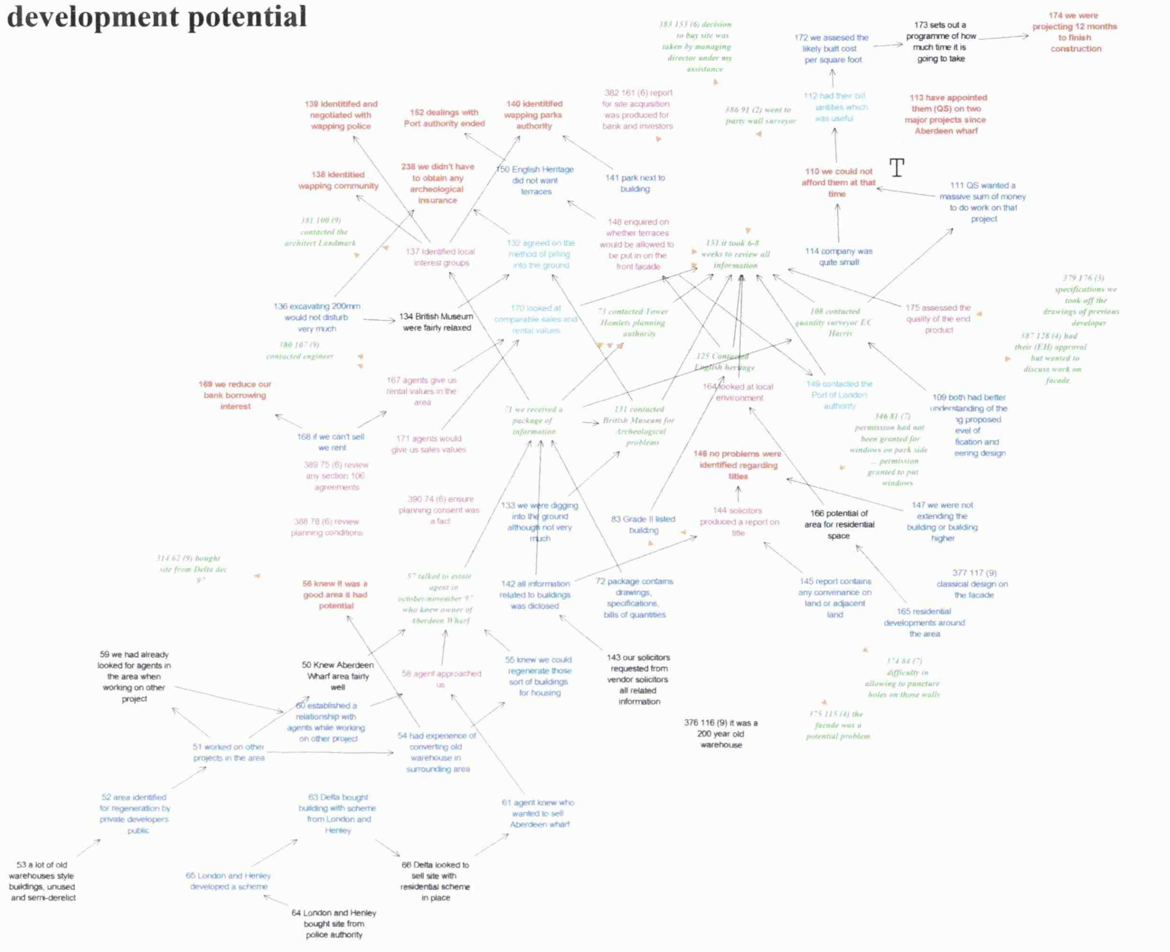
PH Cluster 1 Company's preference to work in Central London area



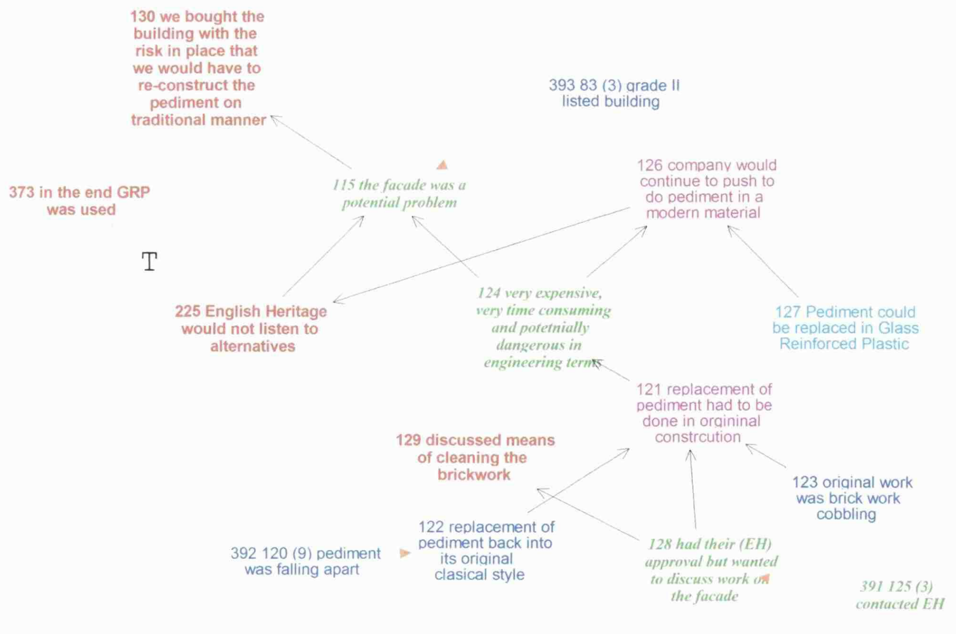
PH Cluster 2 Difficulty with Party Wall Surveyor



PH Cluster 3 Interest and Evaluation of development potential



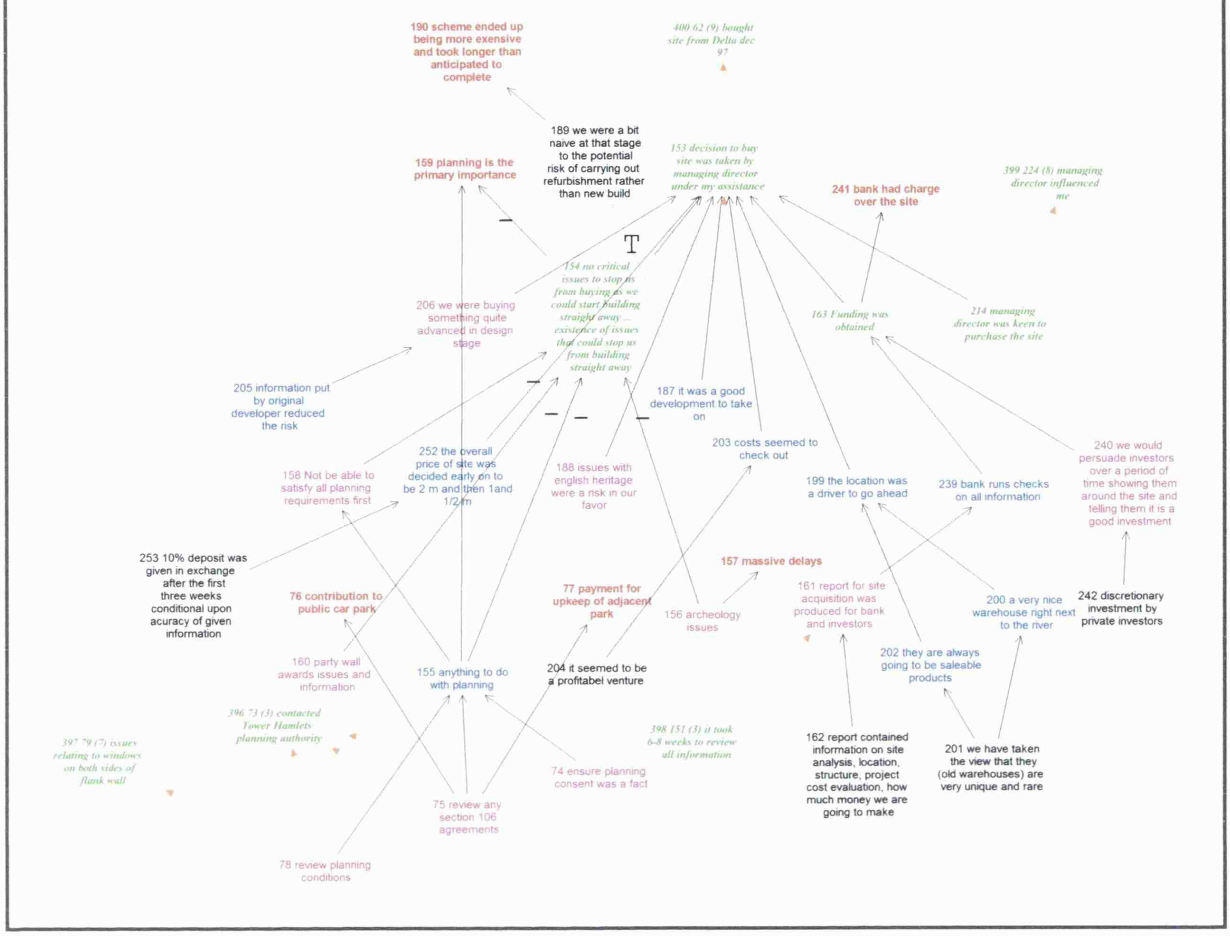
PH Cluster 4 Pediment issue



PH Cluster 5 Decision to add value to scheme & constraints

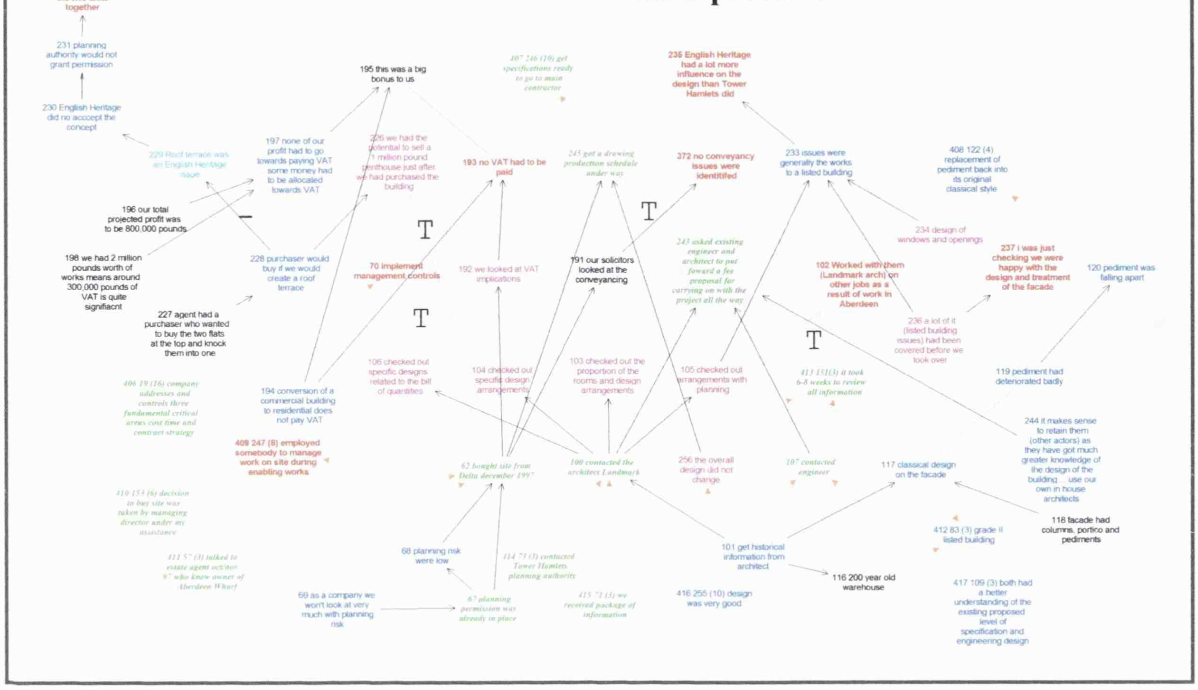
PH Cluster 7 Issue with windows on flank walls

PH Cluster 6 Decision to purchase scheme

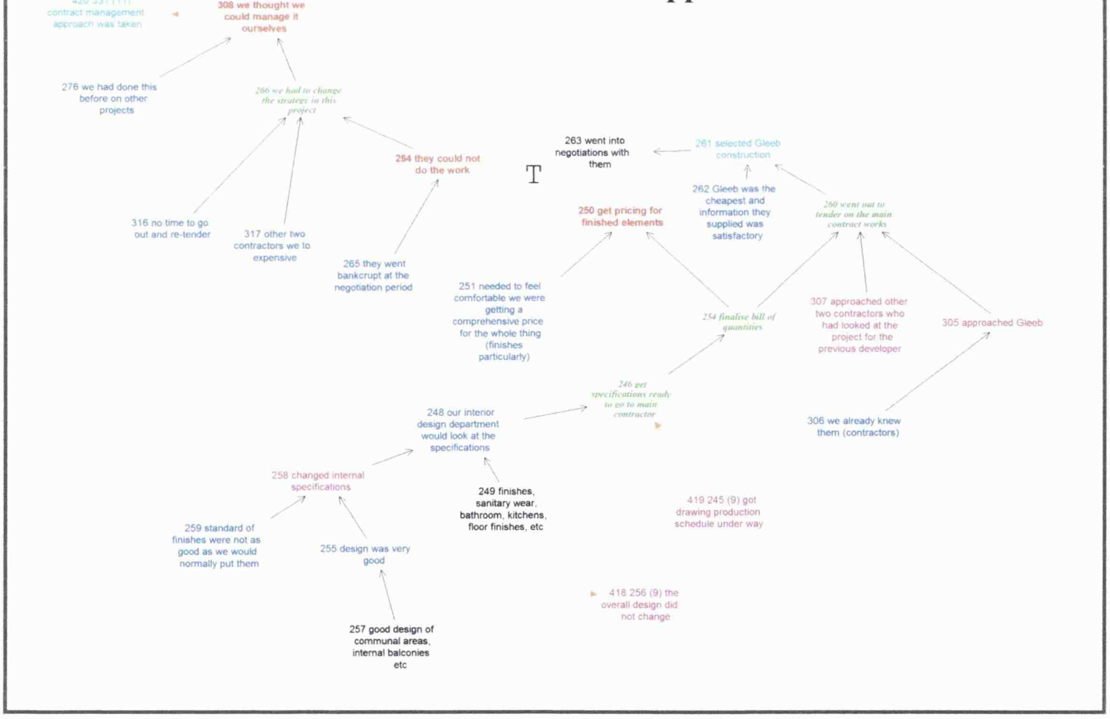


PH Cluster 8 Influence to purchase

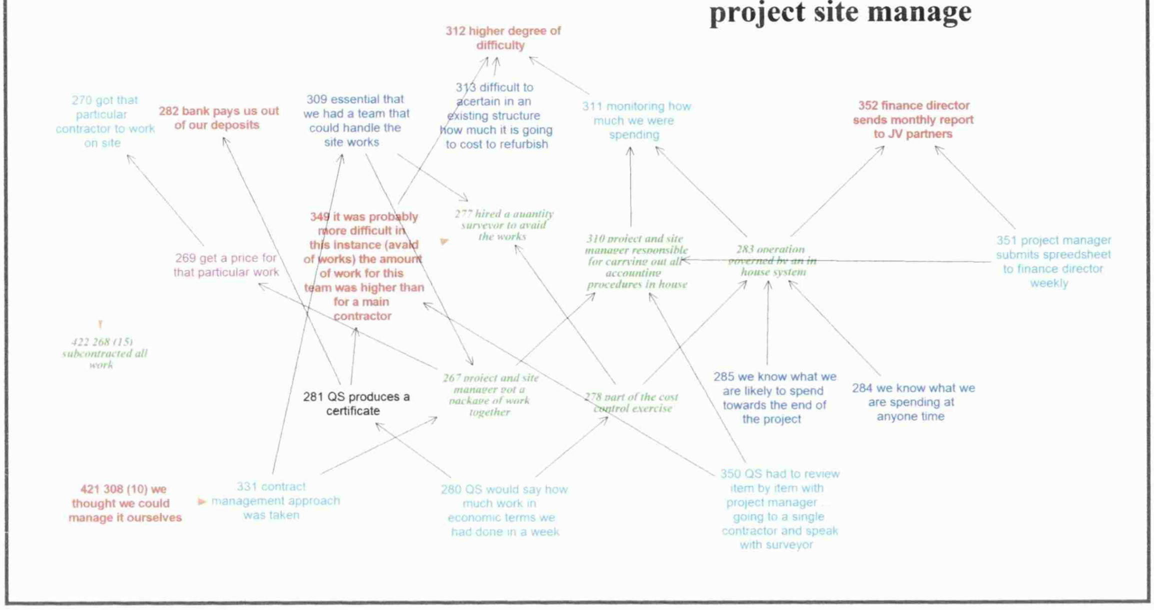
PH Cluster 9 Dealing with issues after purchase



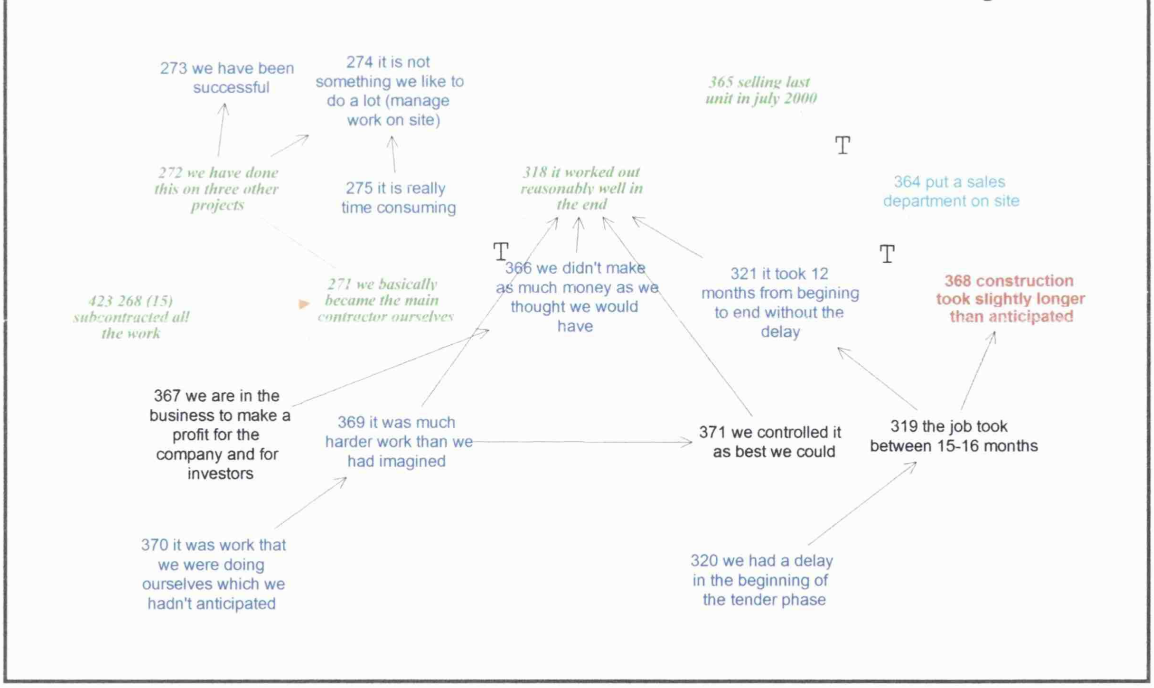
PH Cluster 10 Procurement approach & difficulties



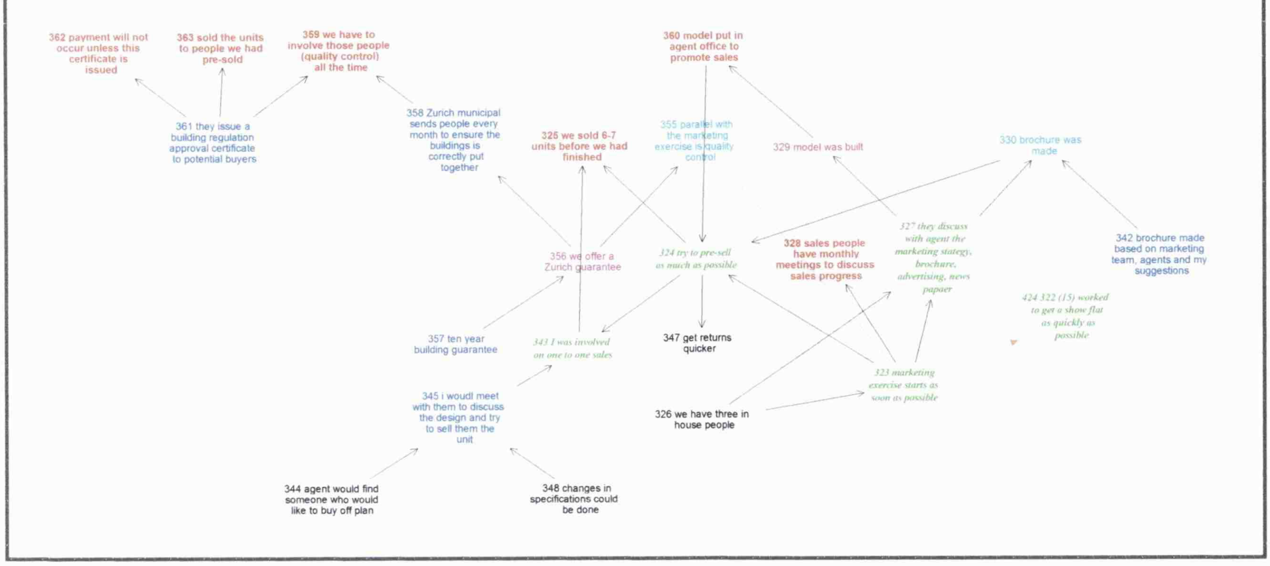
PH Cluster 11 Decision to project site manage



PH Cluster 12 Results of the process



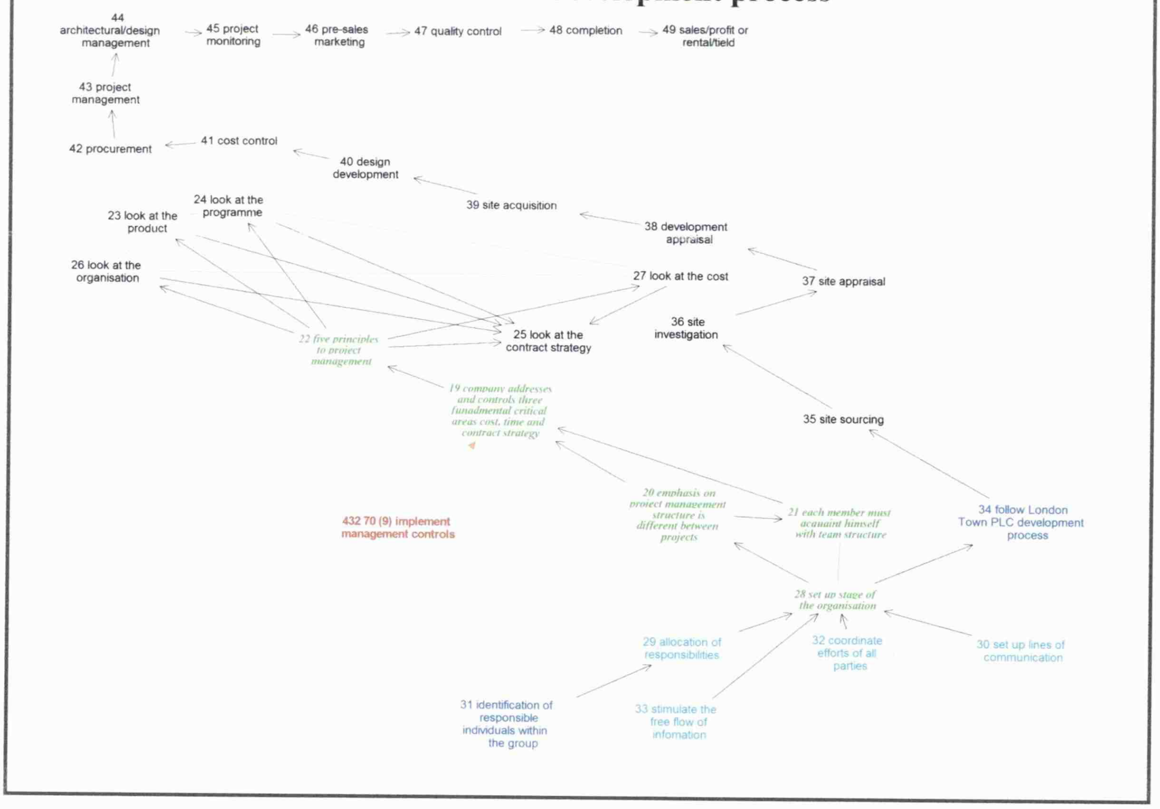
PH Cluster 13 Pre-sales activities



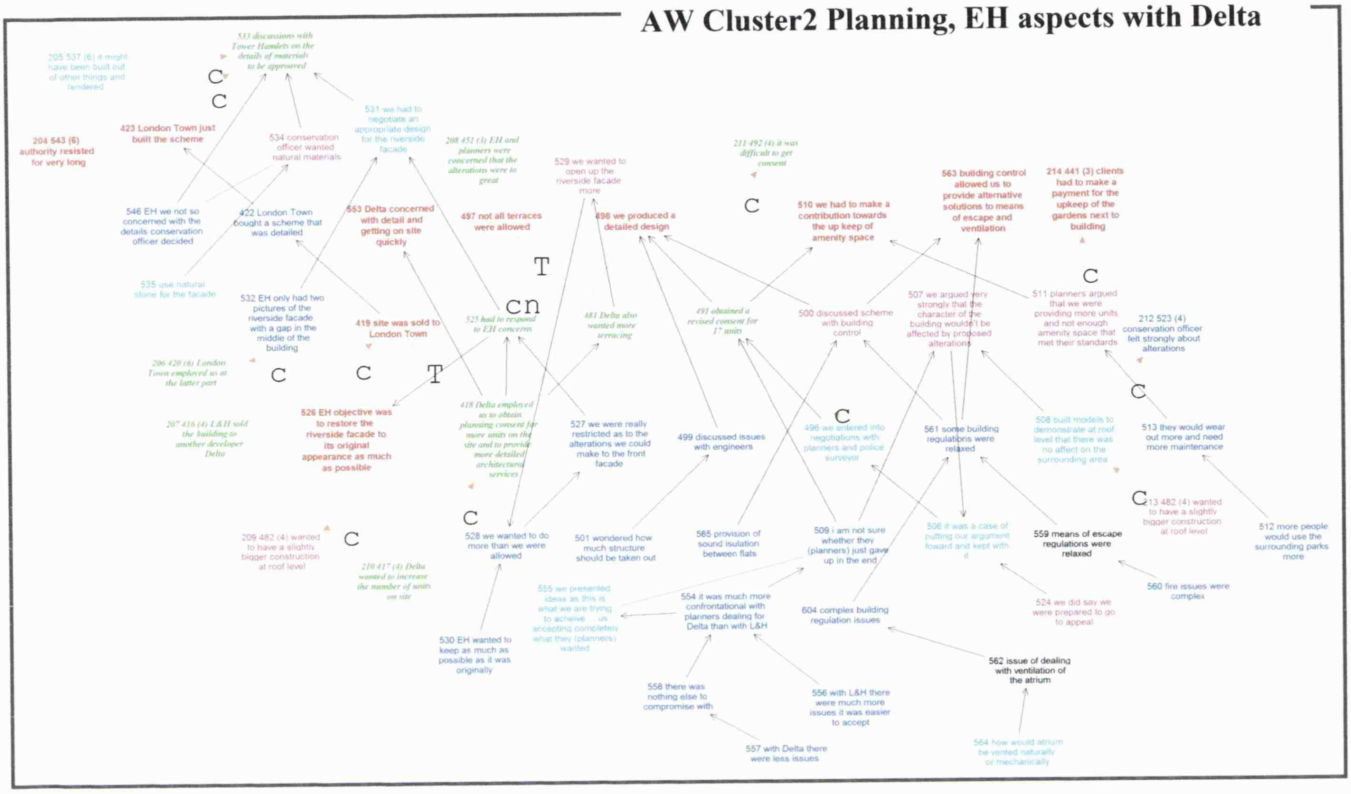
PH Cluster 14 Enabling works discussions

PH Cluster 15 Subcontracting difficulties

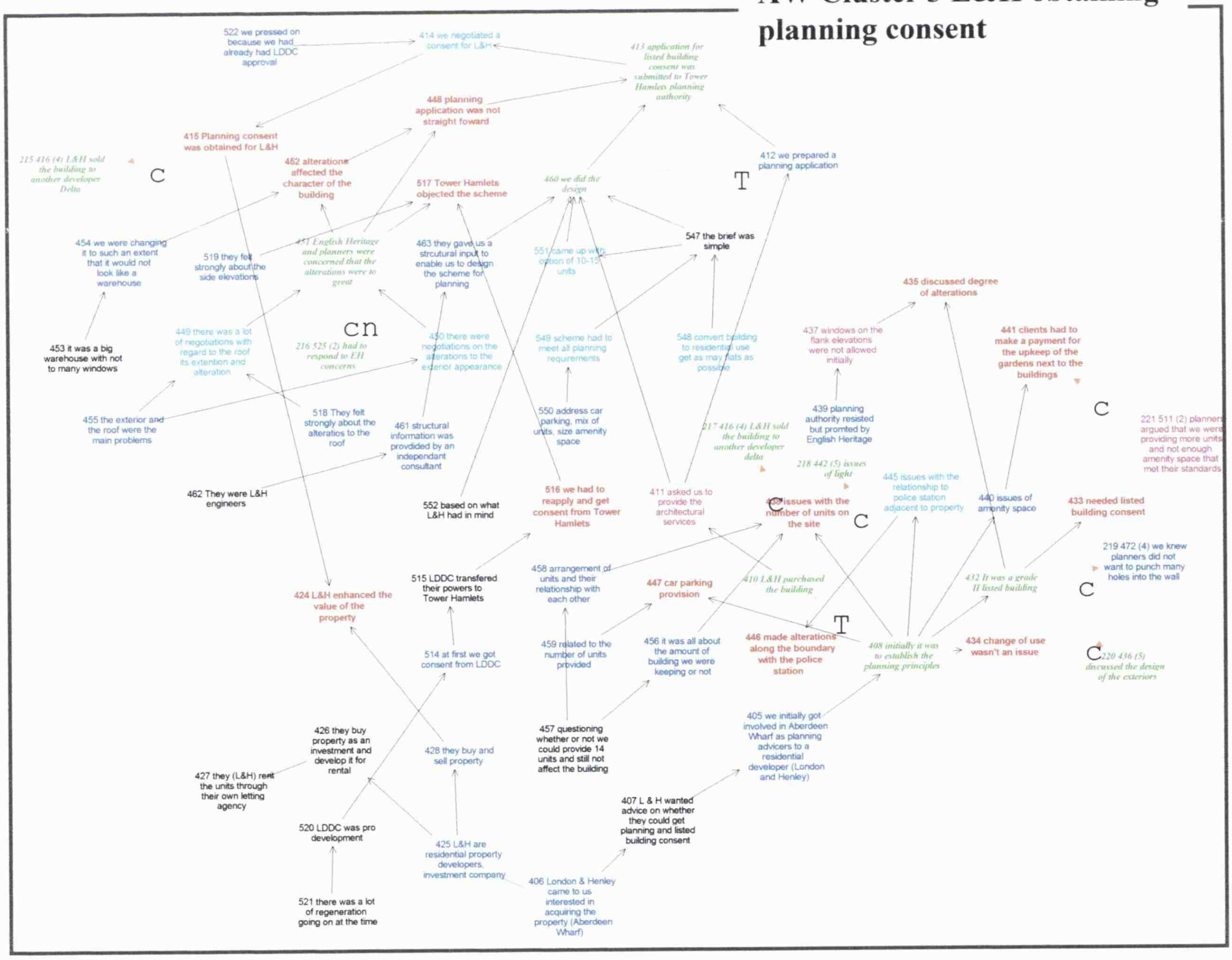
PH Cluster 16 Project Management and development process



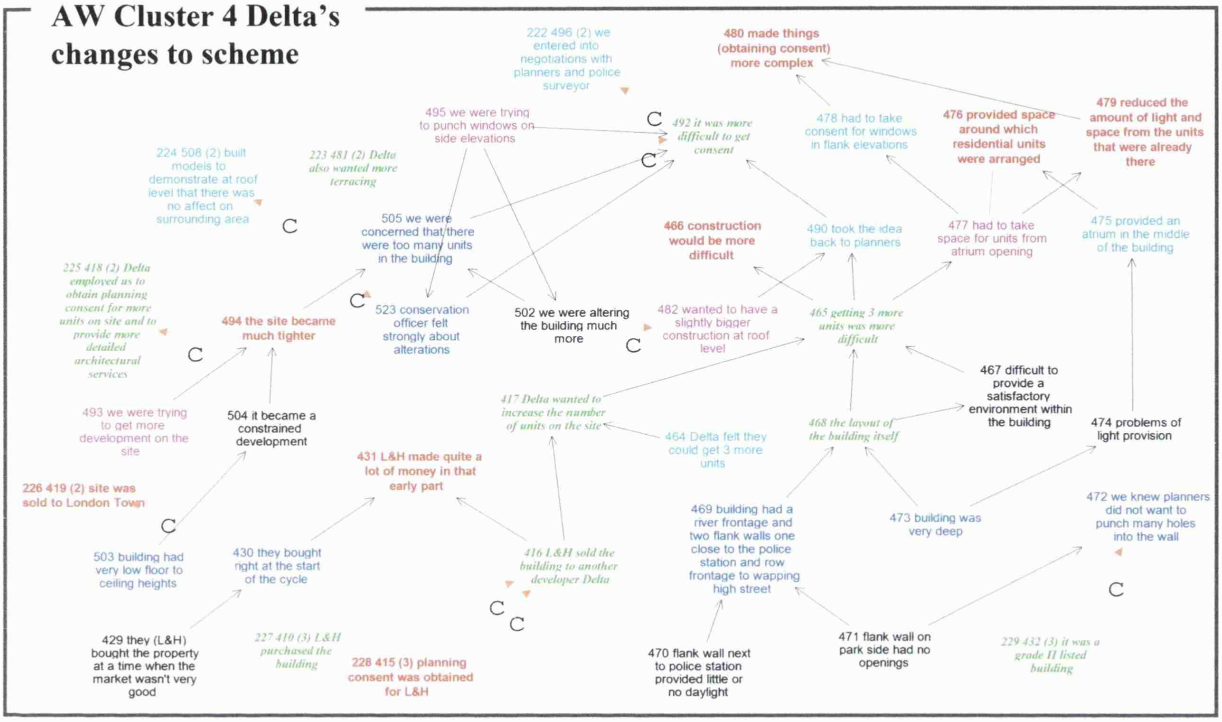
AW Cluster2 Planning, EH aspects with Delta



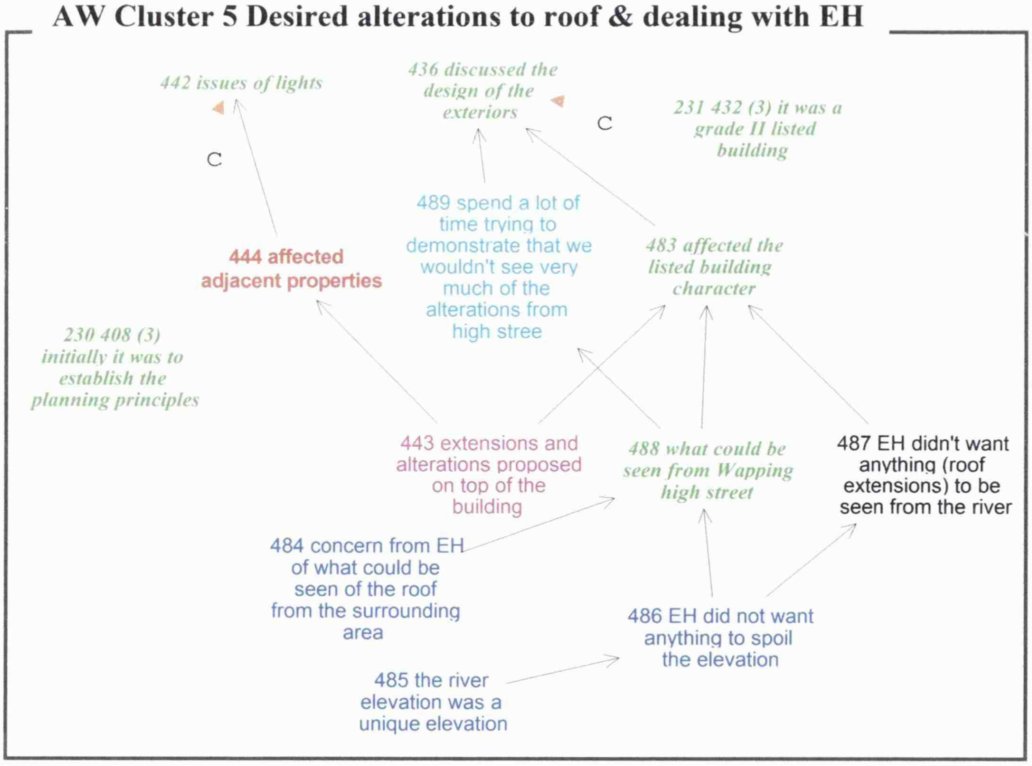
AW Cluster 3 L&H obtaining planning consent



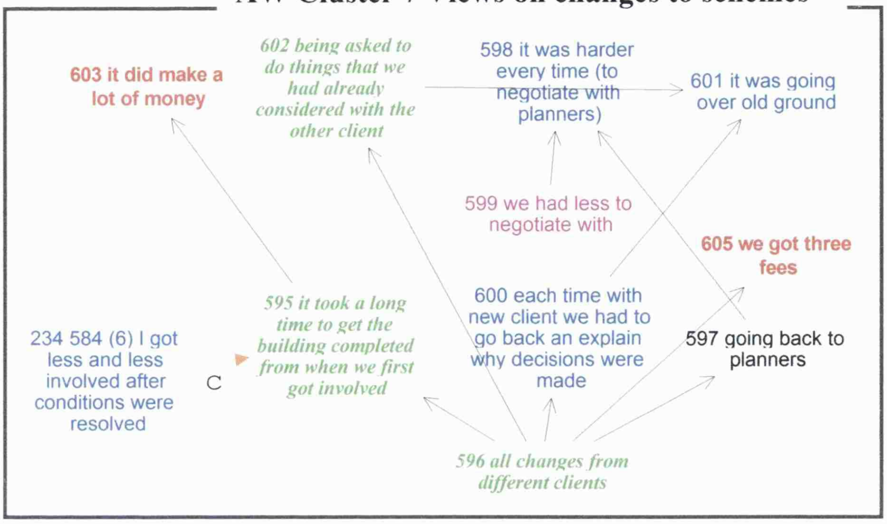
AW Cluster 4 Delta's changes to scheme



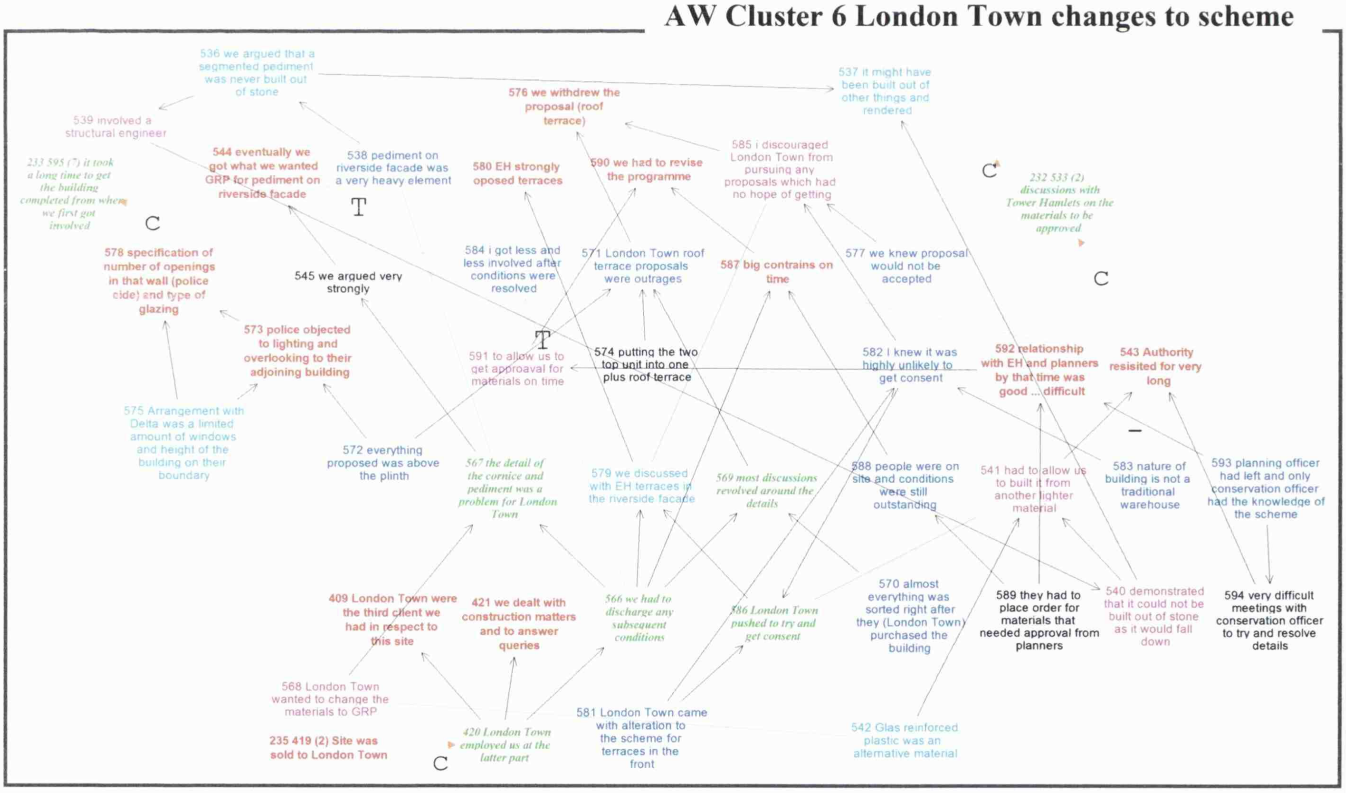
AW Cluster 5 Desired alterations to roof & dealing with EH



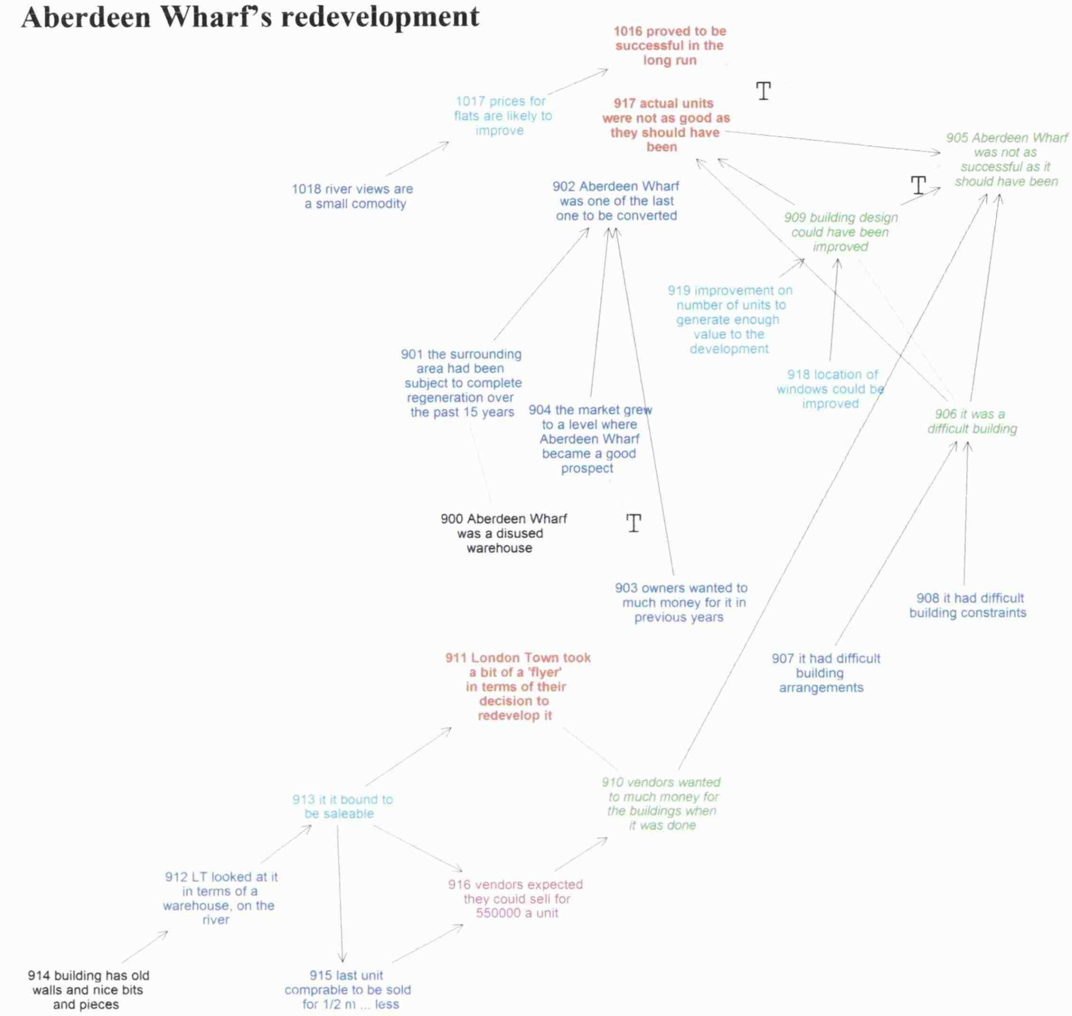
AW Cluster 7 Views on changes to schemes



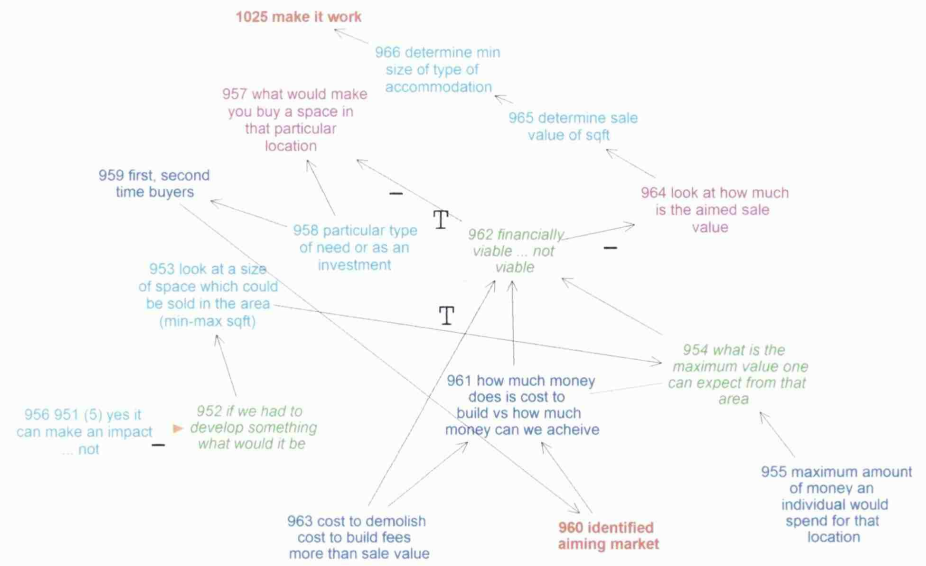
AW Cluster 6 London Town changes to scheme



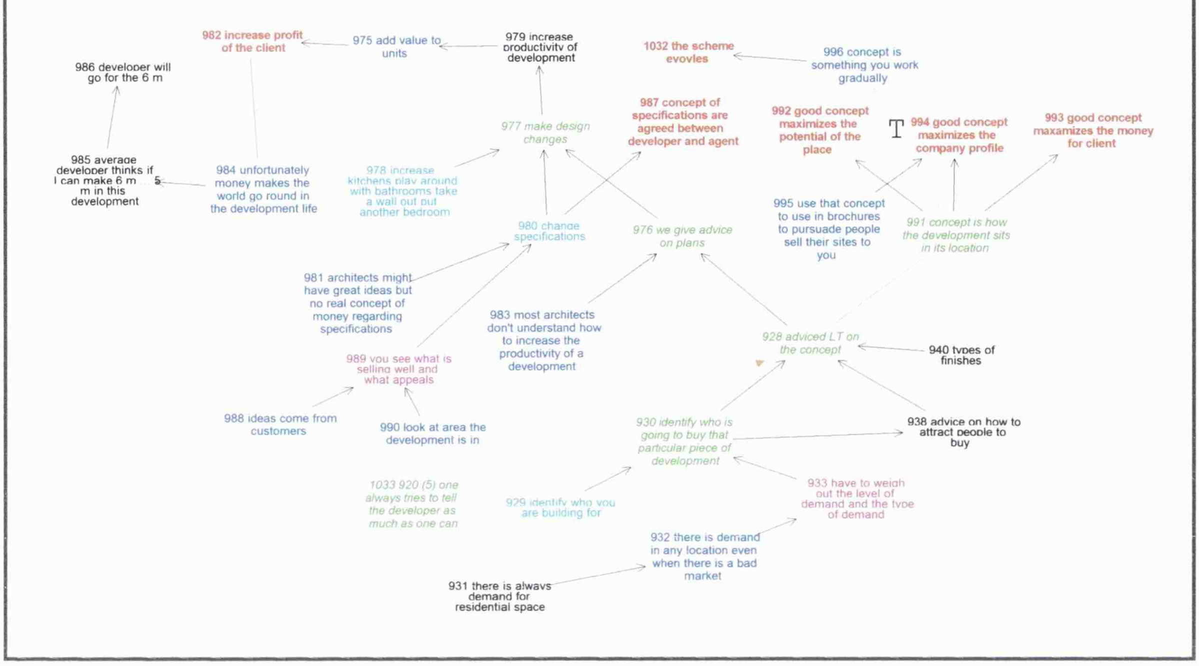
TM Cluster 1 Background of Old Aberdeen Wharf's redevelopment



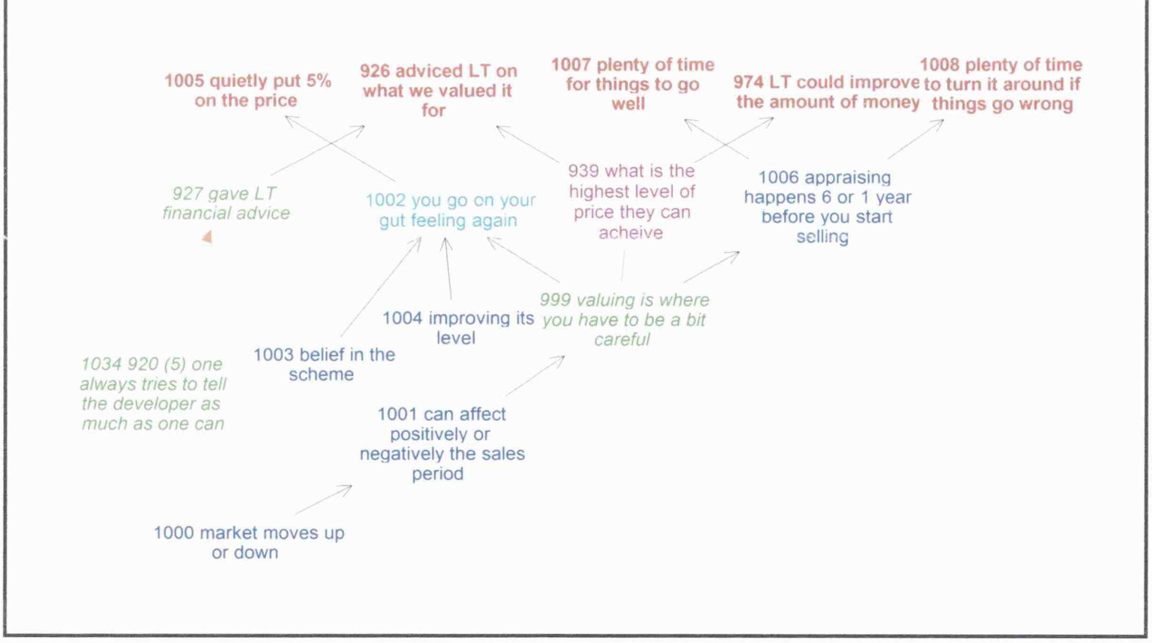
TM Cluster 2 Initial ideas & approach for development



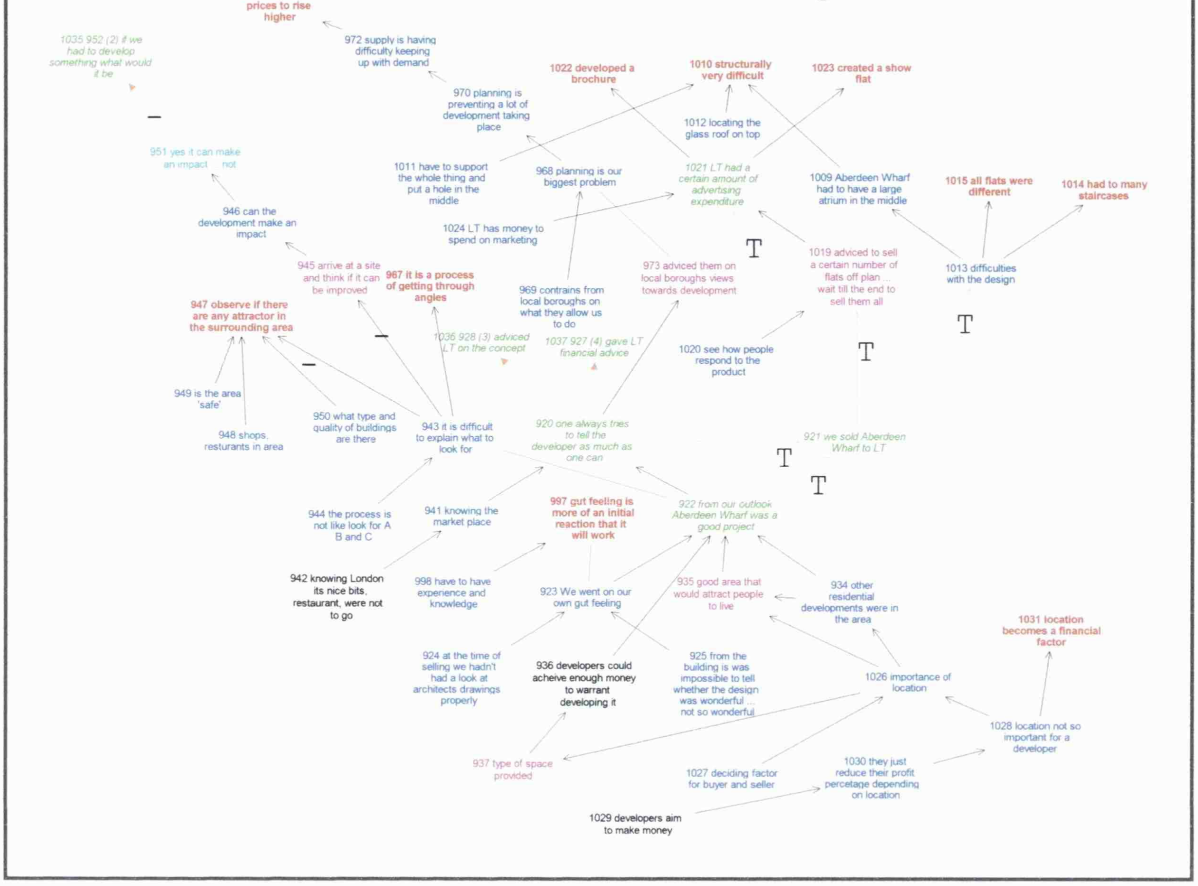
TM Cluster3 Advice on concept



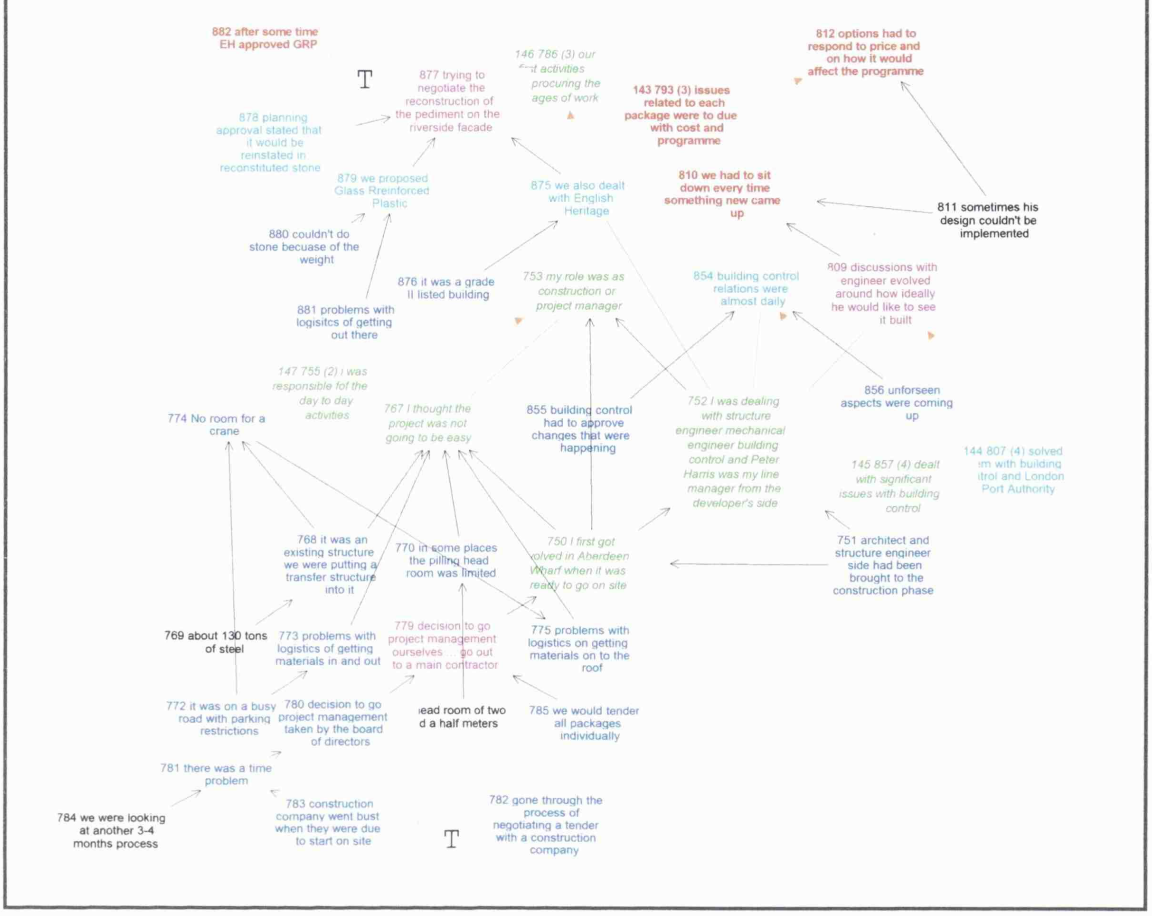
TM Cluster 4 Financial advice



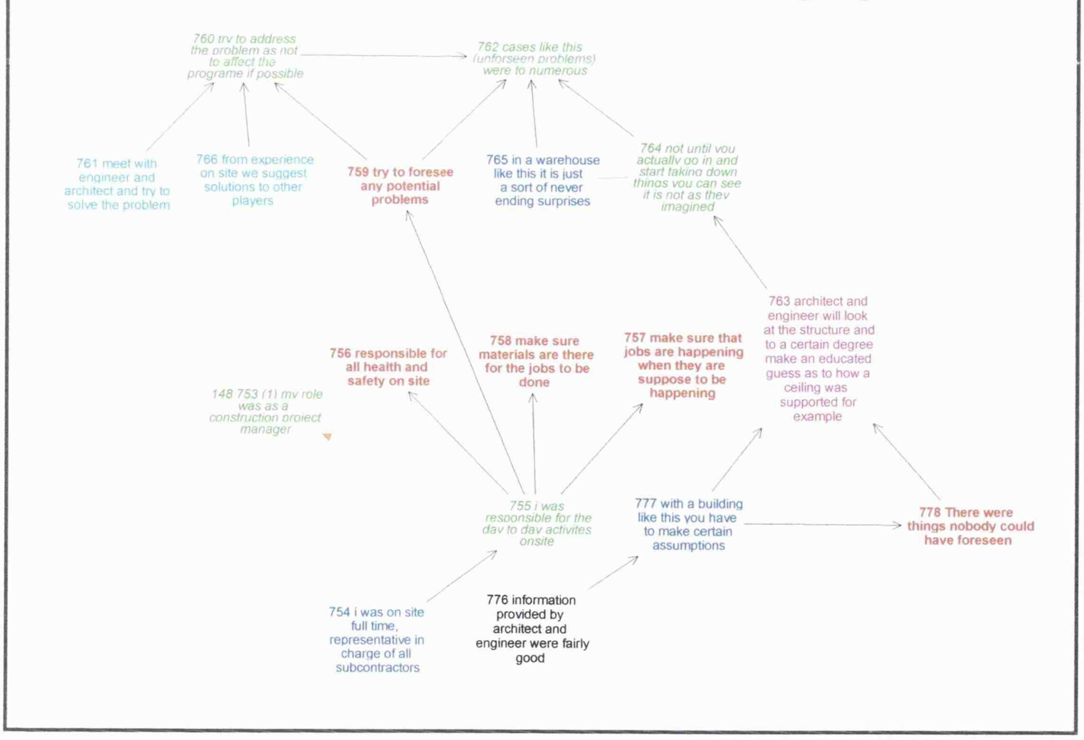
TM Cluster 5 Potential of development/ Advice after site purchase



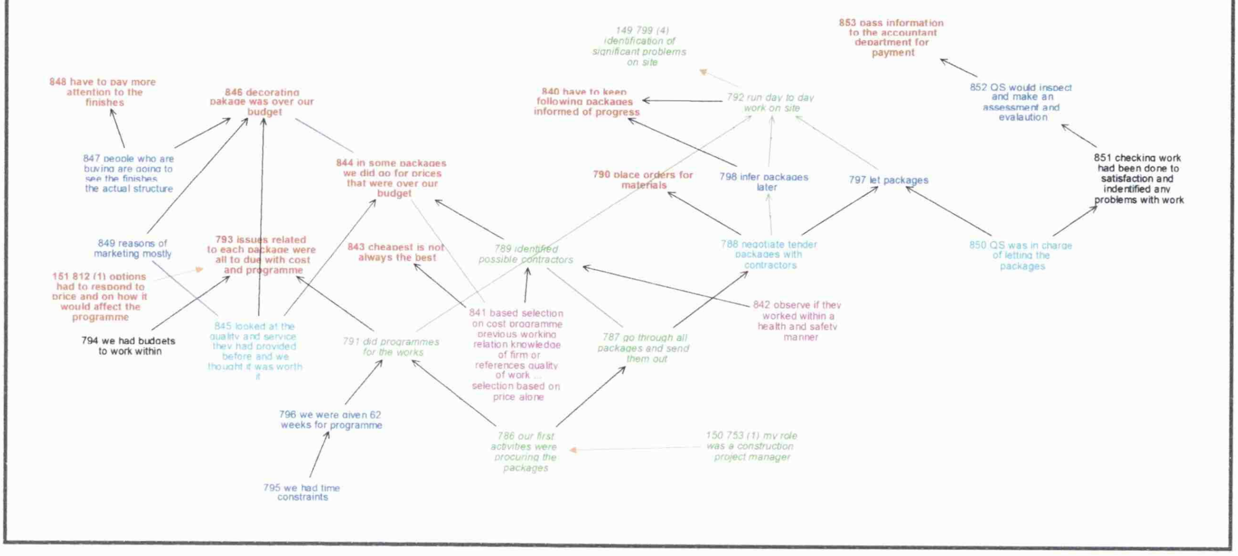
EH Cluster 1 Initial views & involvement in the project



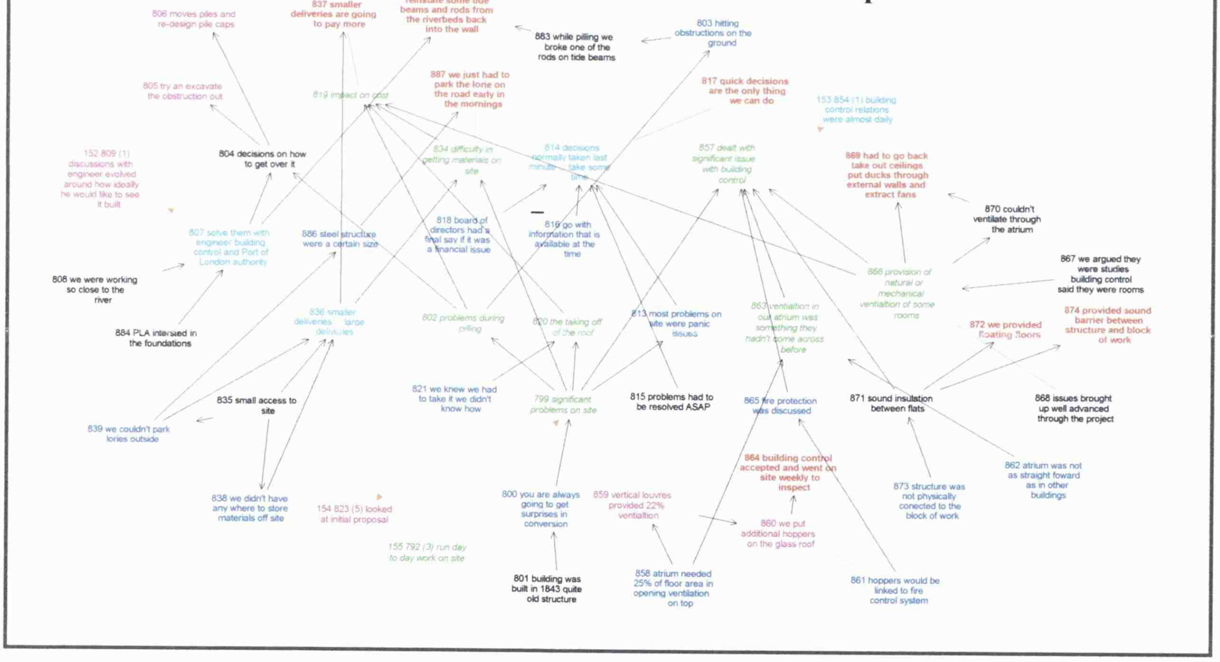
EH Cluster 2 Role of addressing responsibilities



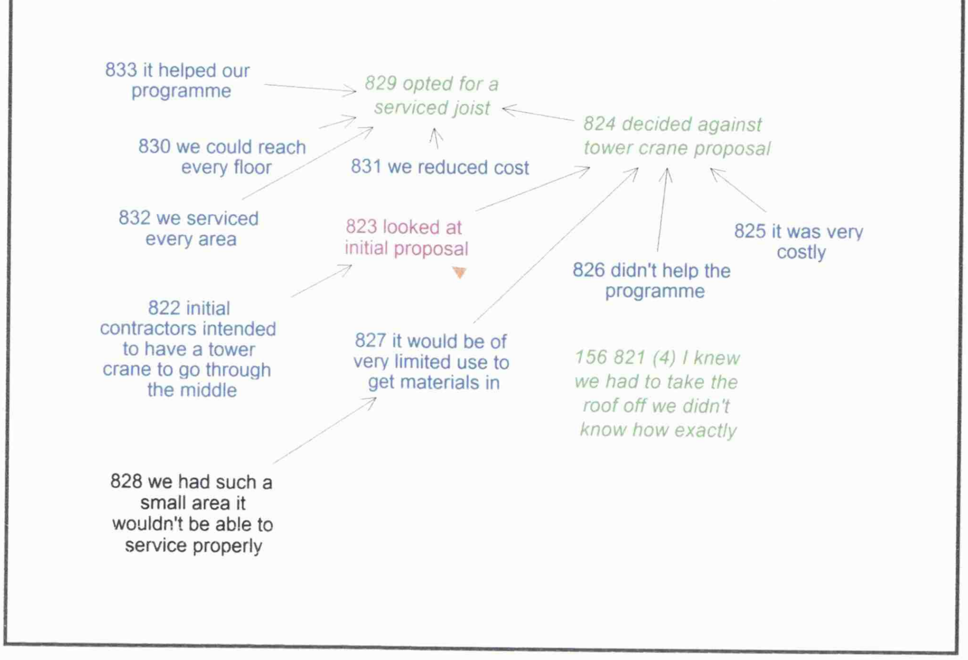
EH Cluster 3 First activities carried out



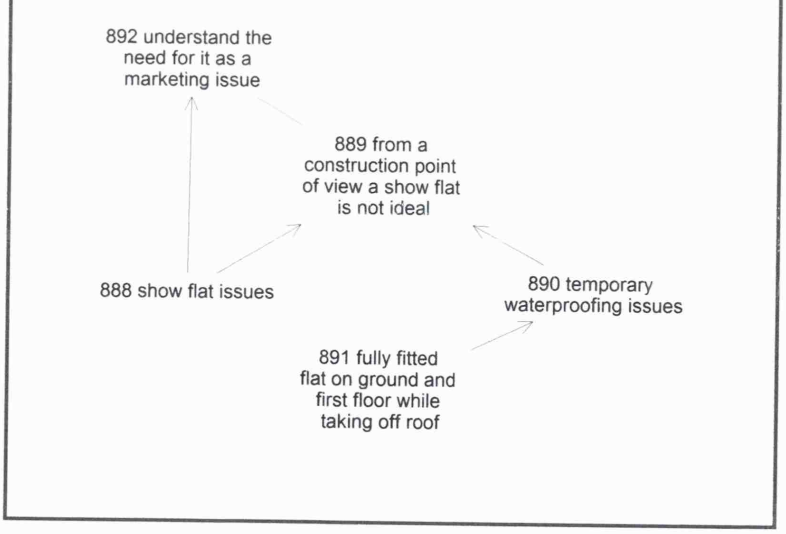
EH Cluster 4 Unforeseen problems on site and impact on cost



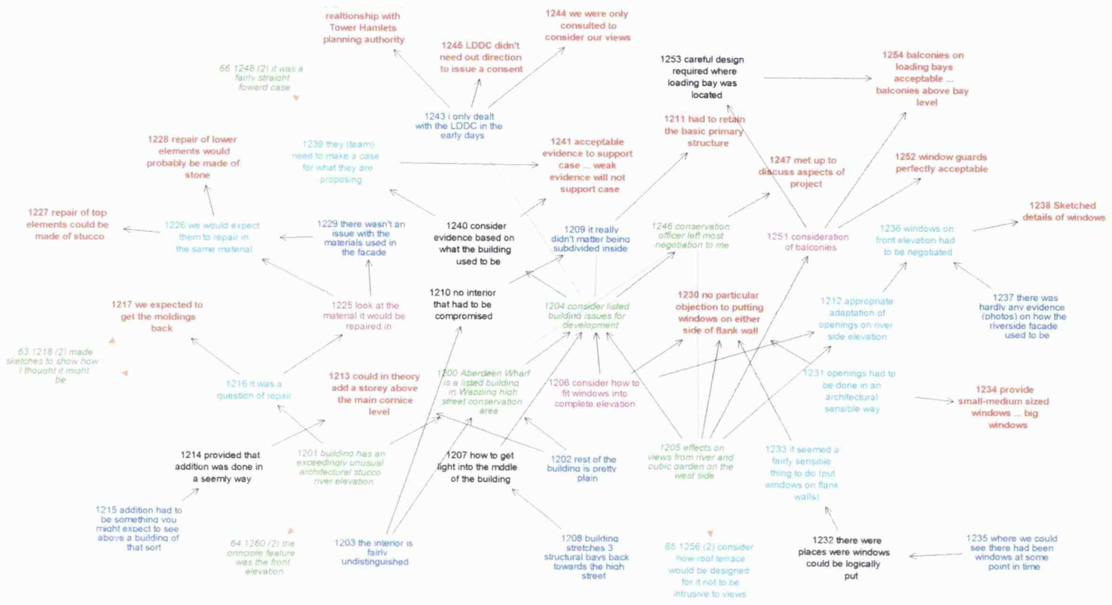
EH Cluster 5 Options for taking roof off



EH Cluster 6 Implications of show flat

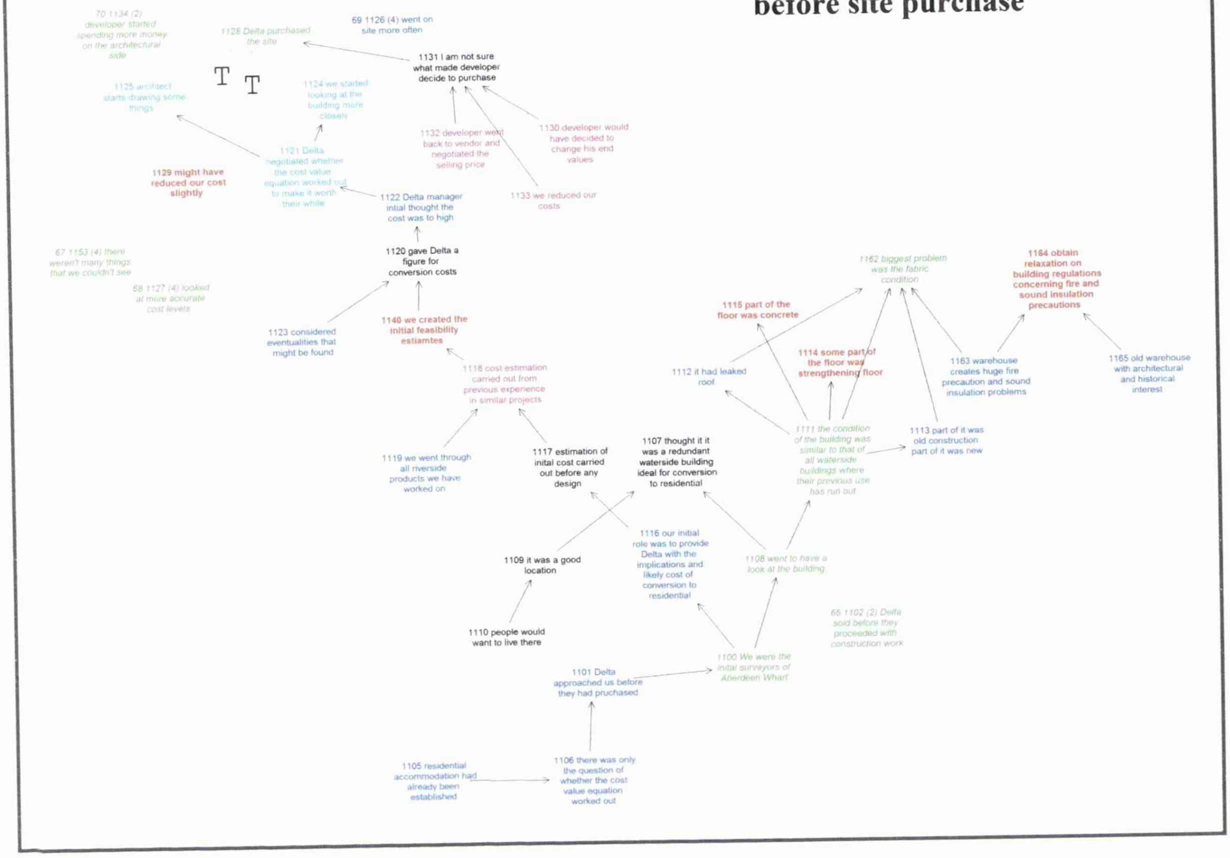


PC Cluster 1 English Heritage issues

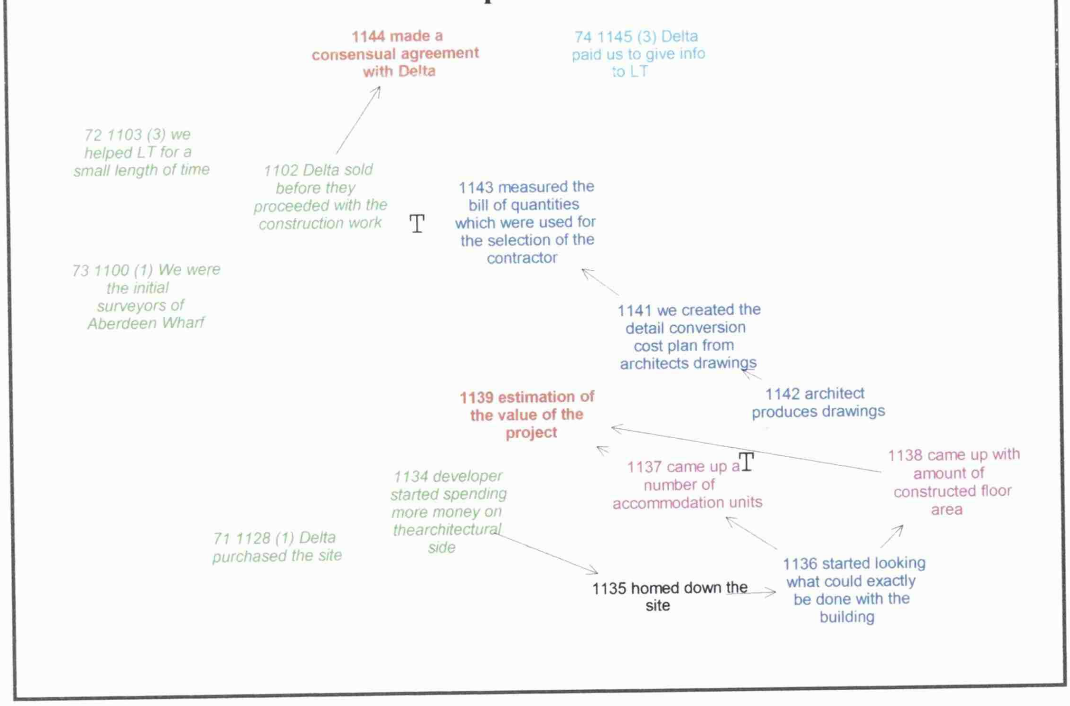


PC Cluster 2 Views on case

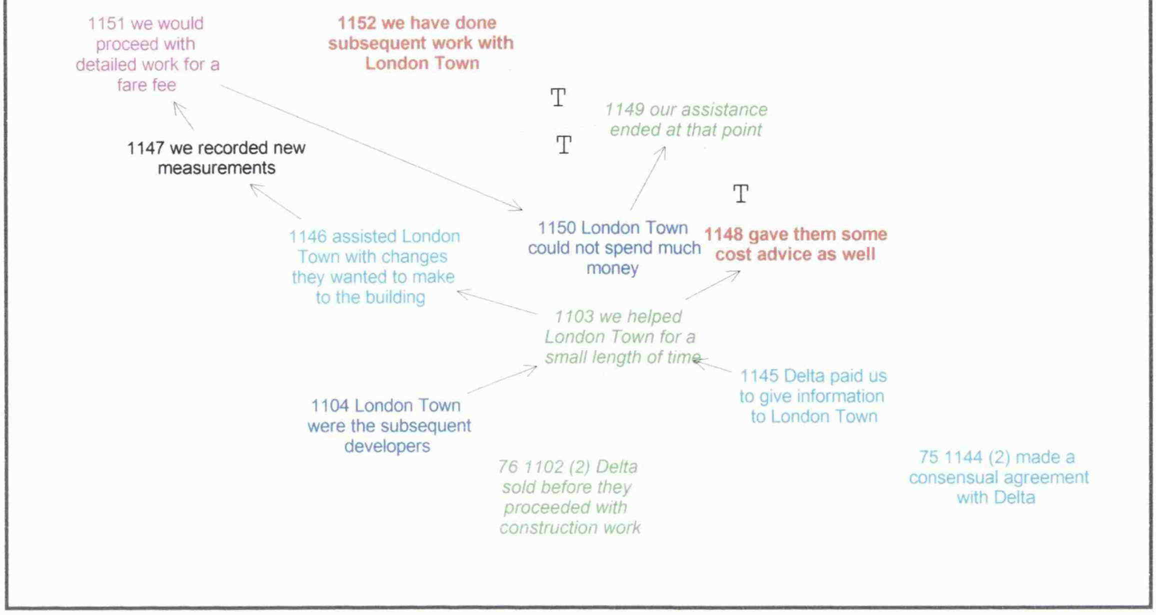
BH Cluster 1 Involvement before site purchase



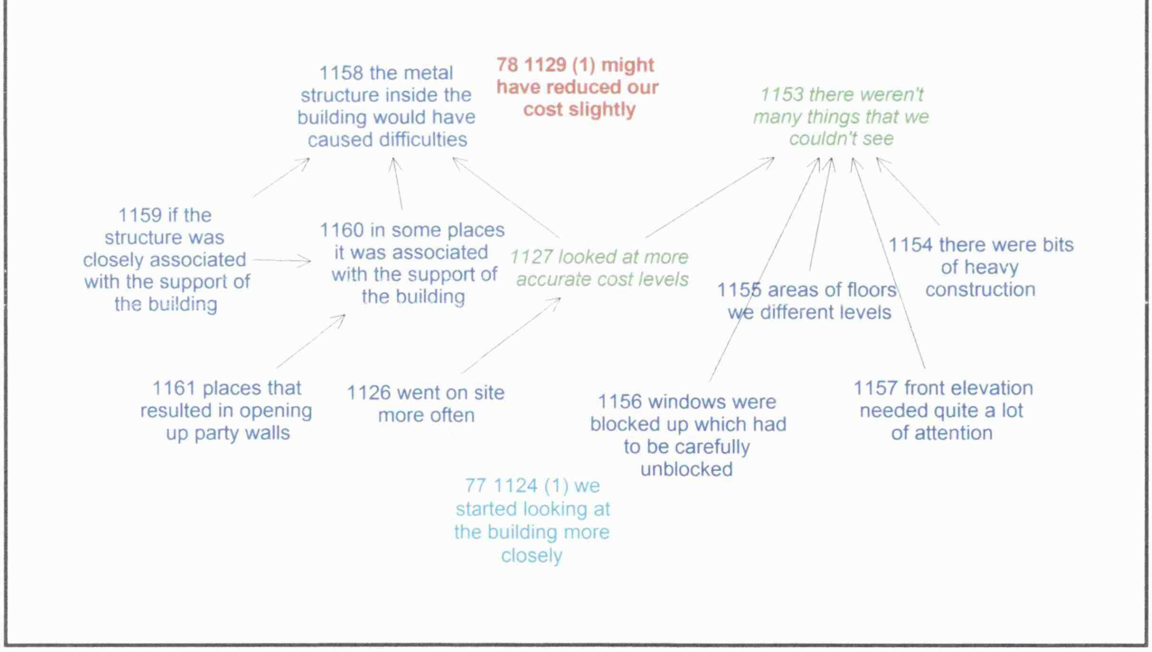
BH Cluster 2 Involvement after site purchase with Delta



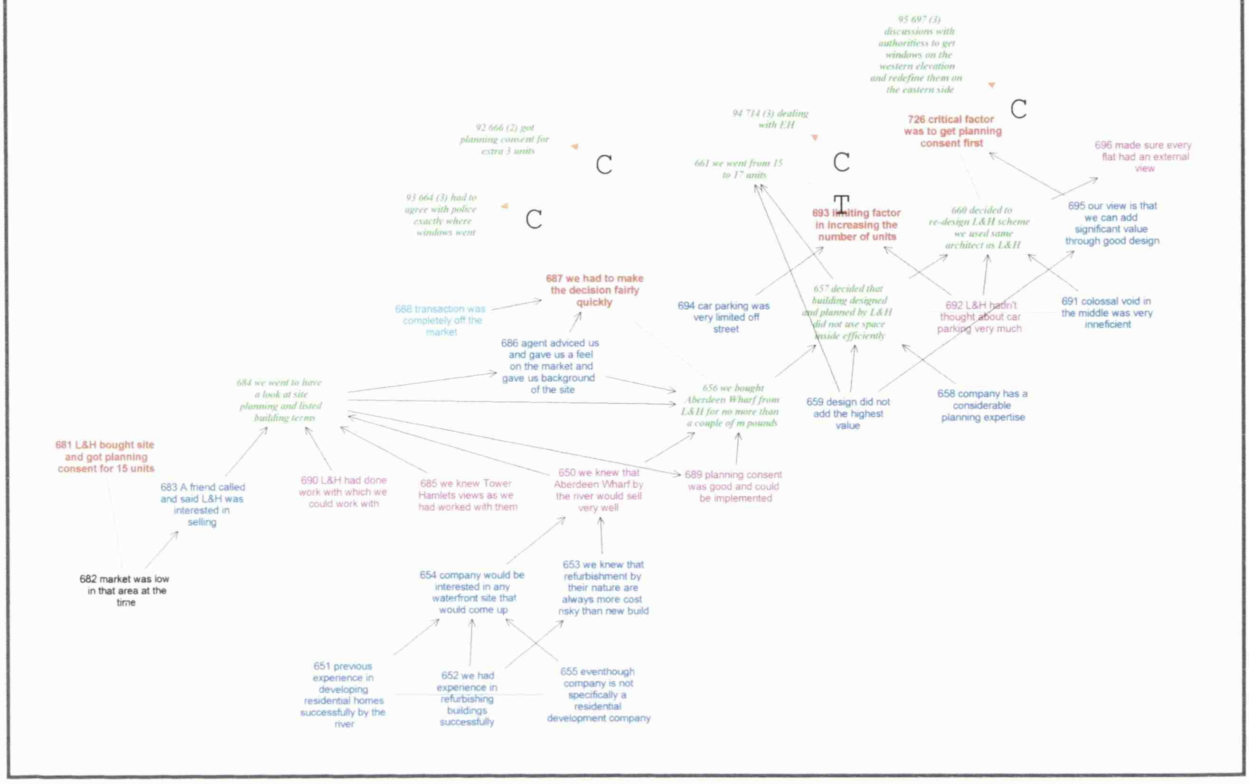
BH Cluster 3 Participation with London Town



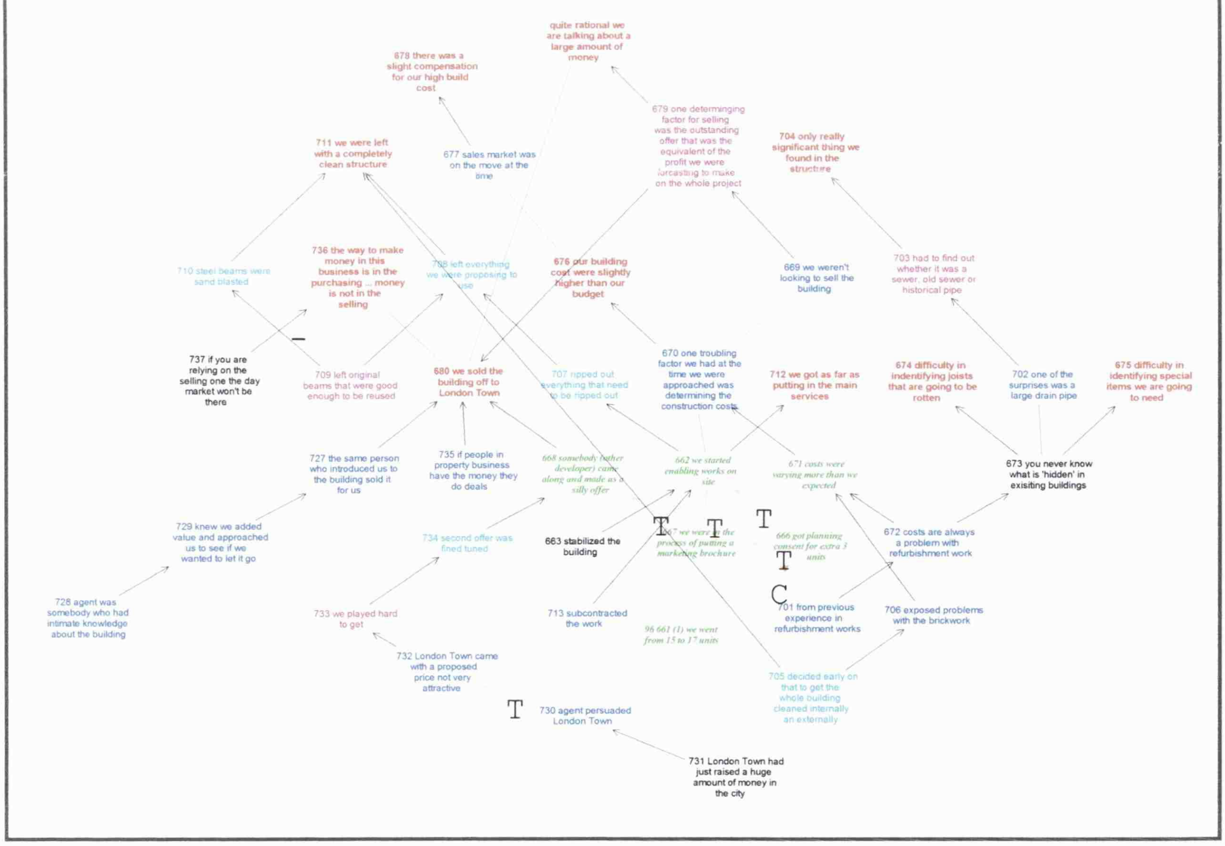
BH Cluster 4 Identification of possible difficulties



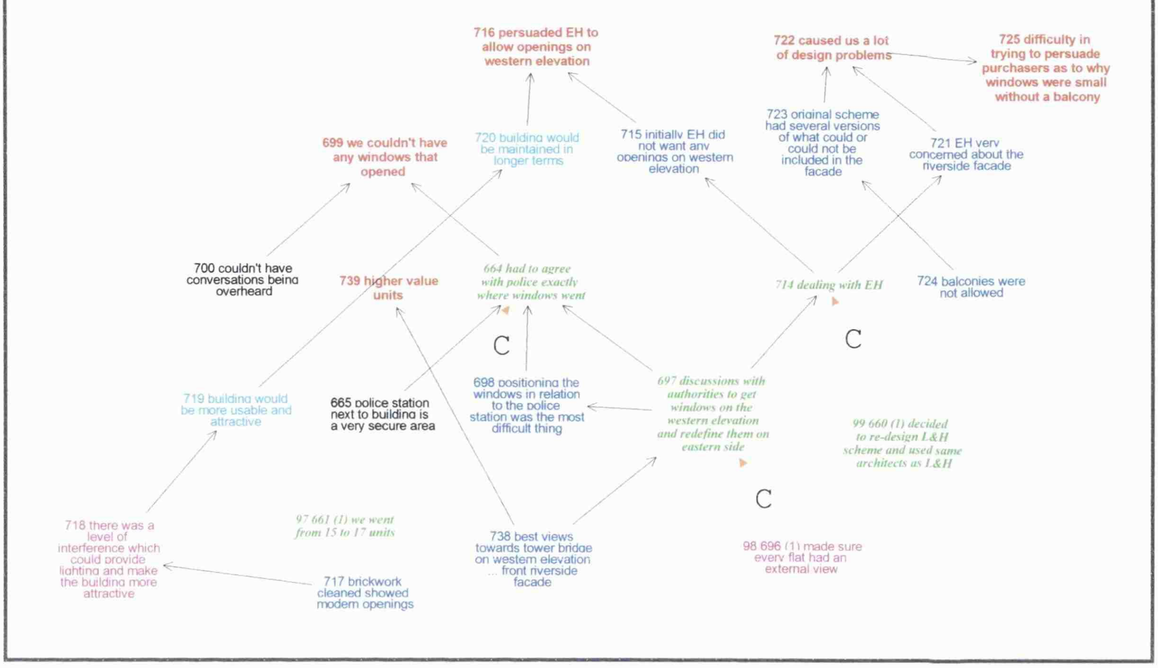
DA Cluster 1 Interest in site



DA Cluster 2 Decision to sell site to London Town



DA Cluster 3 Planning and Design aspects



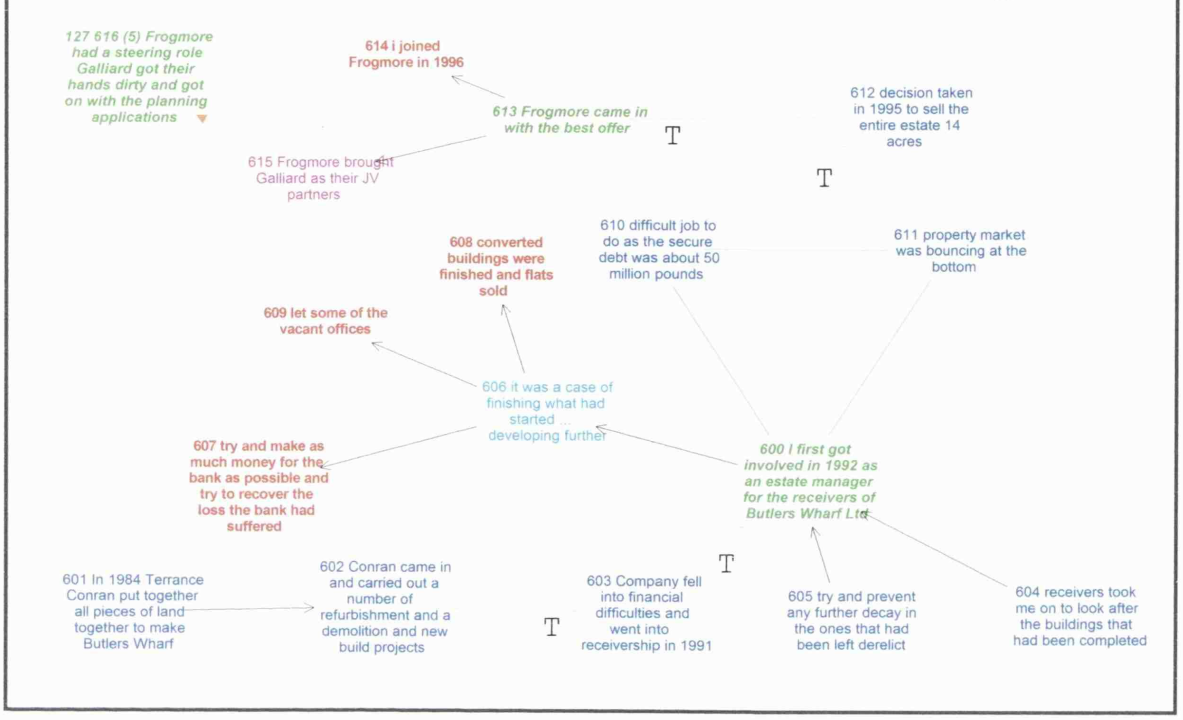
Appendix 6
Wheat Wharf
Project time line

Activity/Month	1998										1999												2000											
	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Wheat Wharf put for sale																																		
Site bought by Angel properties																																		
Stabilization of building																																		
Development of re-design																																		
Construction work on shell																																		
Application and process to change of use of ground floor																																		
Application and process of ammendment to design																																		
Production of drawings																																		
Preparation tender package for fit out and negotiation with contractor (e)																																		
Construction work on fit out																																		
Sale of units off plan																																		
Occupation																																		

Appendix 7

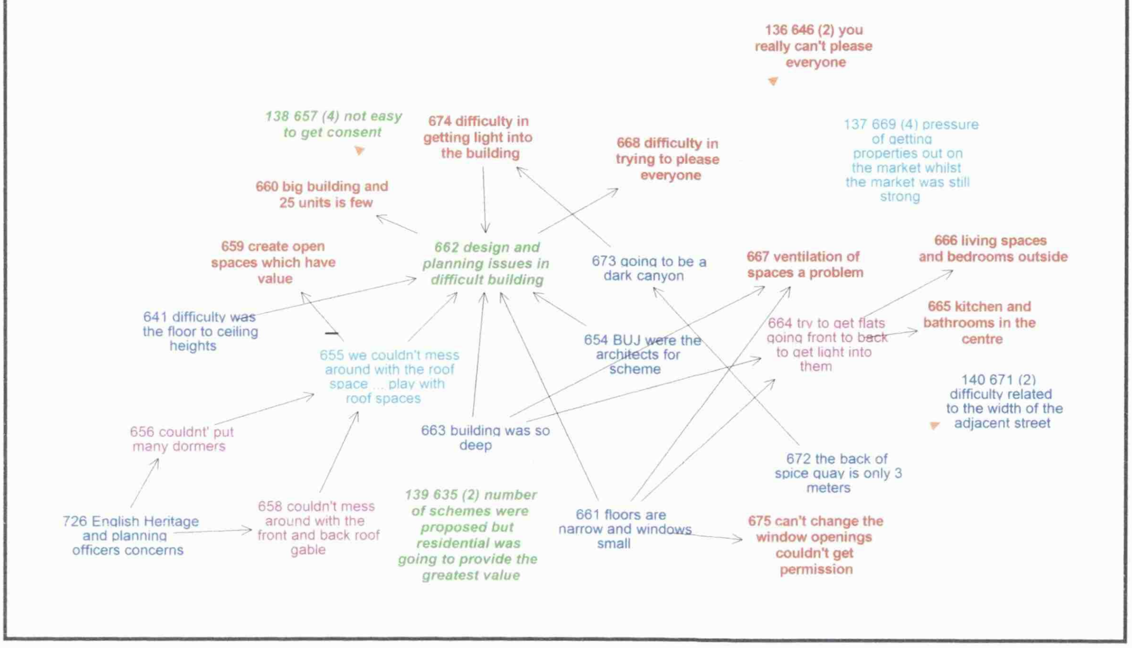
Wheat Wharf Individual Actors' Clusters

CD Cluster 1 Butlers Wharf Background

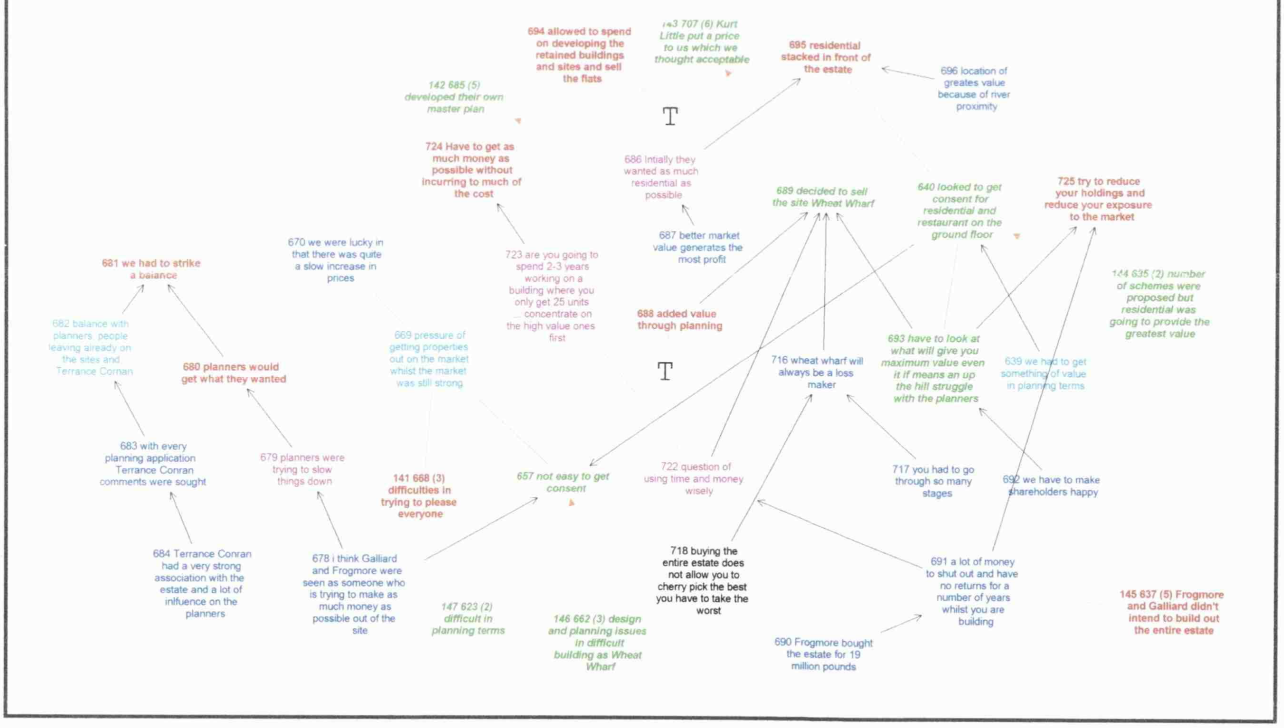


CD Cluster 2 Difficulties related to Wheat Wharf

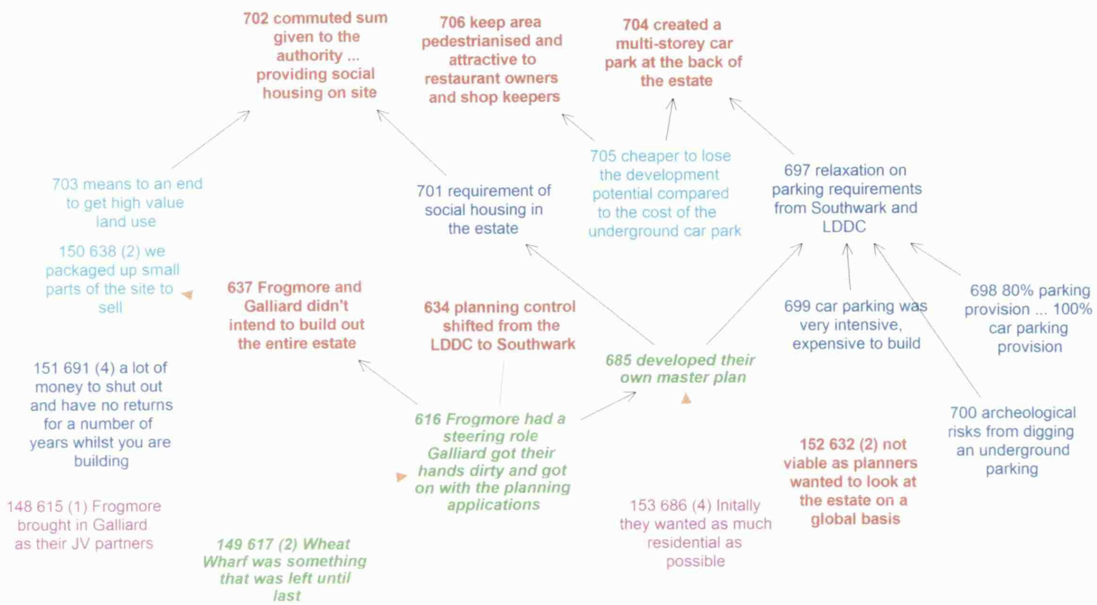
CD Cluster 3 Design and Planning issues for Frogmore



CD Cluster 4 Decision to sell Wheat Wharf

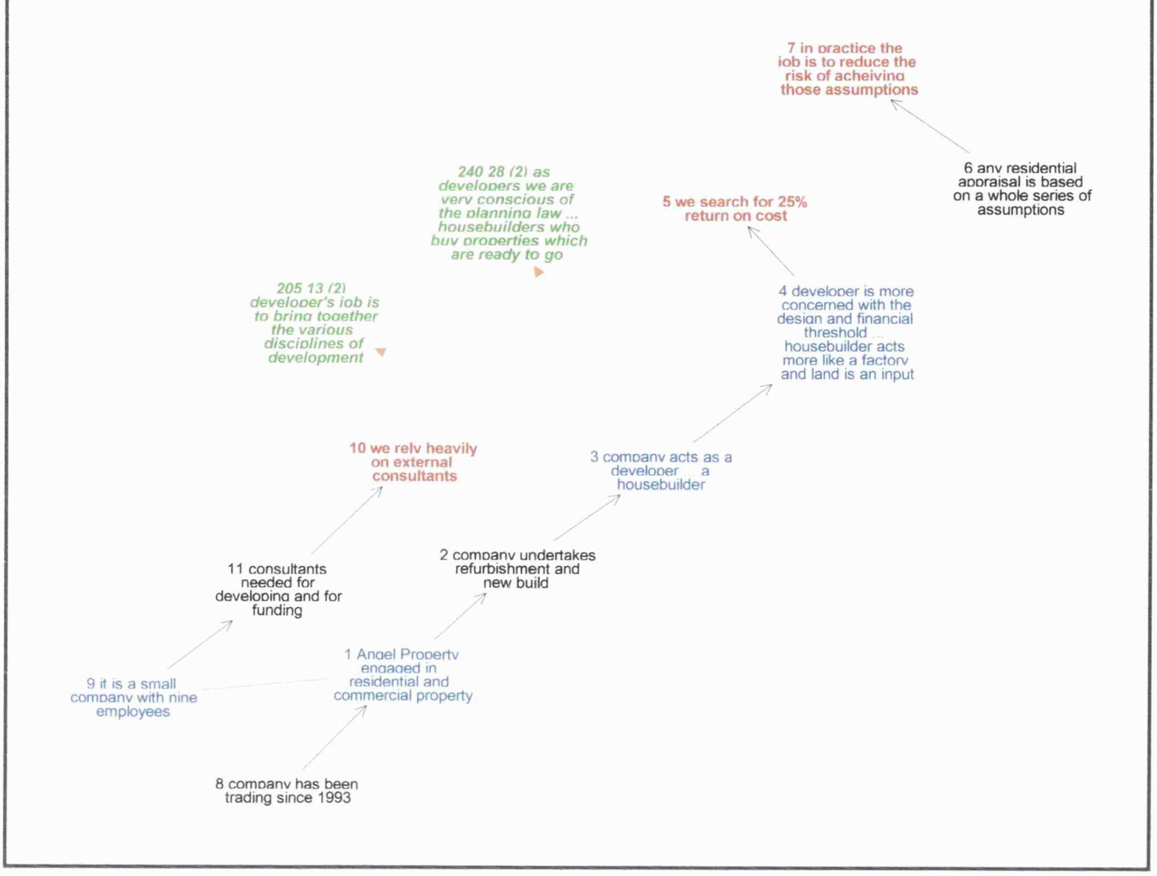


CD Cluster 5 Issues related with Butler's Wharf Master Plan

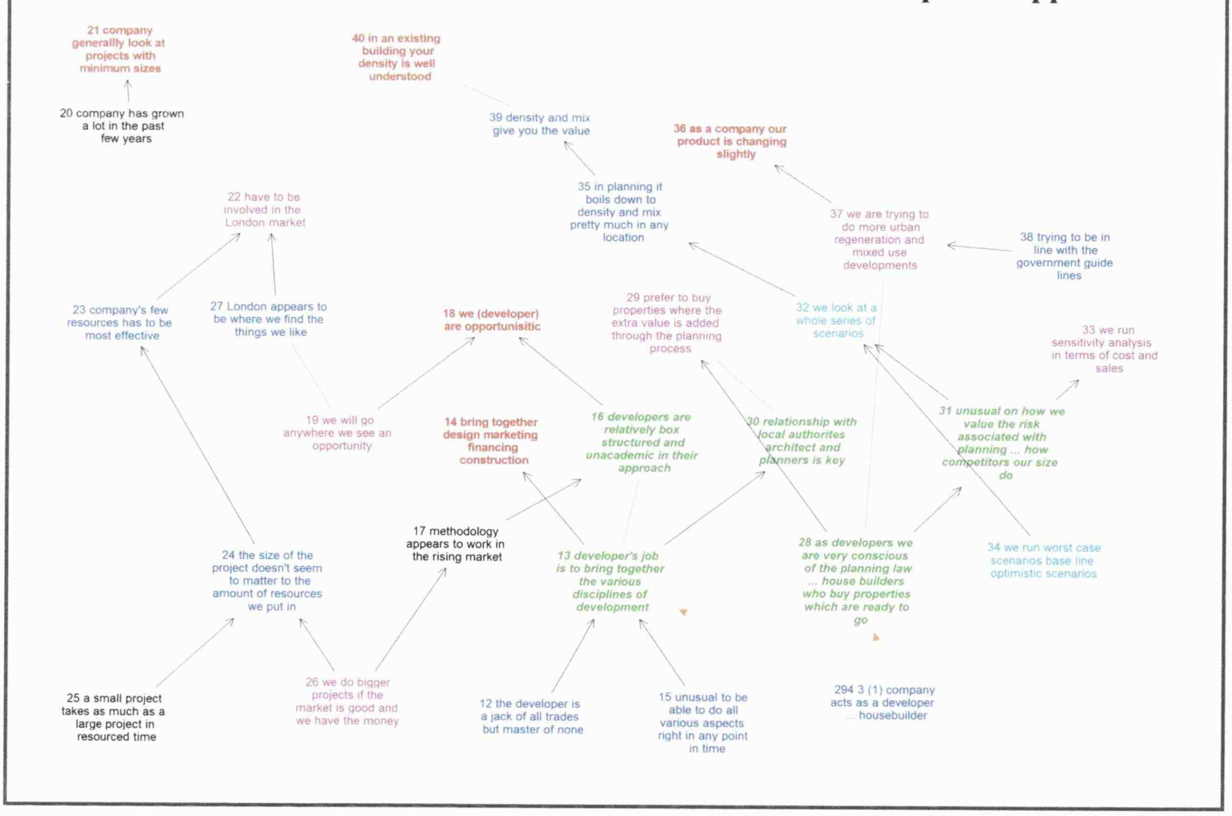


CD Cluster 6 Views of purchase

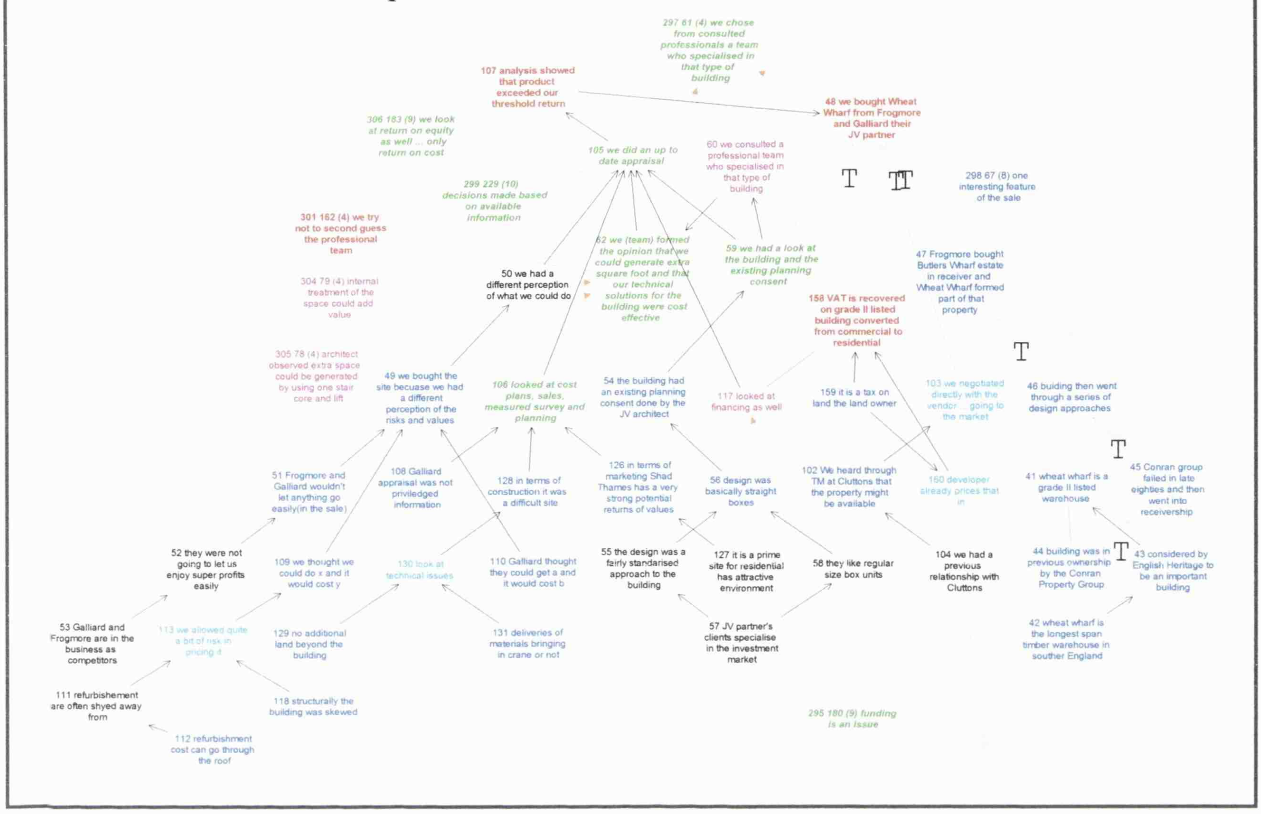
KL Cluster 1 Company Background



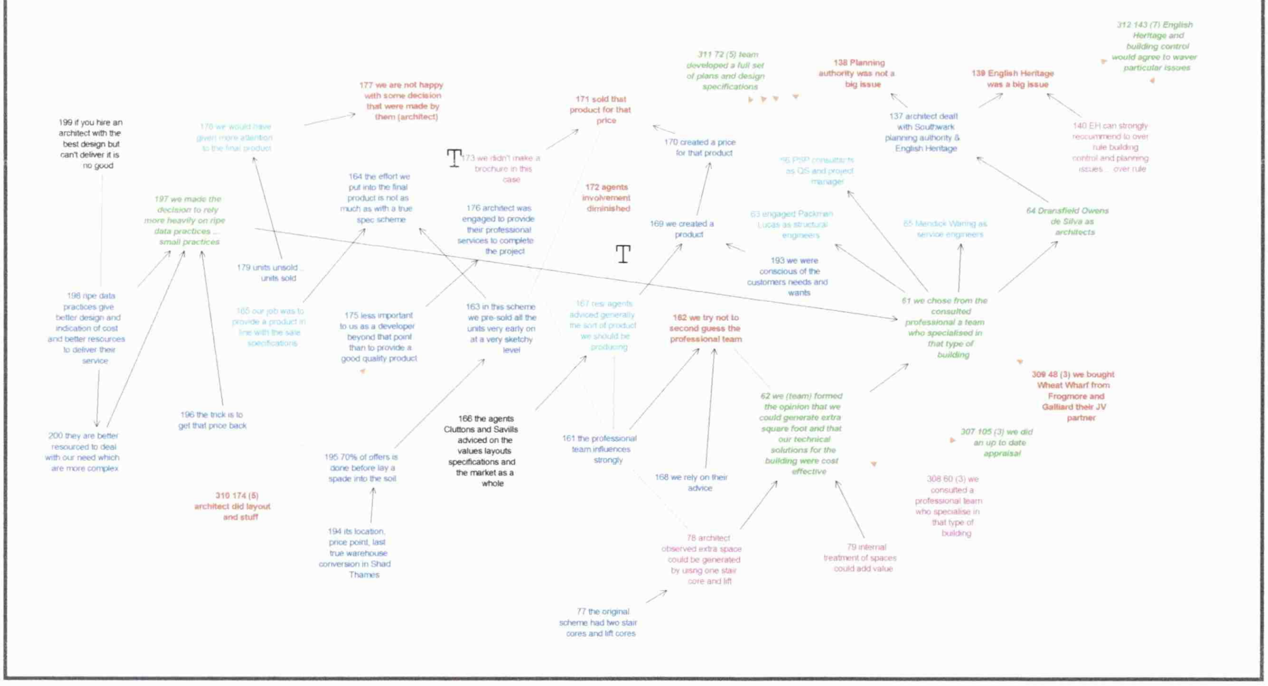
KL Cluster 2 General development approach



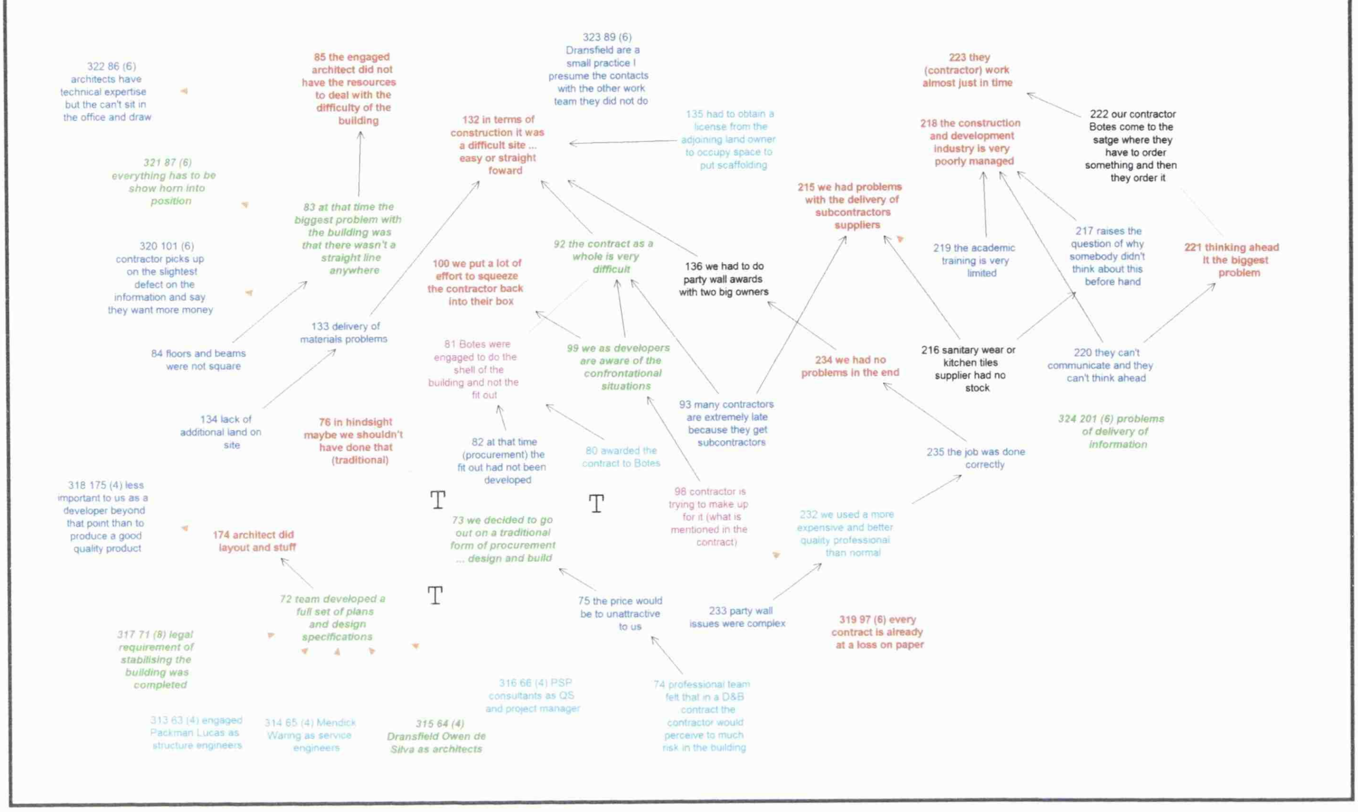
KL Cluster 3 Criteria to purchase site



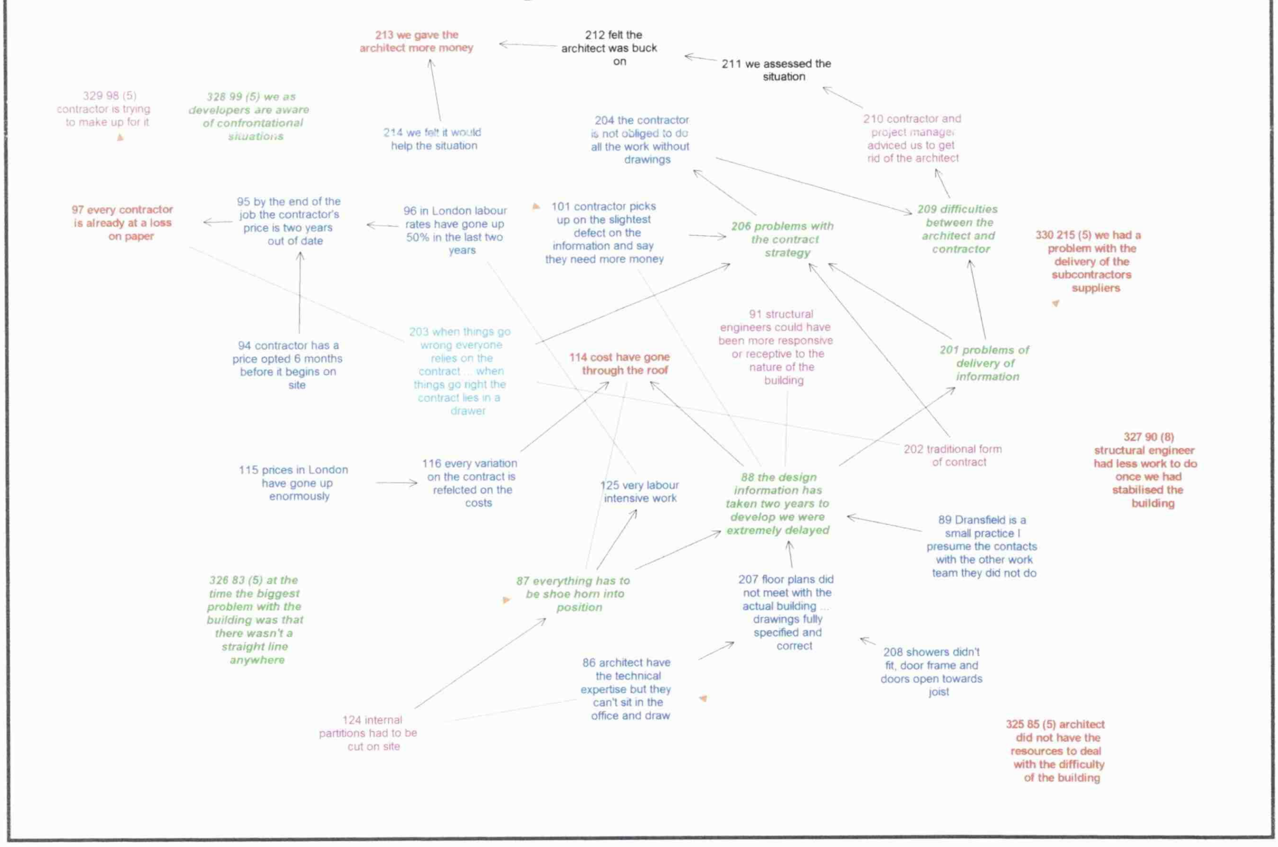
KL Cluster 4 Selection of Professional Team



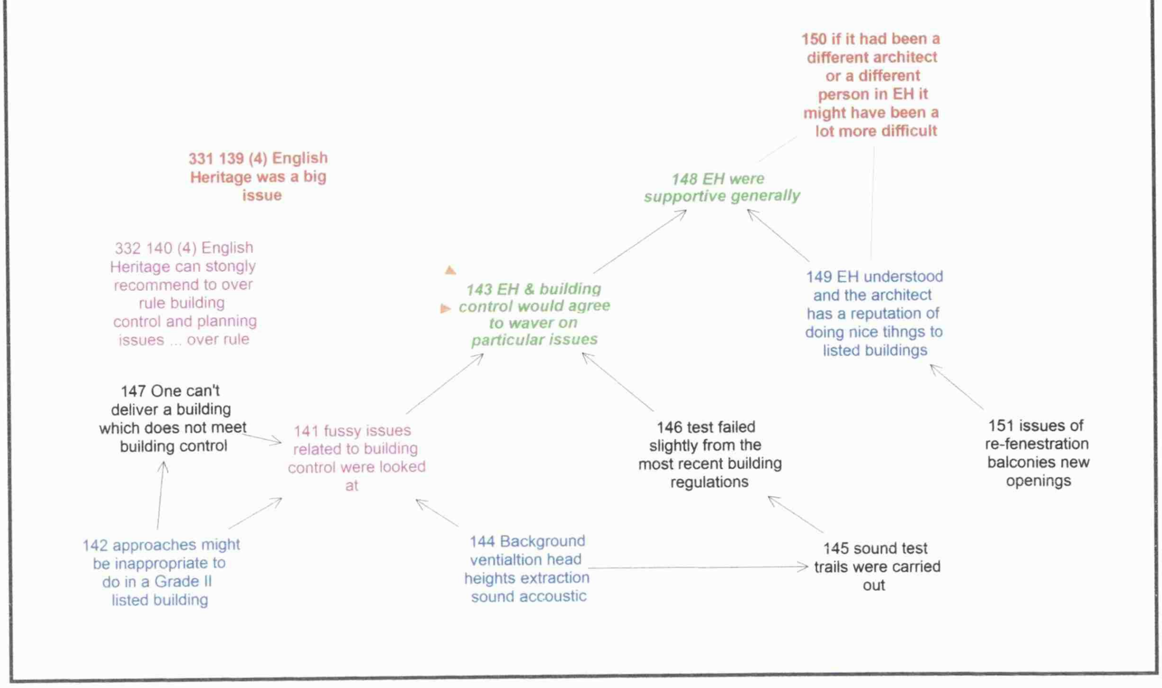
KL Cluster 5 Contract & site difficulties



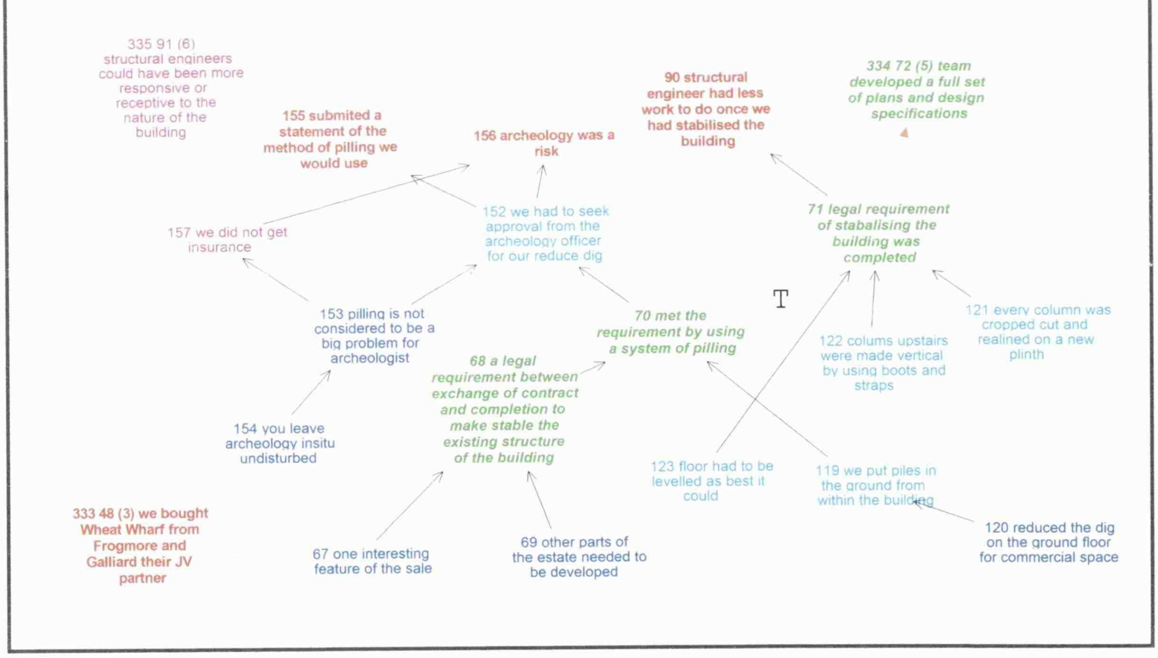
KL Cluster 6 Difficulties with design & effects on the contract



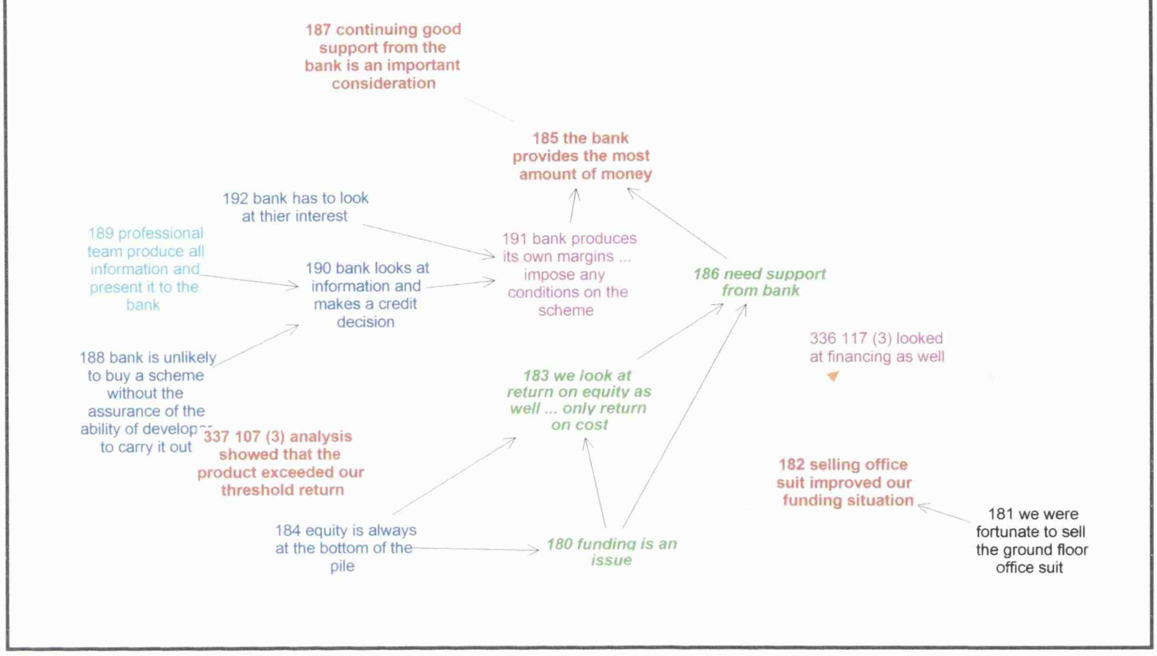
KL Cluster 7 Dealing with English Heritage



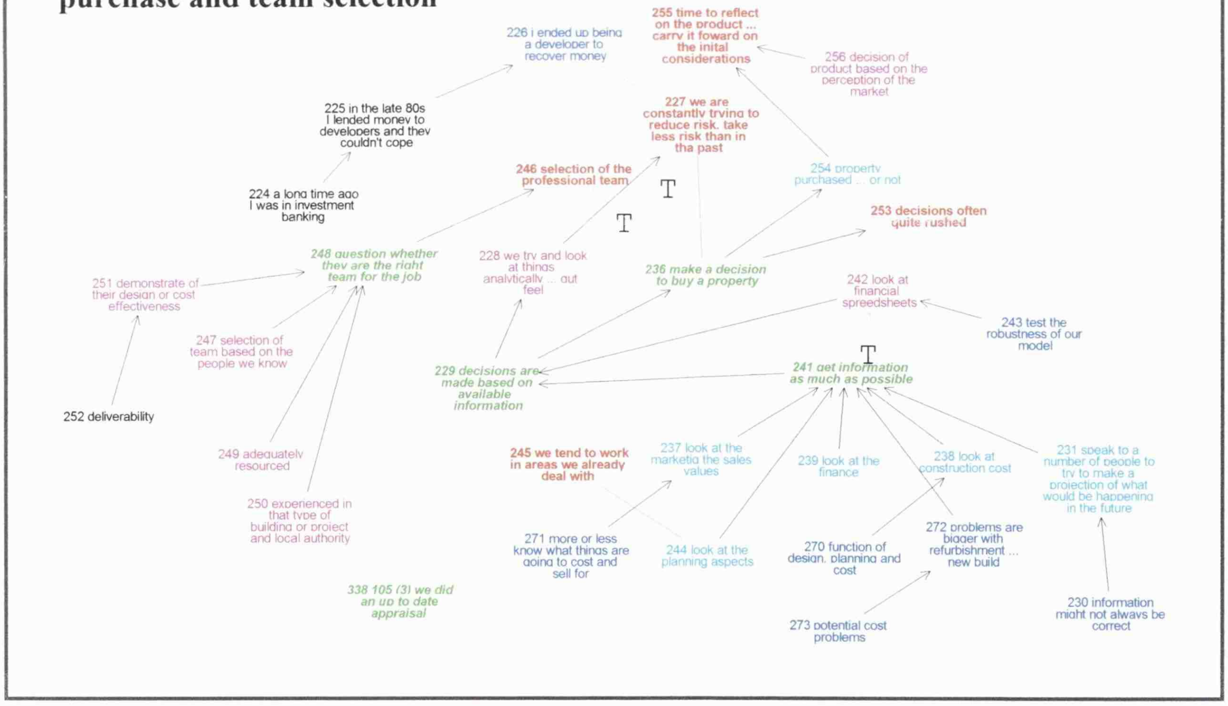
KL Cluster 8 Stabilising requirement



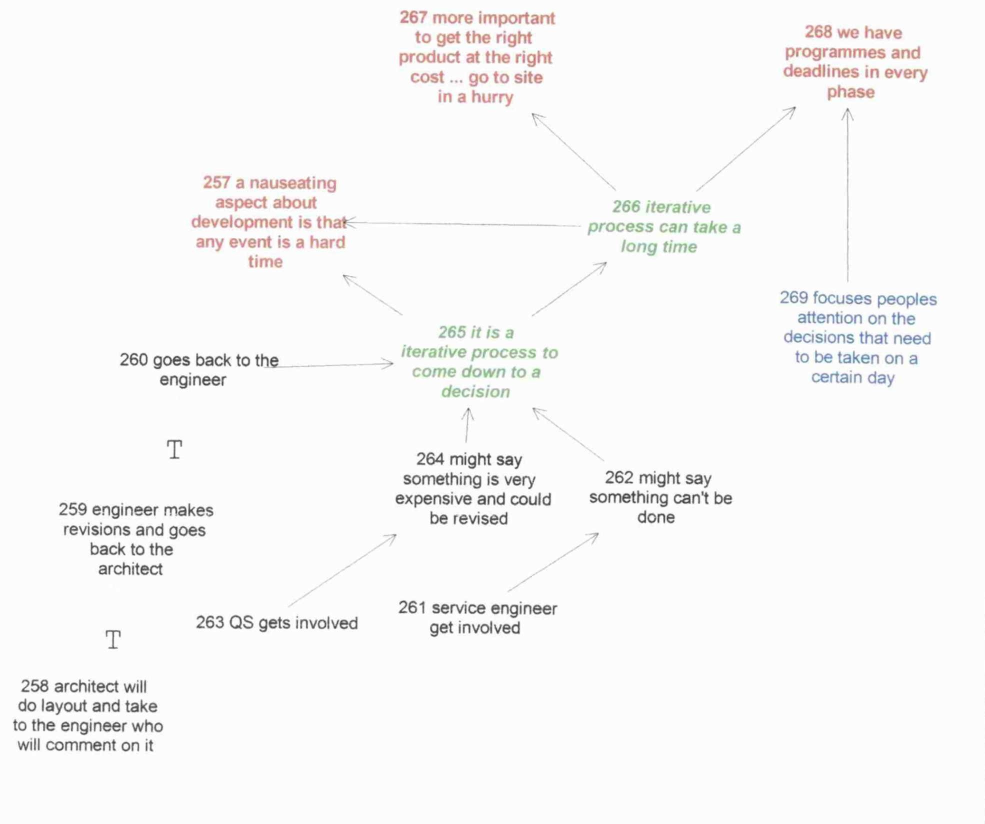
KL Cluster 9 Obtaining funding



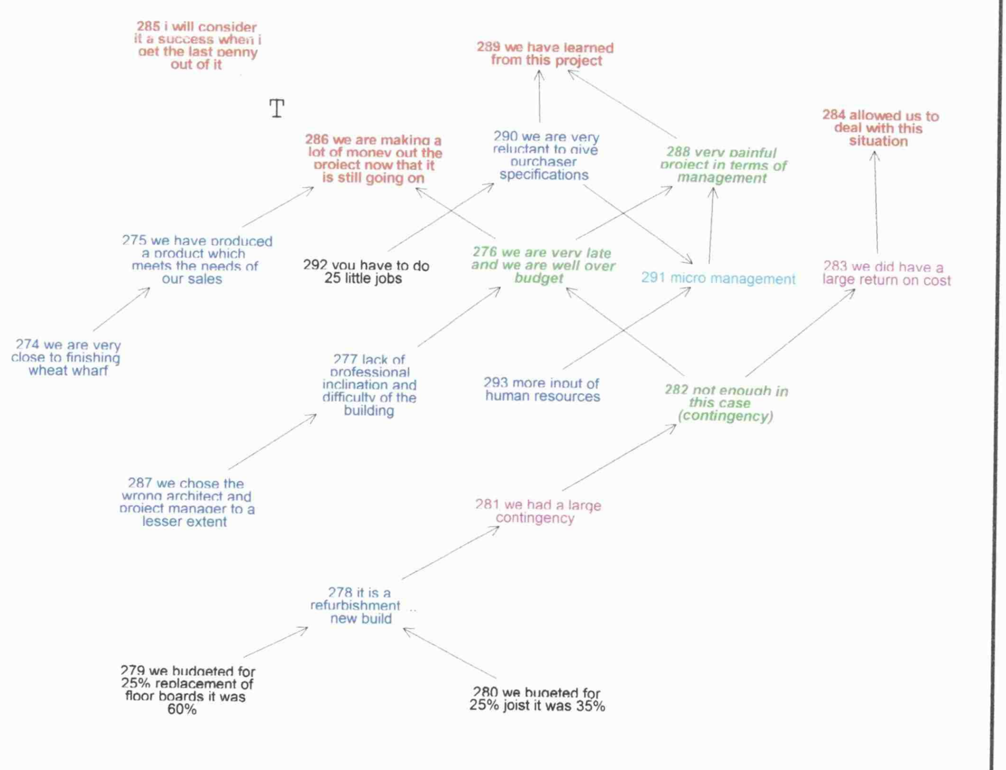
KL Cluster 10 General views on site purchase and team selection



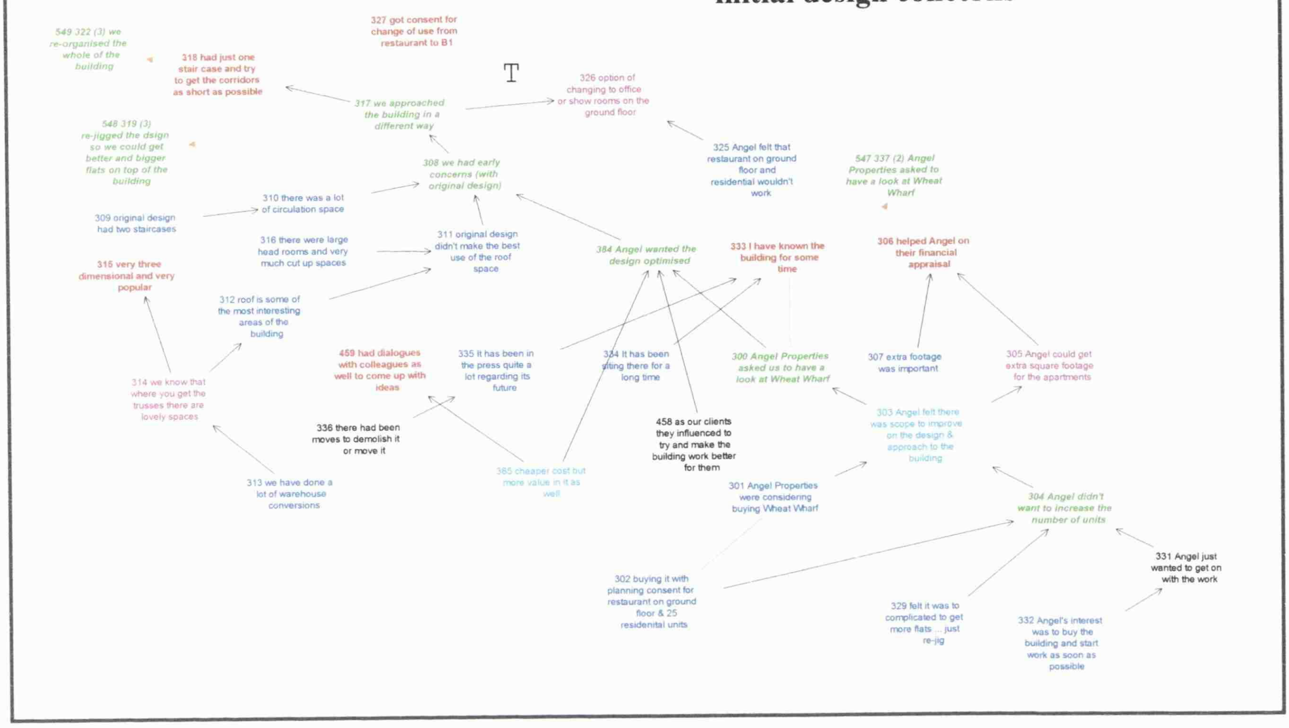
KL Cluster 11 General views on development as an iterative process



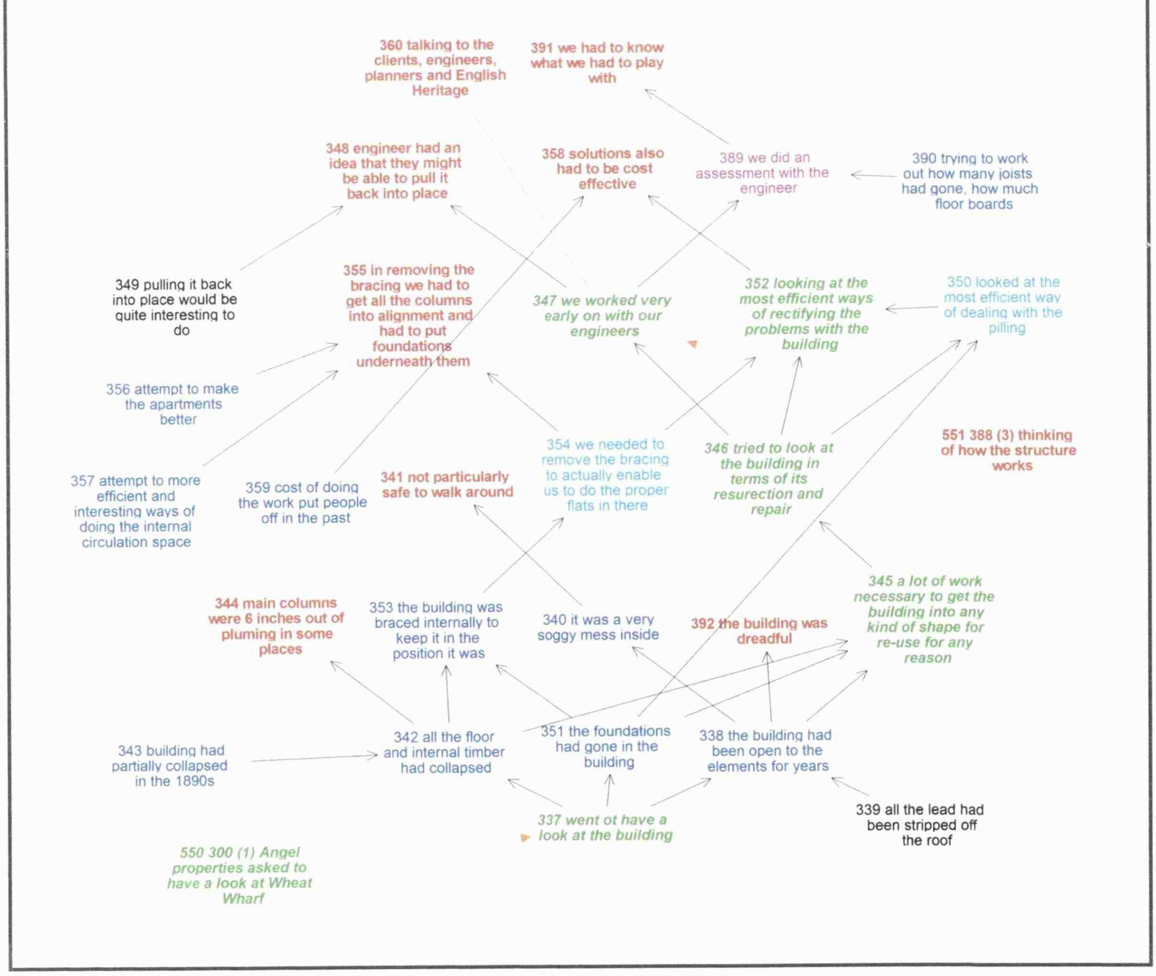
KL Cluster 12 Being over budget



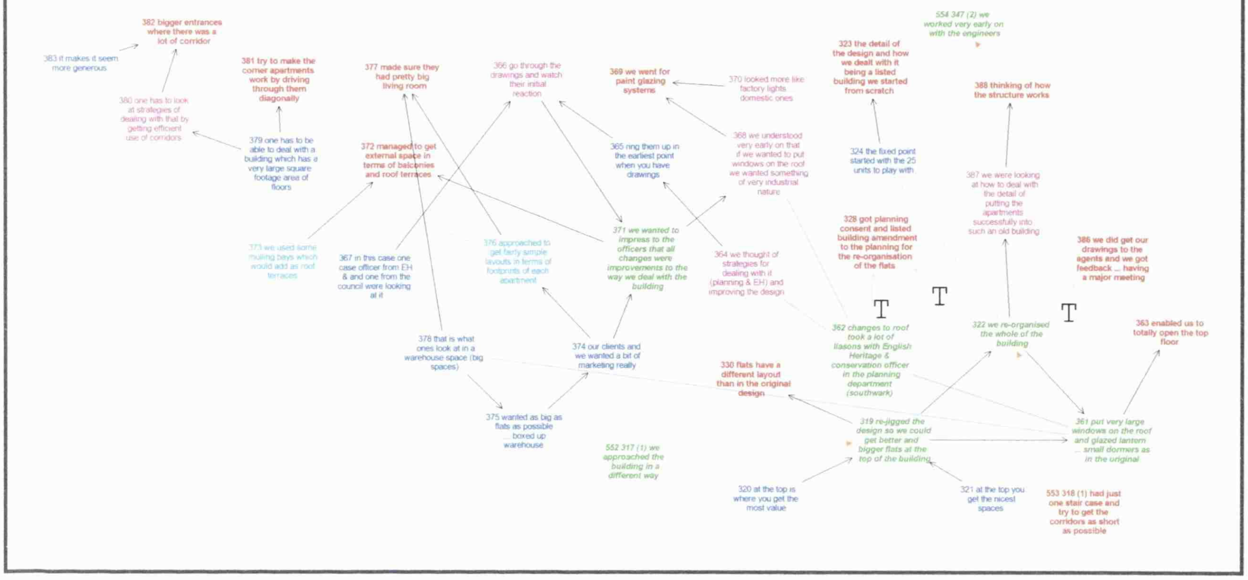
JD Cluster 1 Angel's approach and initial design concerns



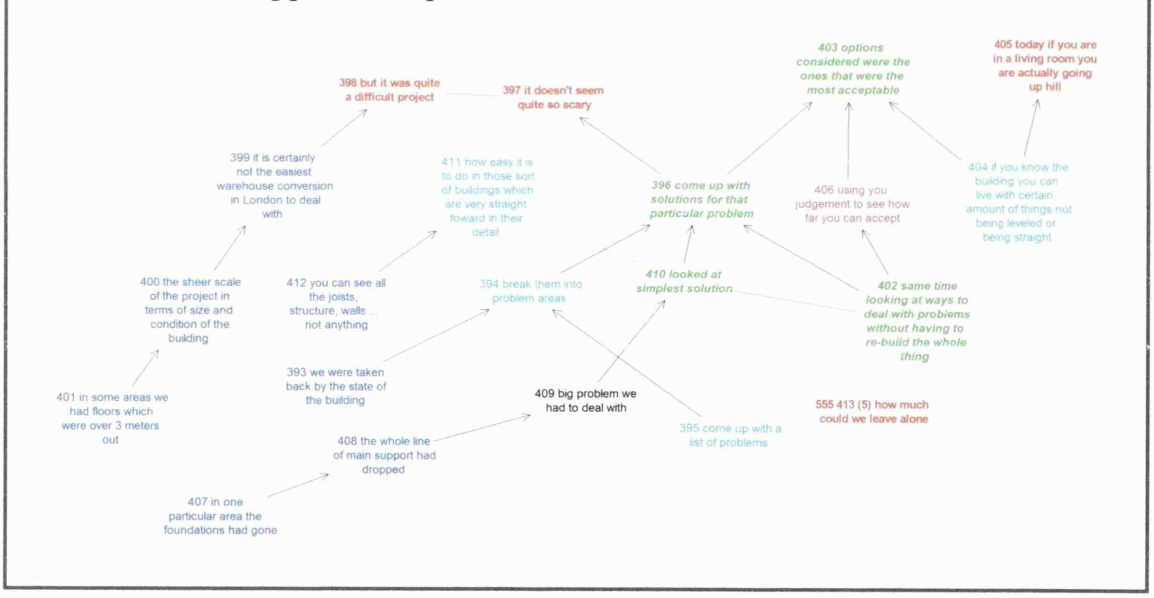
JD Cluster 2 State of Building & initial approach



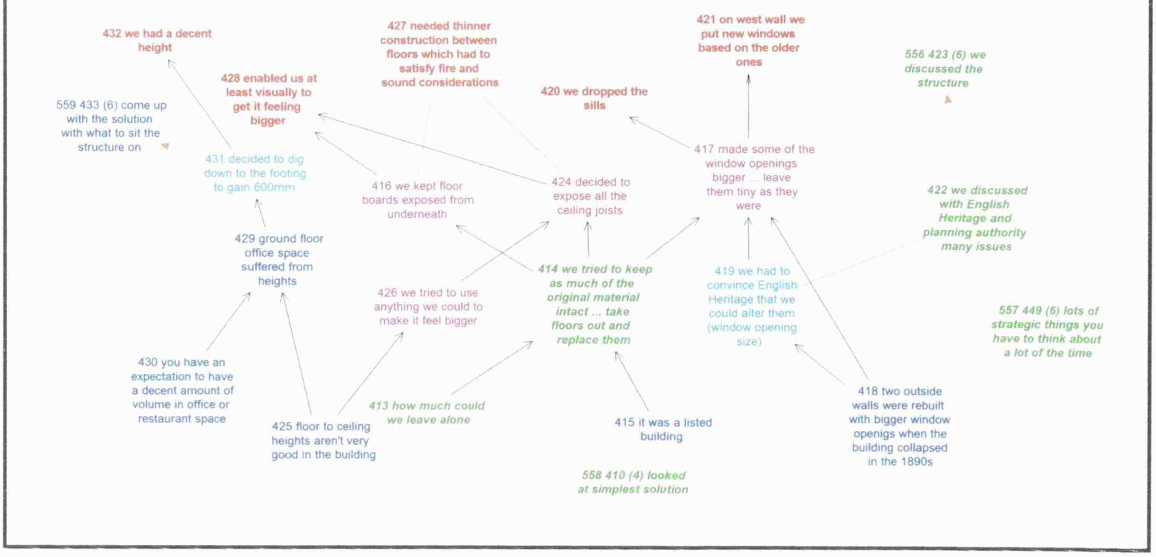
JD Cluster 3 Re-jigging the layout & approach to planners and EH



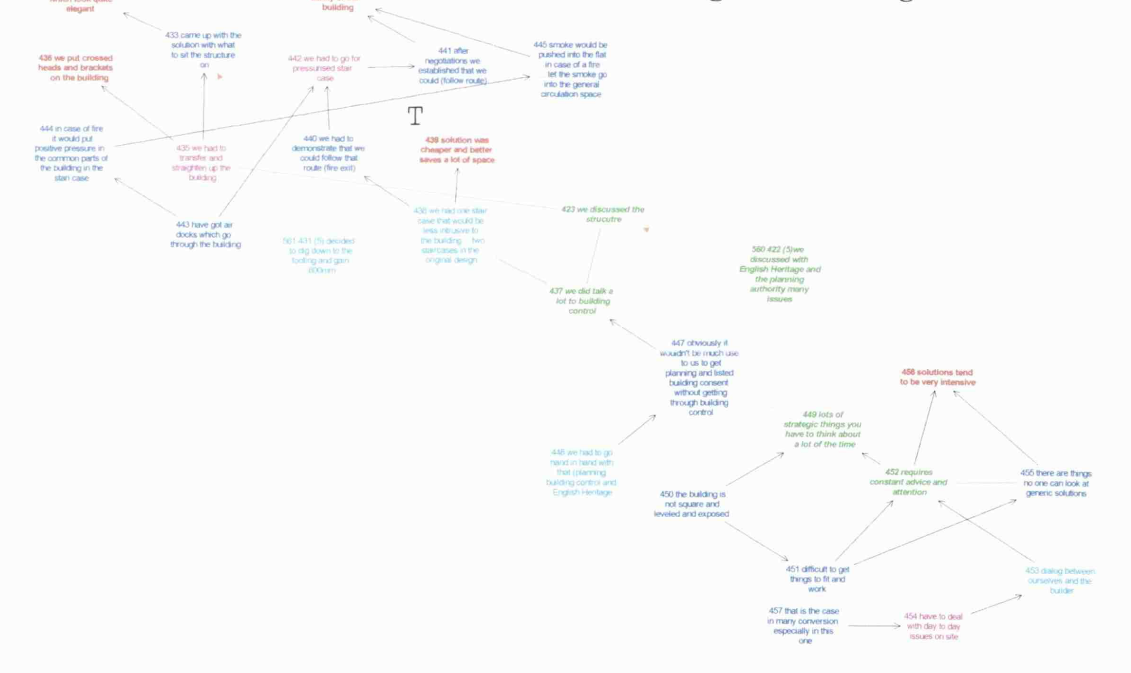
JD Cluster 4 Approach to problems



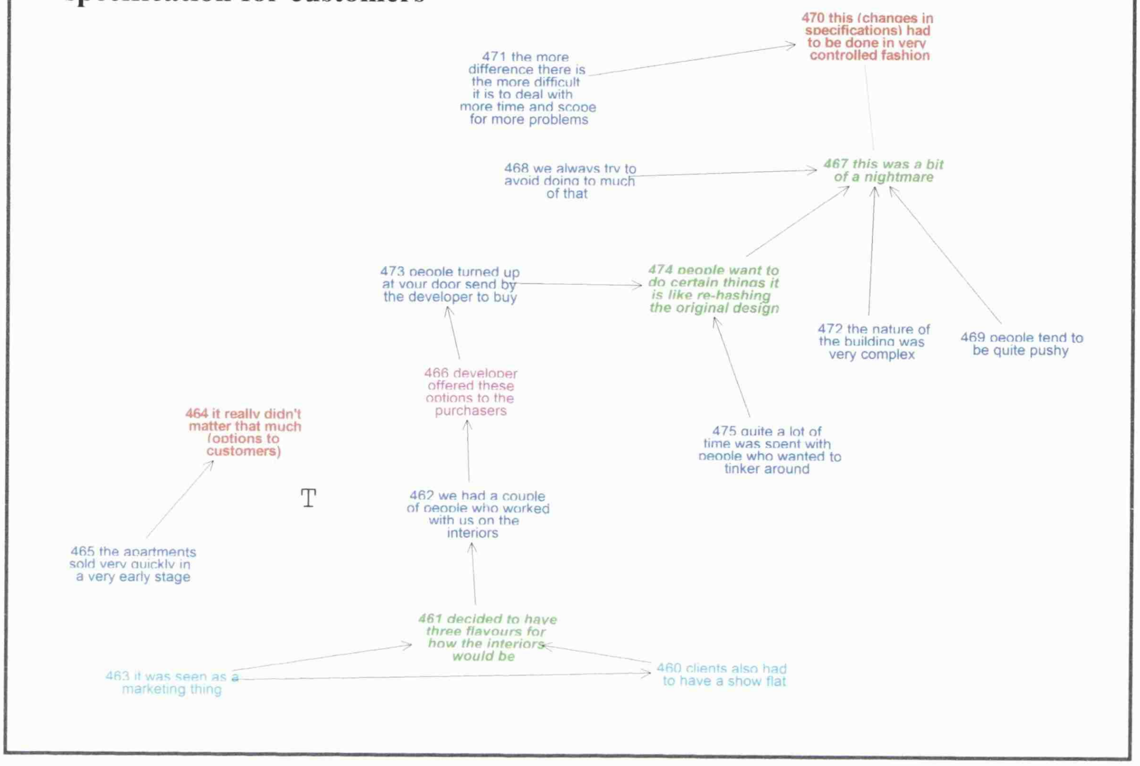
JD Cluster 5 Solutions to problems vs original elements



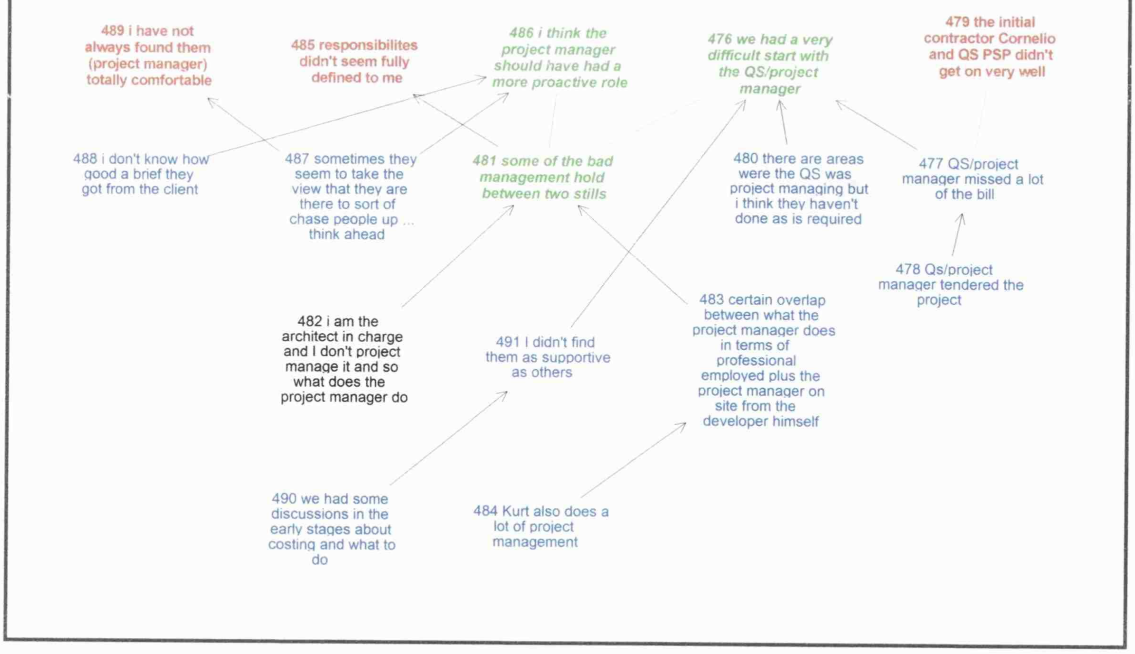
JD Cluster 6 General Strategy & dealing with building control



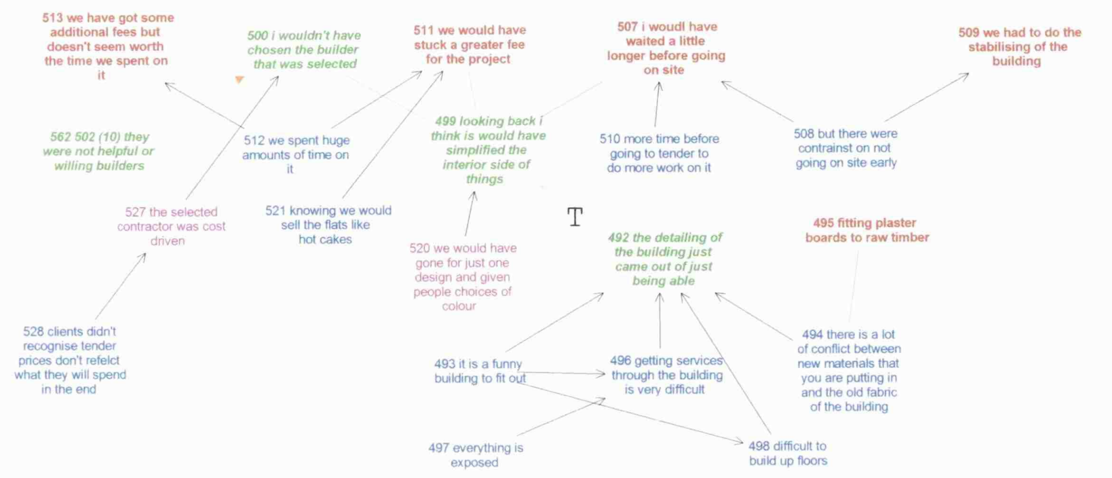
JD Cluster 7 Option specification for customers



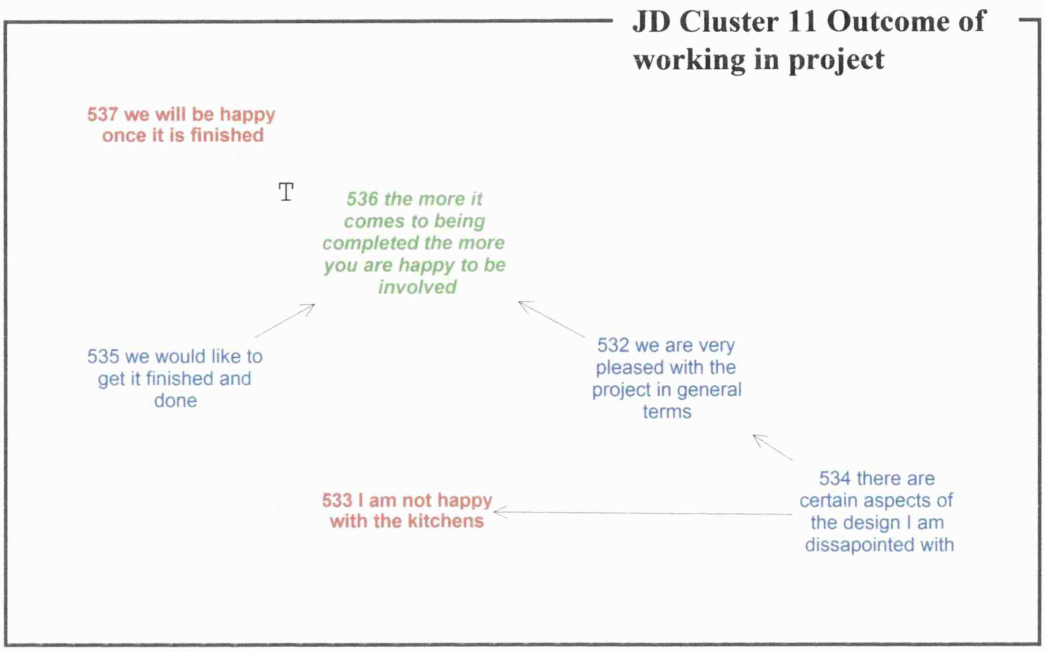
JD Cluster 8 Relation & views with project management

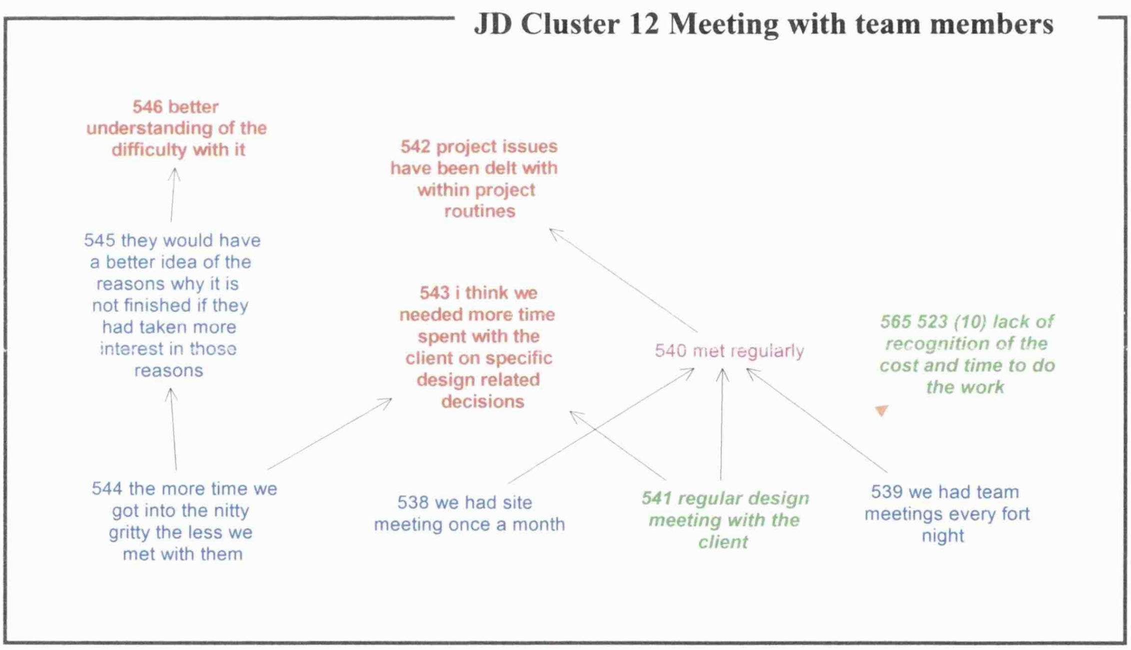


JD Cluster 9 A look back at the project

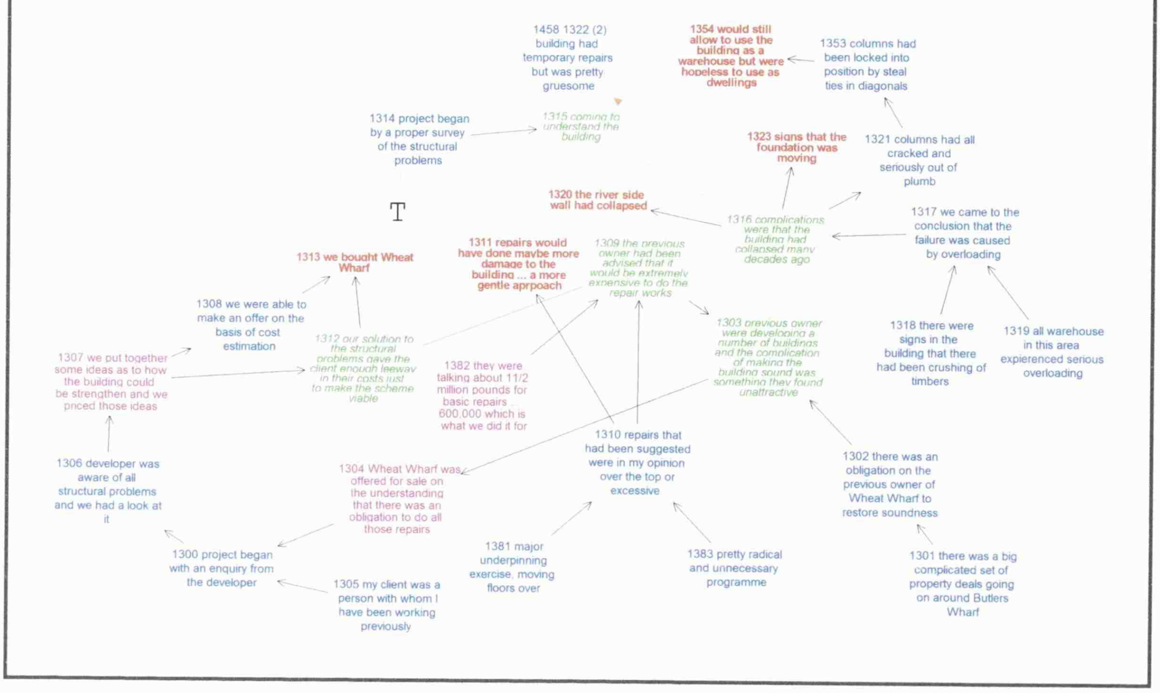


JD Cluster 10 Problems with contractor & lack of understanding from client

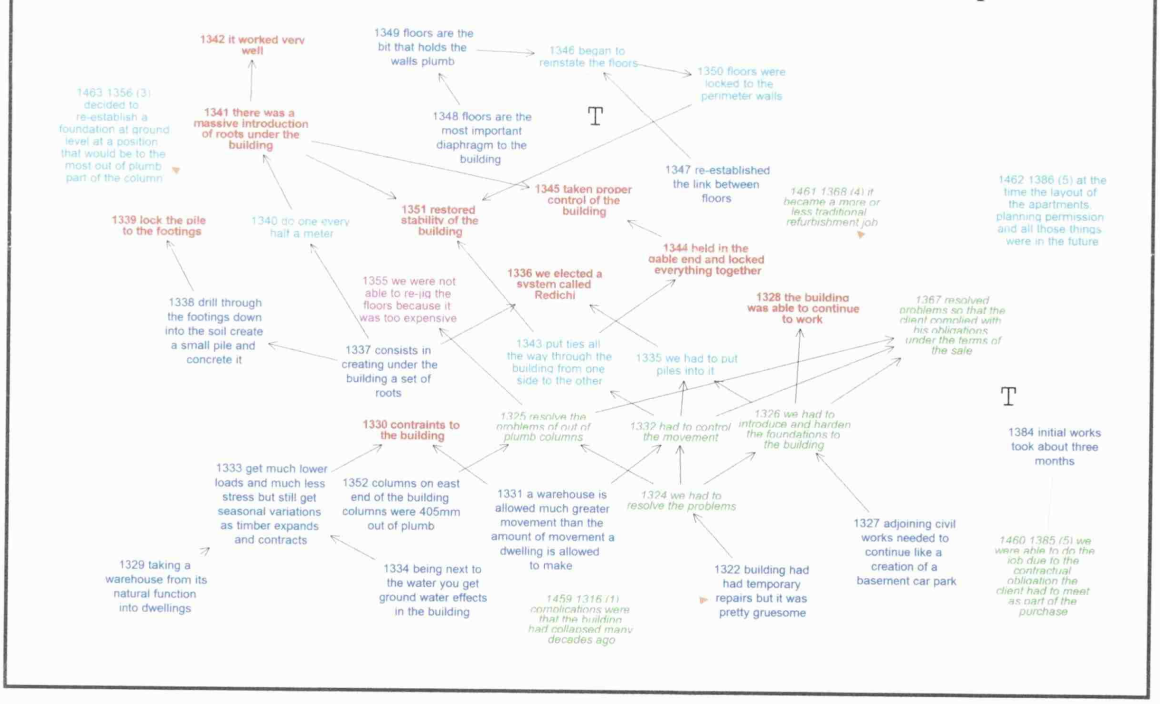

JD Cluster 11 Outcome of working in project
537 we will be happy once it is finished
T
536 the more it comes to being completed the more you are happy to be involved
535 we would like to get it finished and done
532 we are very pleased with the project in general terms
534 there are certain aspects of the design I am dissapointed with
533 I am not happy with the kitchens


JD Cluster 12 Meeting with team members
546 better understanding of the difficulty with it
542 project issues have been delt with within project routines
545 they would have a better idea of the reasons why it is not finished if they had taken more interest in those reasons
543 i think we needed more time spent with the client on specific design related decisions
540 met regularly
565 523 (10) lack of recognition of the cost and time to do the work
544 the more time we got into the nitty gritty the less we met with them
538 we had site meeting once a month
541 regular design meeting with the client
539 we had team meetings every fort night

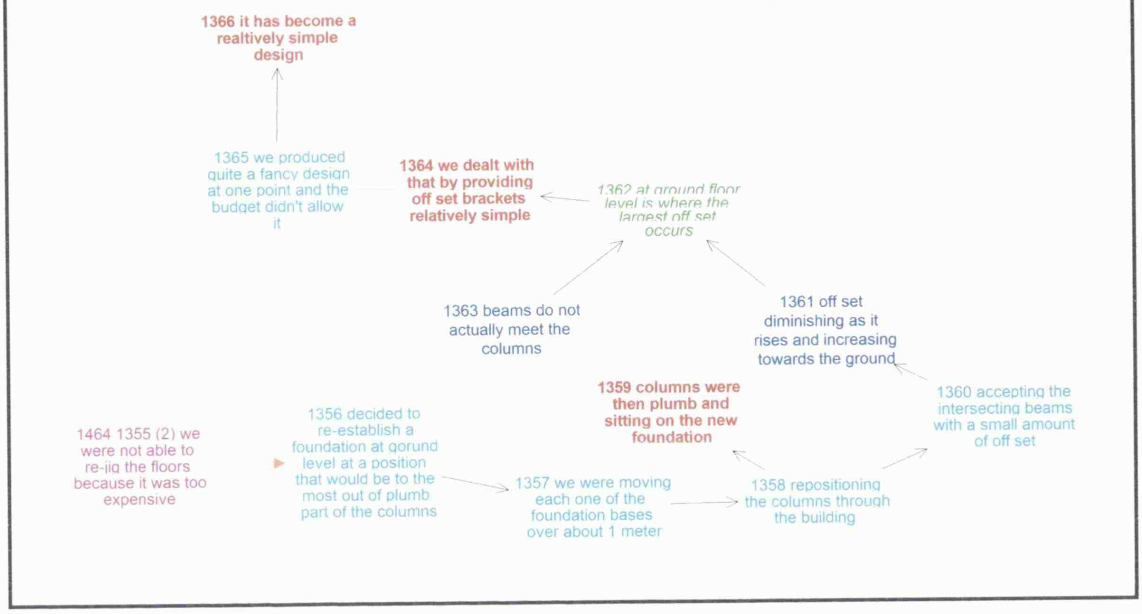
RP Cluster 1 Background and initiation



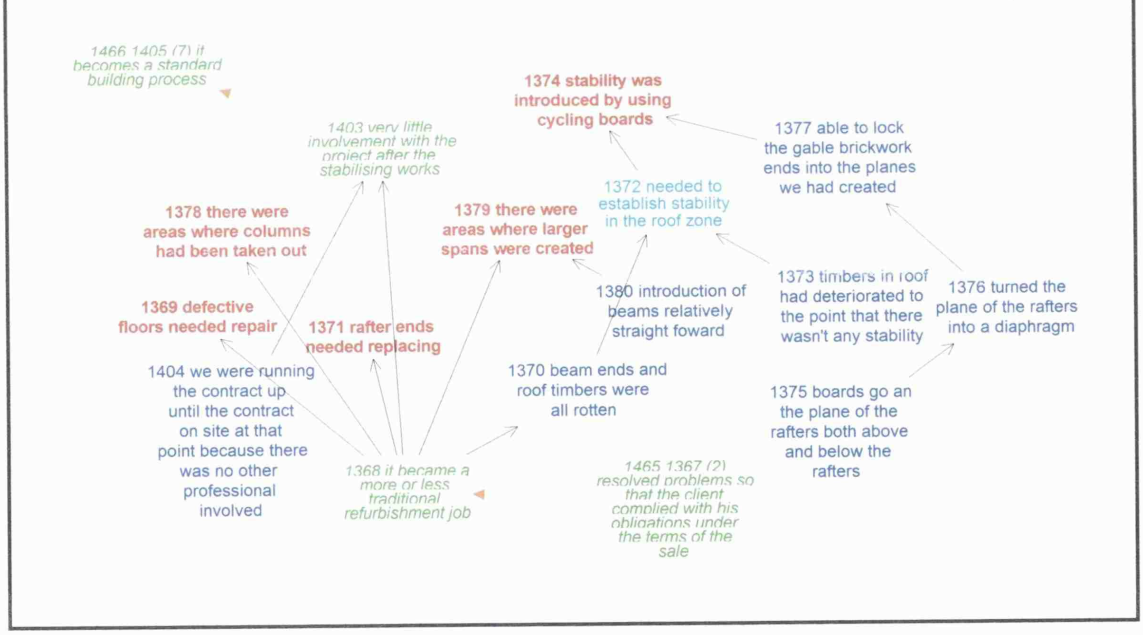
RP Cluster 2 Structural problems



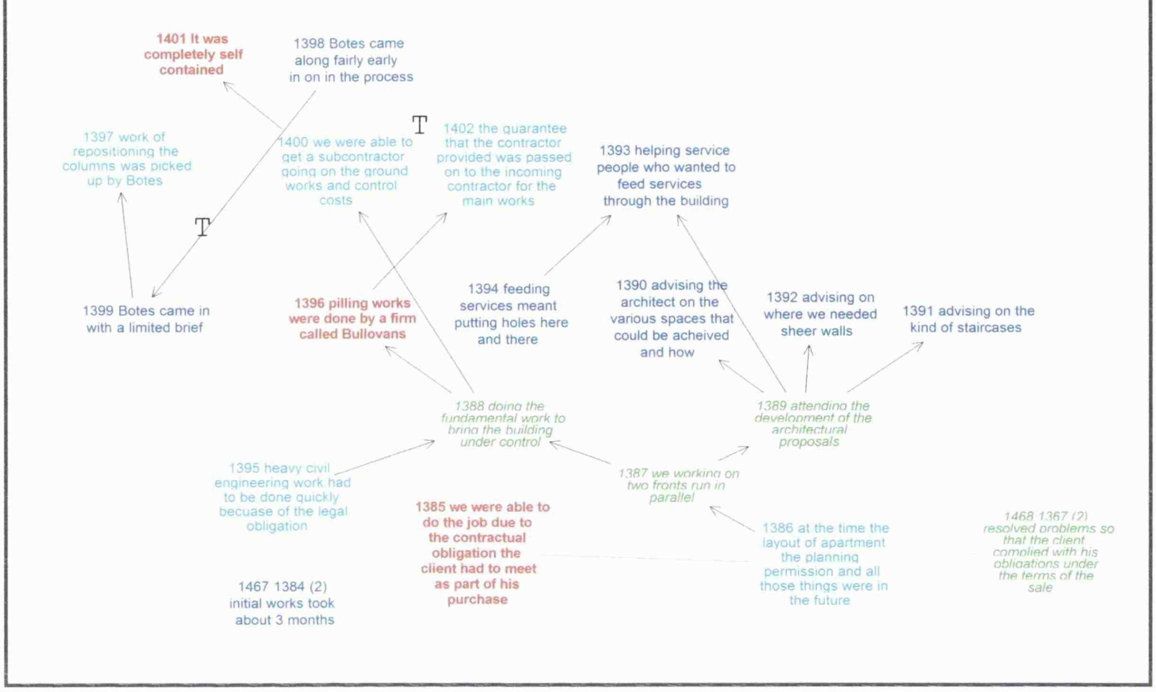
RP Cluster 3 Dealing with out of plumb columns



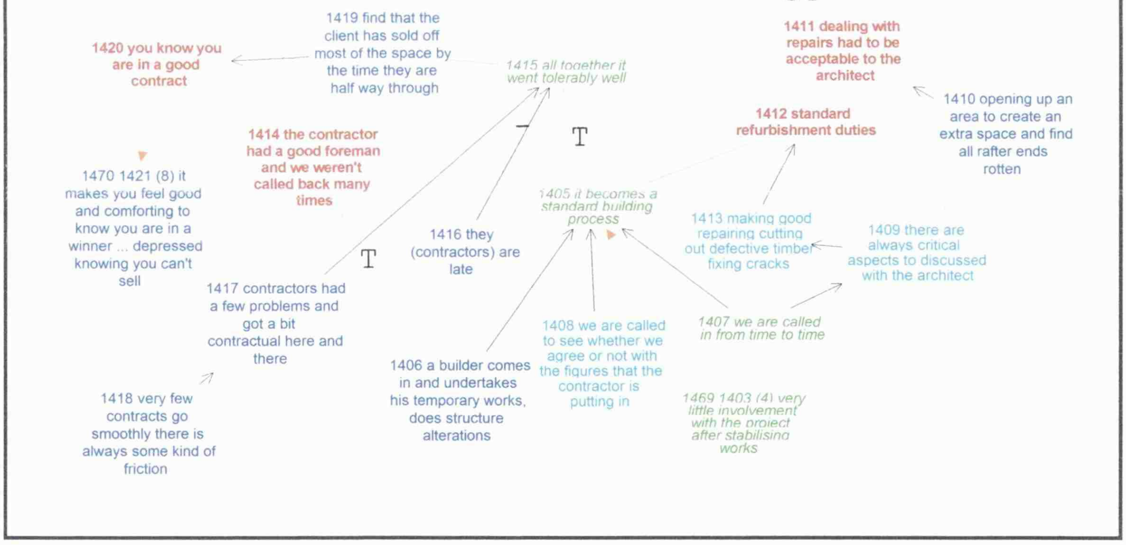
RP Cluster 4 A refurbishment job



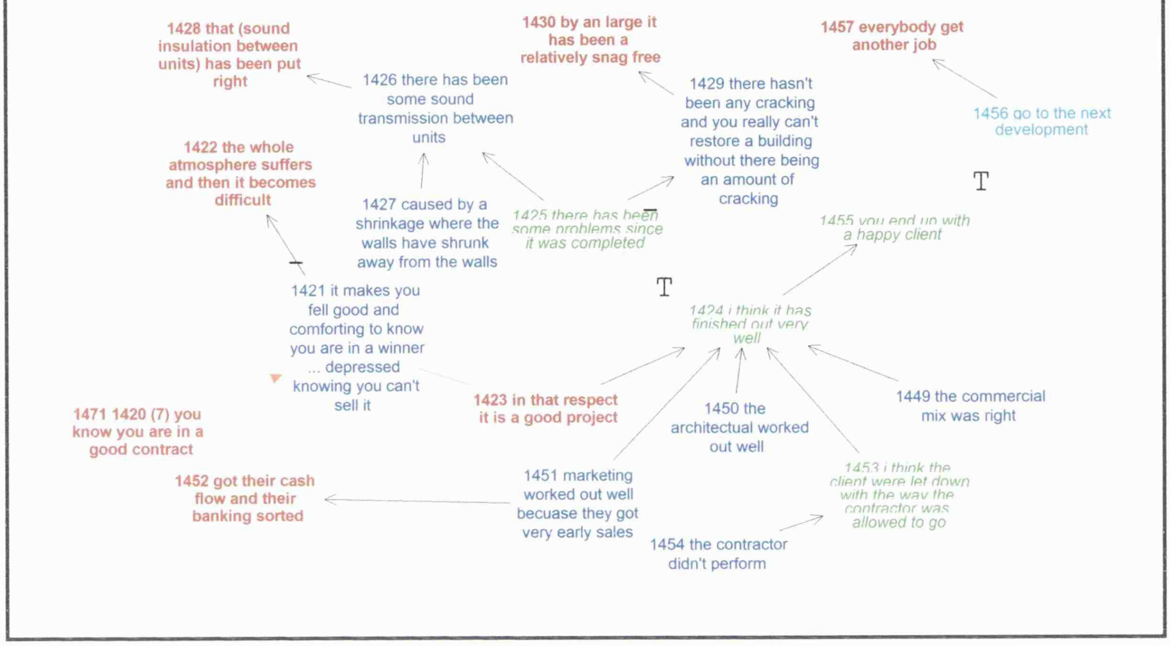
RP Cluster 5 Working fronts



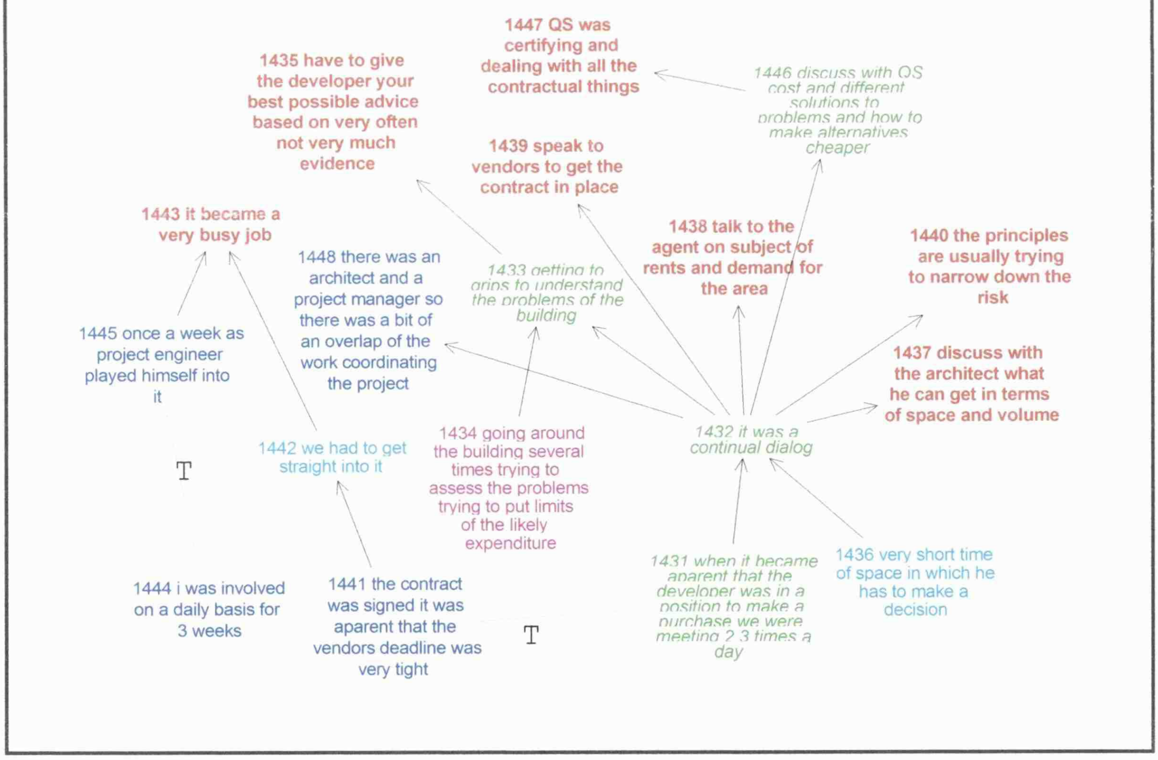
RP Cluster 7 The standard building process



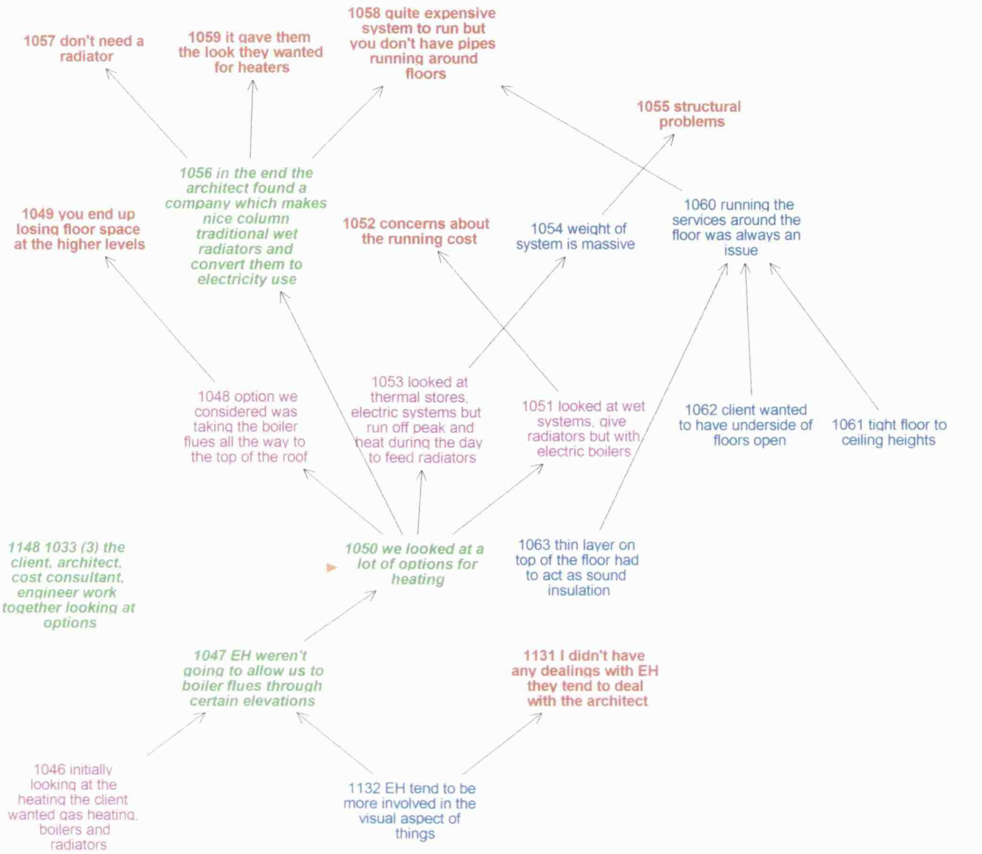
RP Cluster 8 Outcome of process



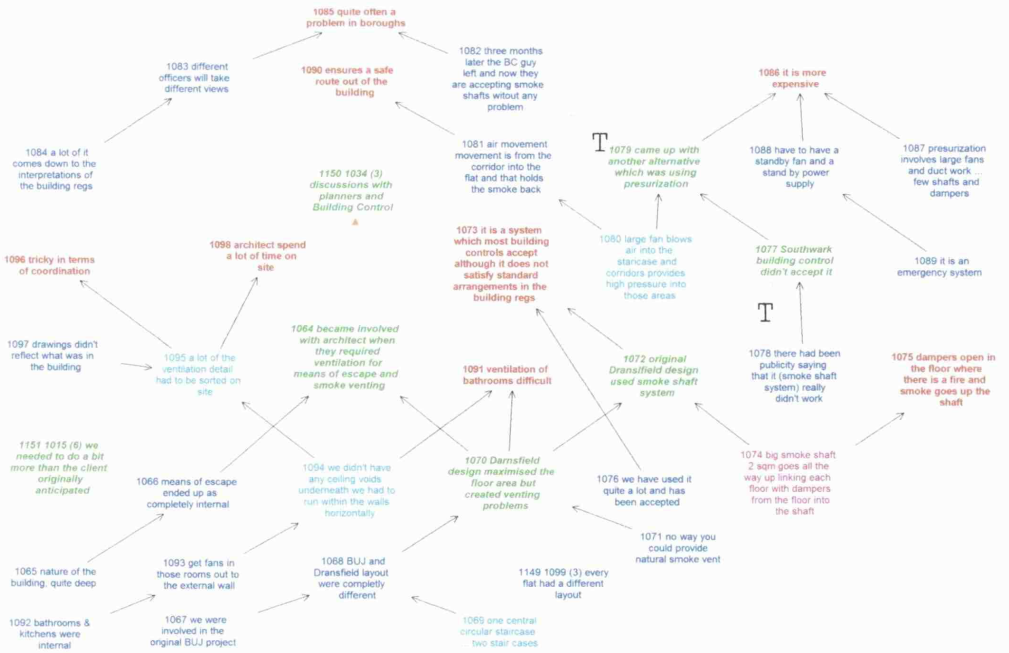
RP Cluster 9 Initial dialog with team members



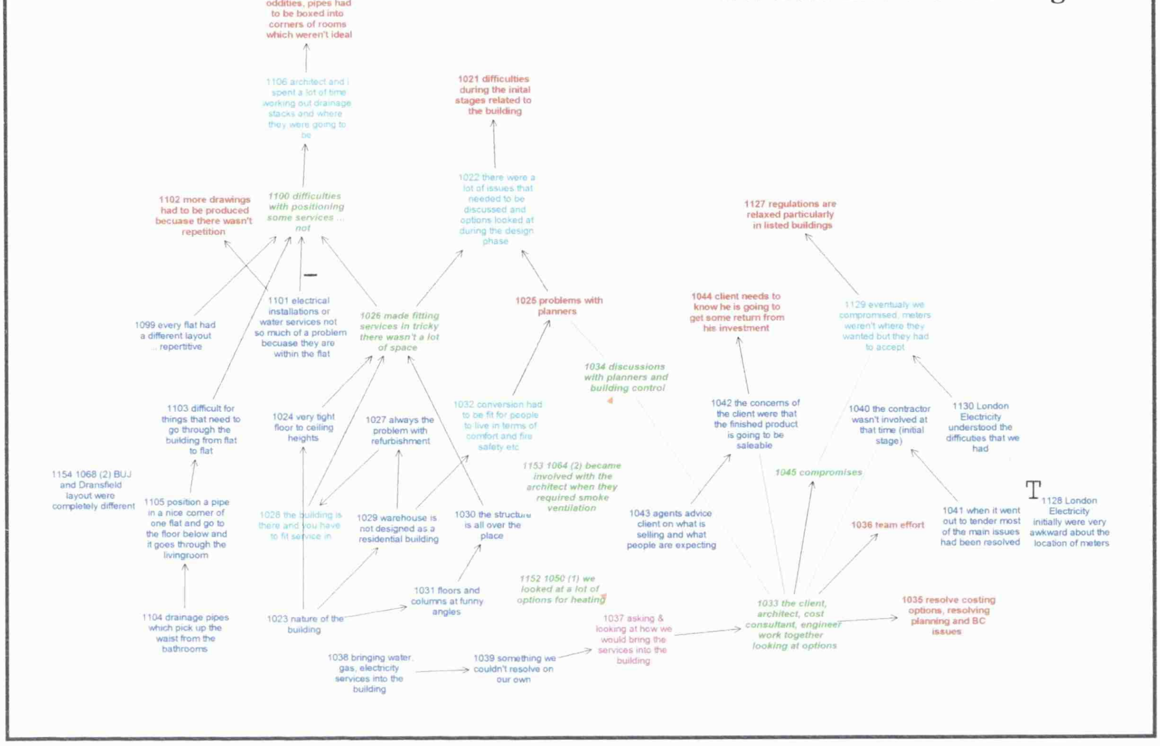
SW Cluster 1 Heating system options



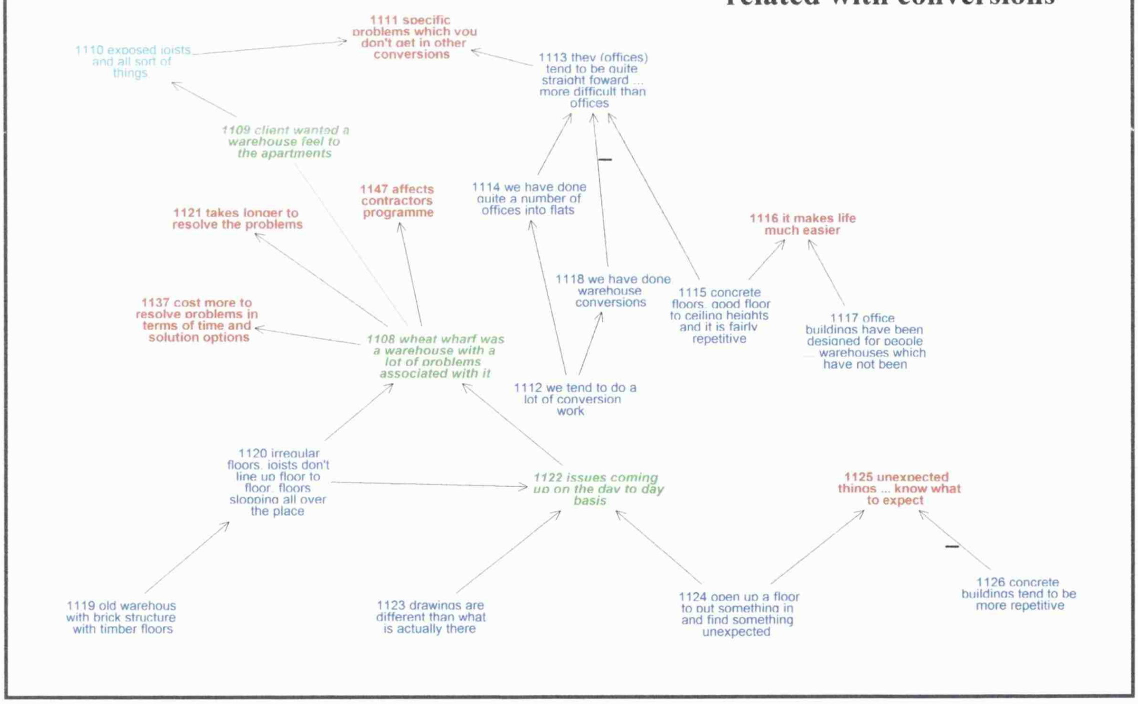
SW Cluster 2 Ventilation aspects



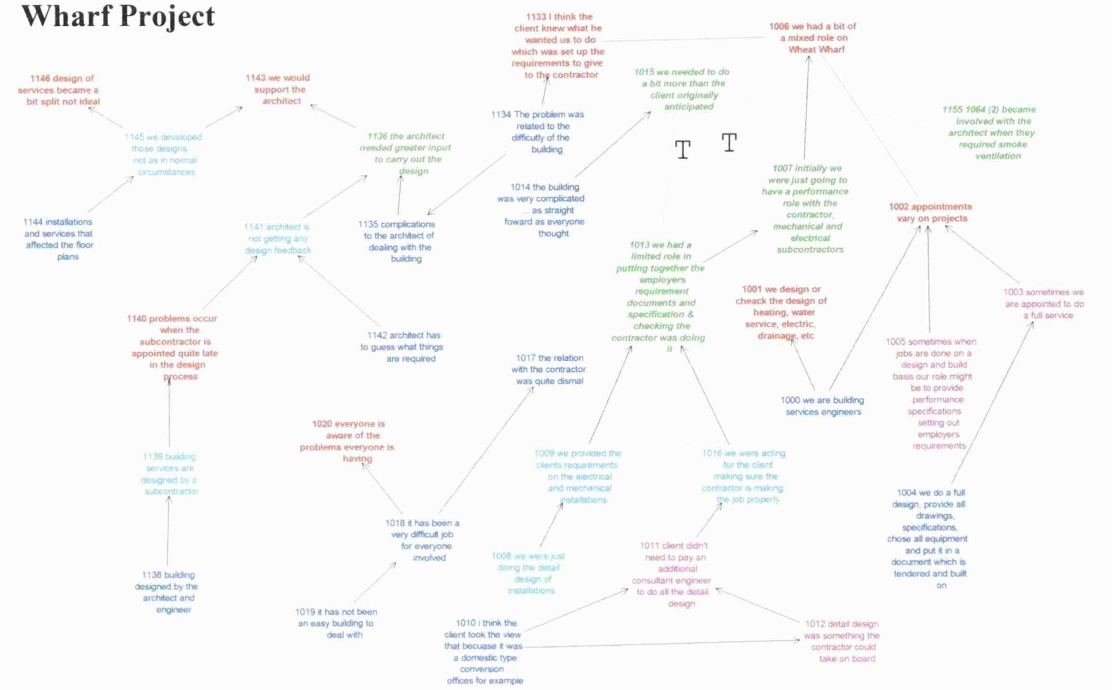
SW Cluster 3 Fitting Services into the building



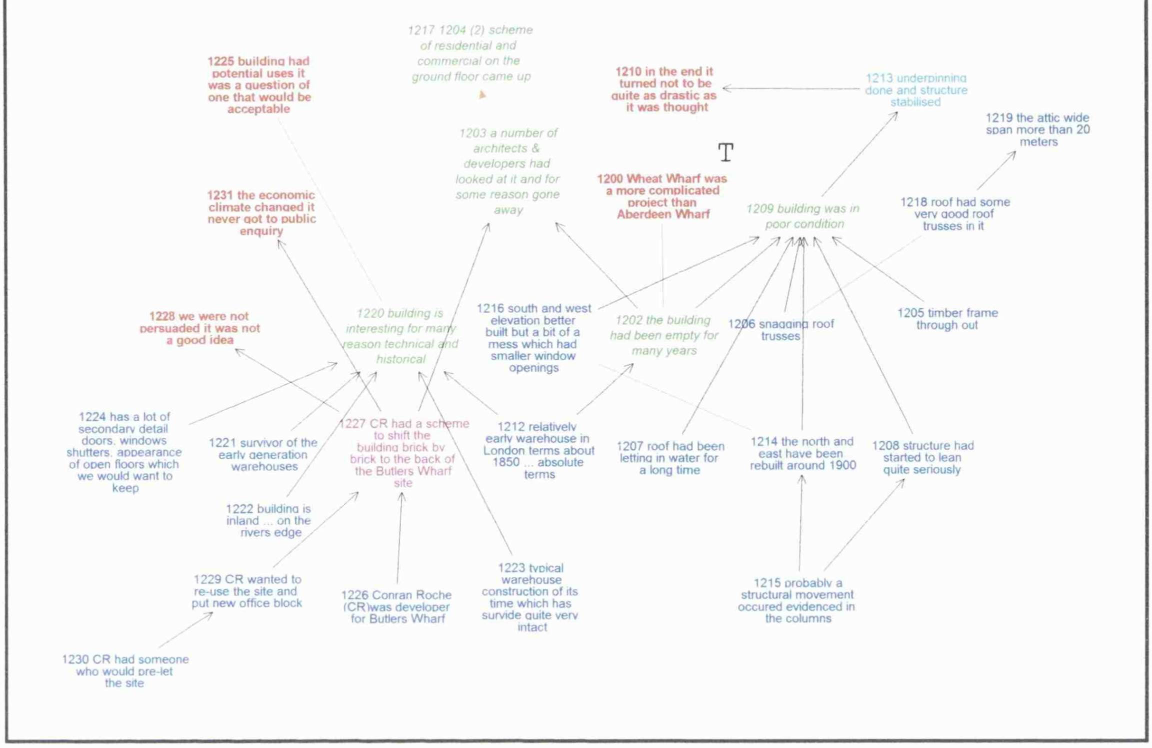
SW Cluster 4 Difficulties related with conversions



SW Cluster 5 Role in Wheat Wharf Project

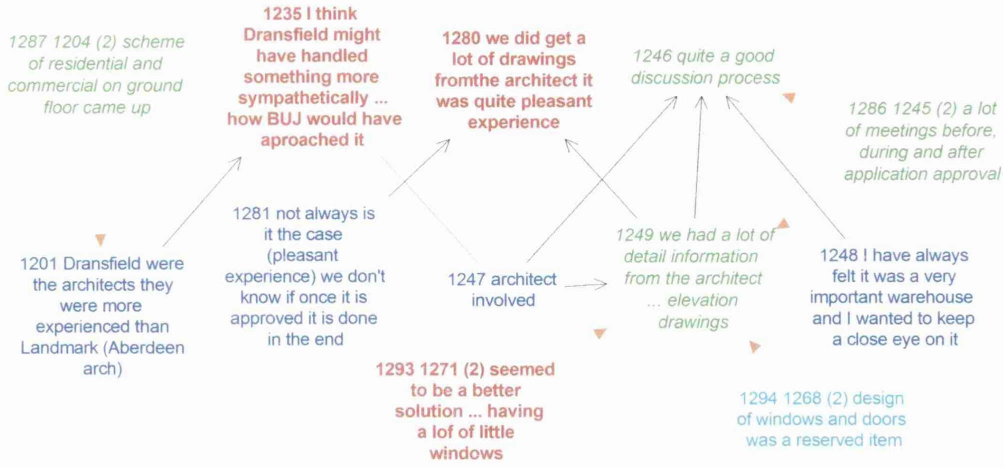


PC Cluster 1 Background & conditions of building

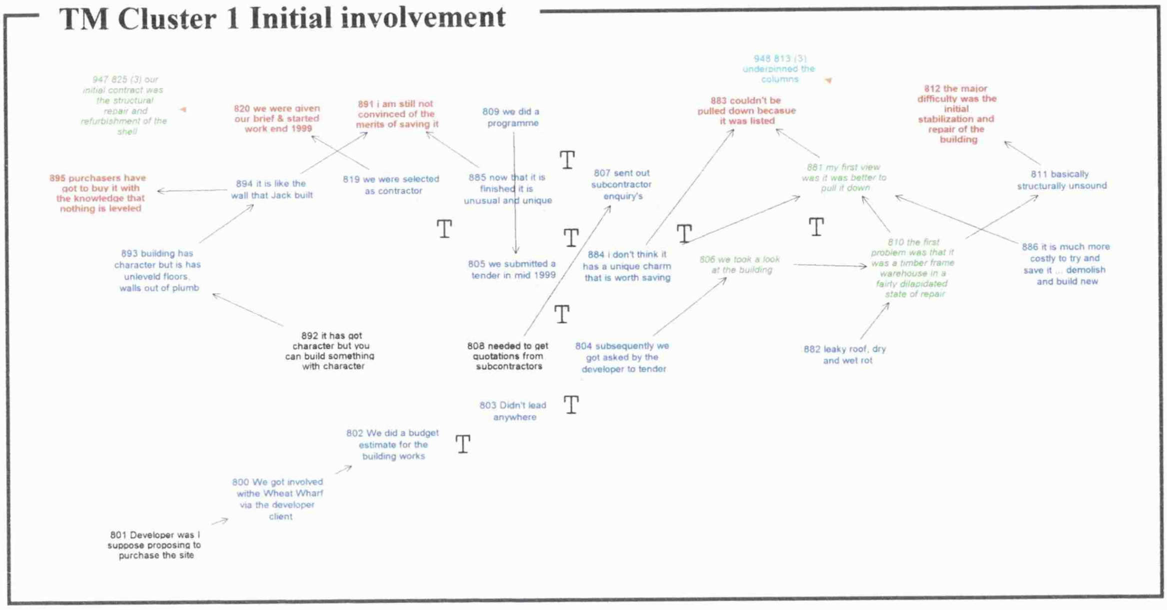


PC Cluster 2 Detail Concerns

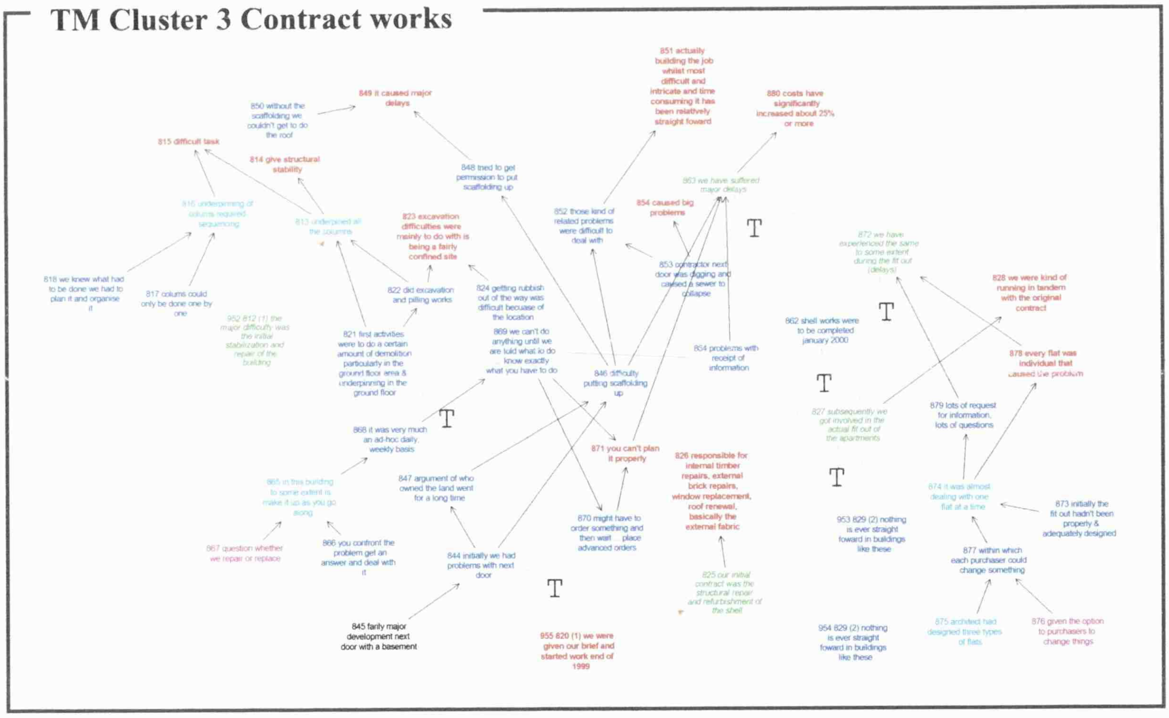
PC Cluster 3 Detail information



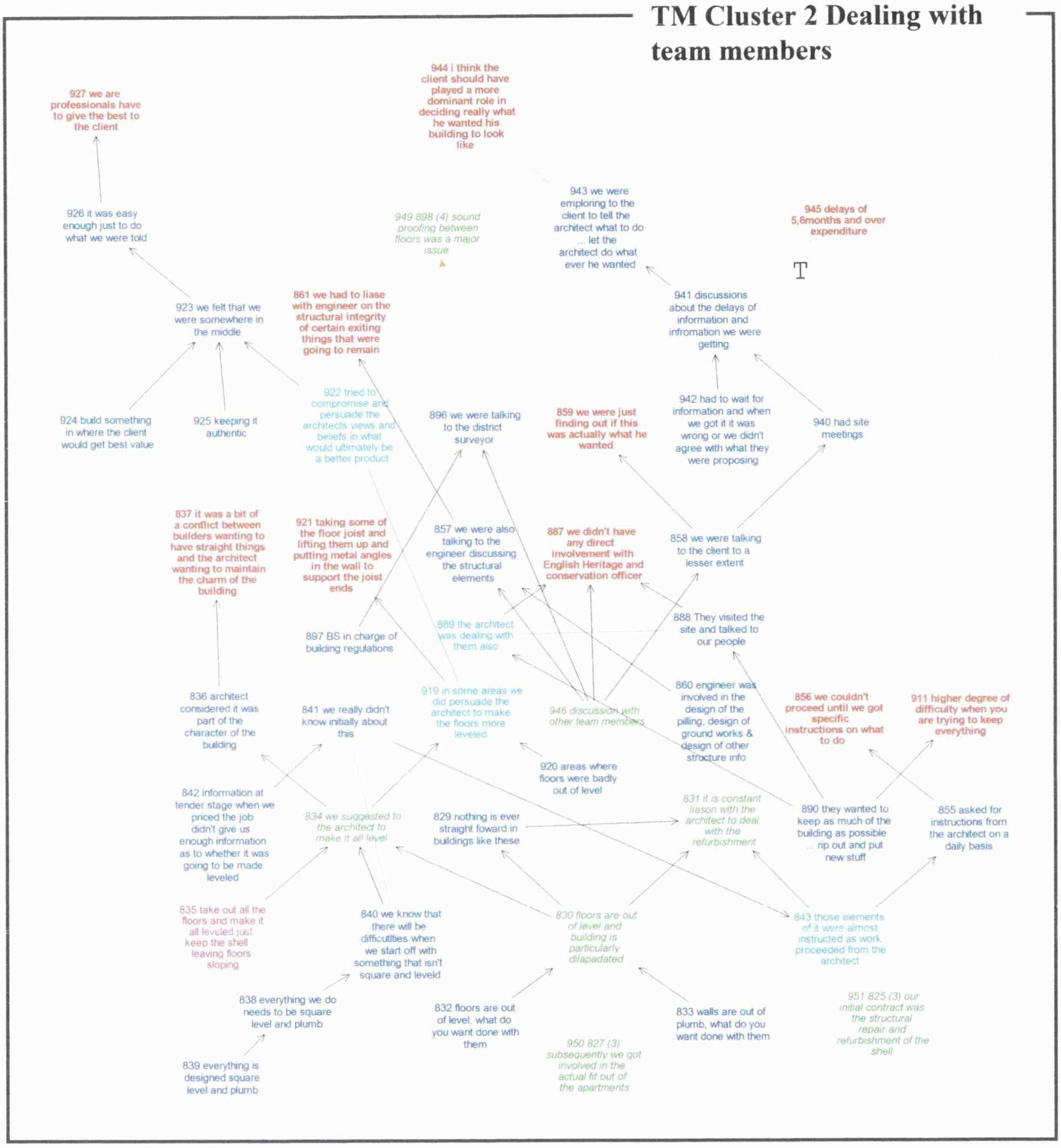
TM Cluster 1 Initial involvement



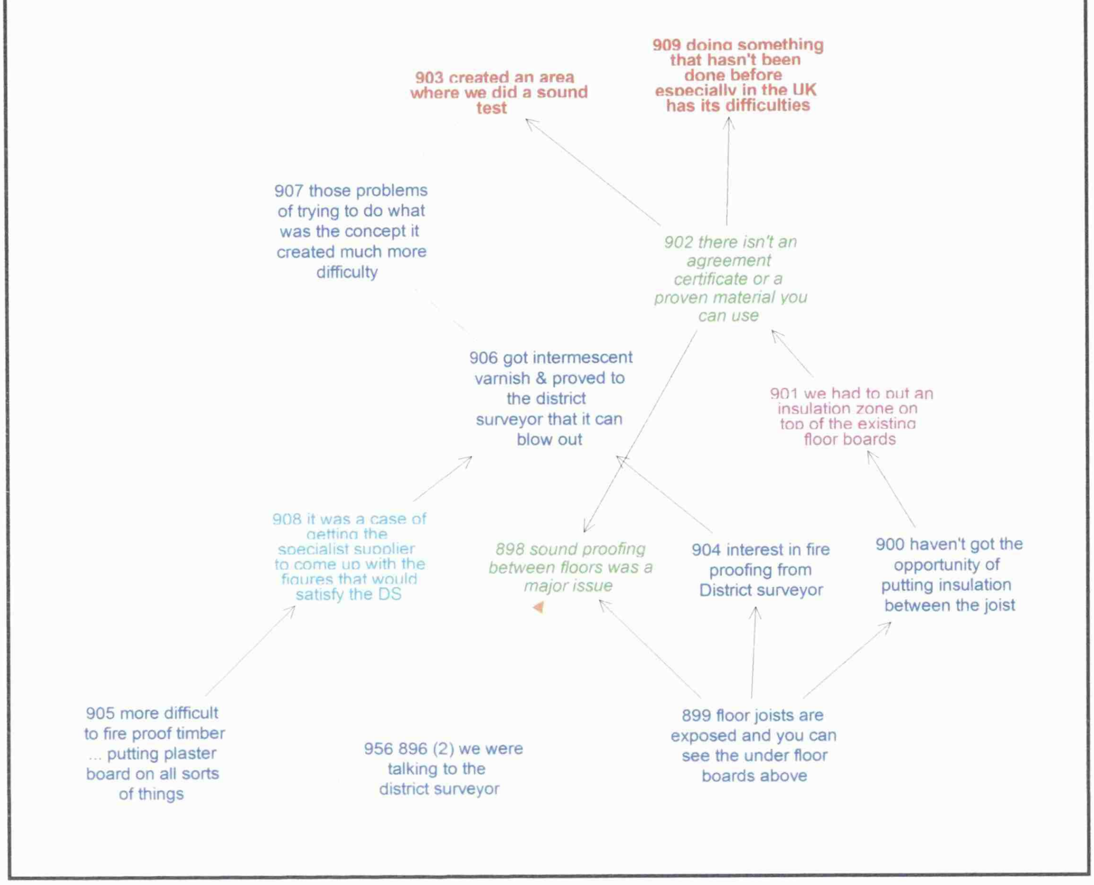
TM Cluster 3 Contract works



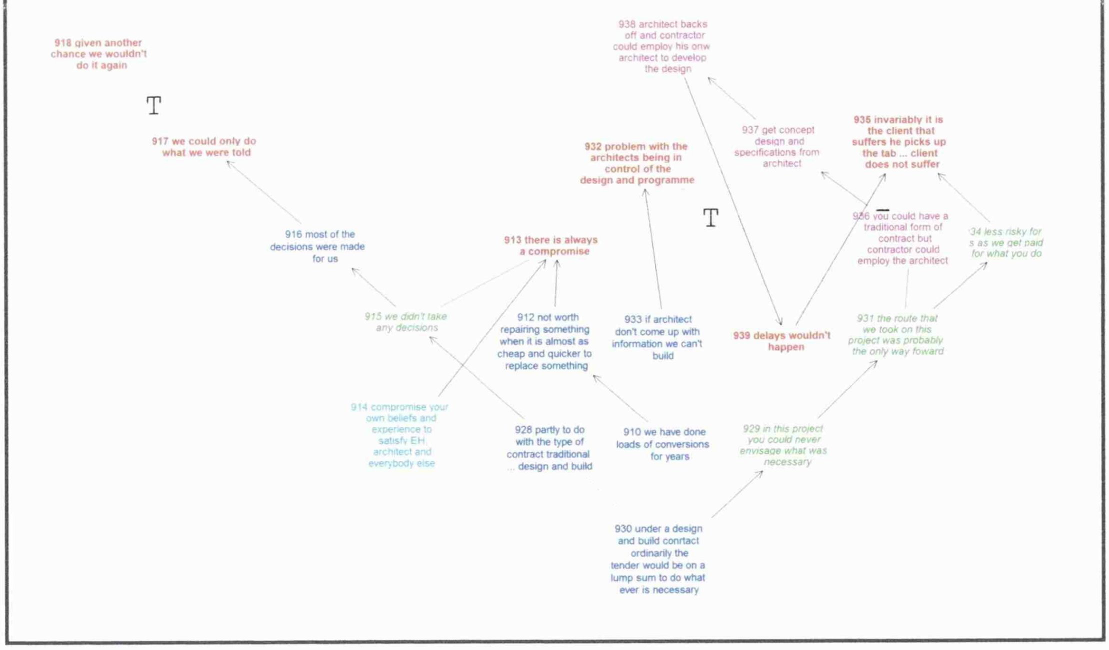
TM Cluster 2 Dealing with team members



TM Cluster 4 Building control issues



TM Cluster 5 Form of contract

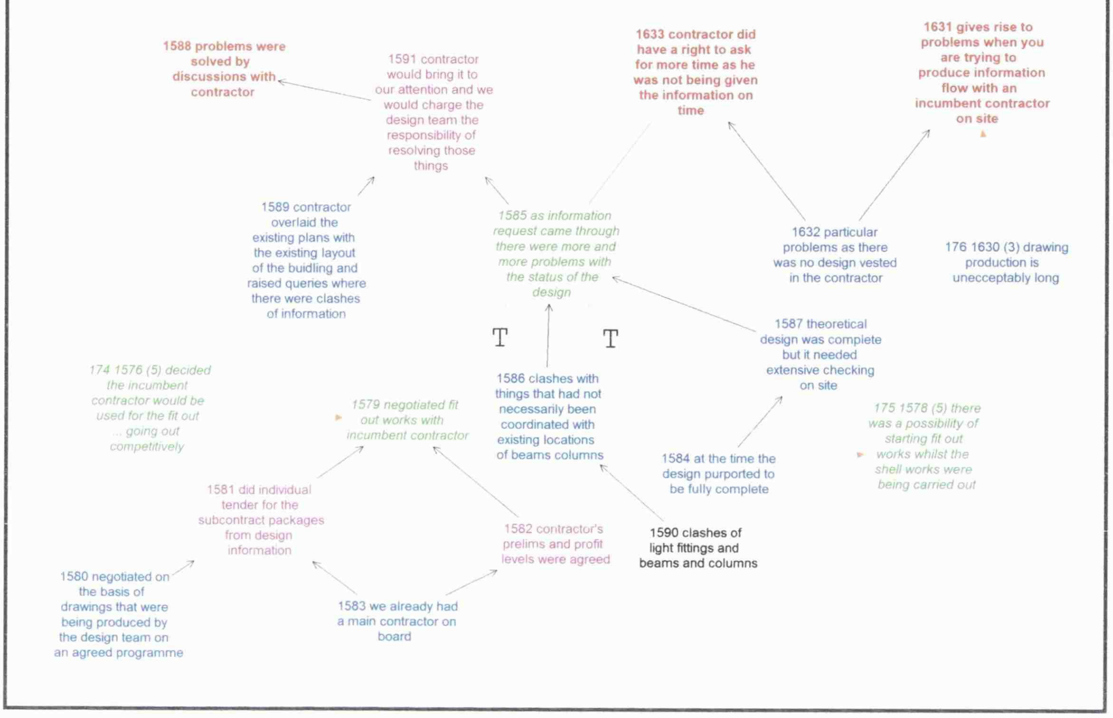


PS Cluster 1 Development of cost plans and procurement

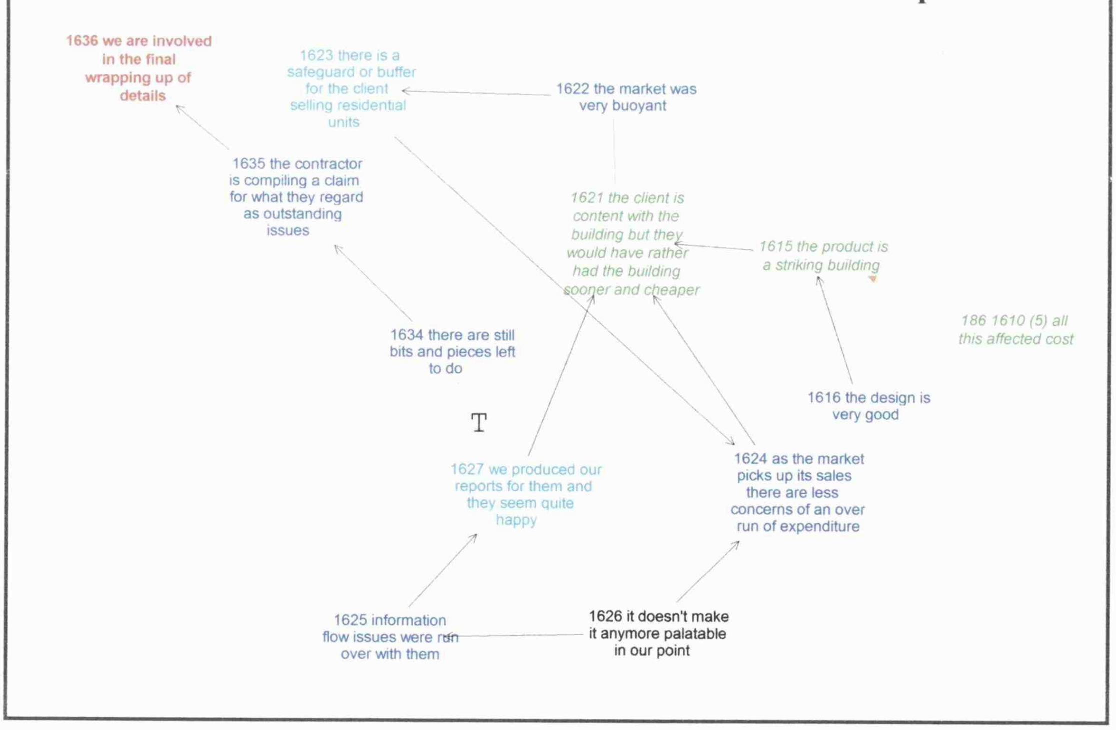
PS Cluster 2 Structural work & implications

PS Cluster 3 Initial role in the project

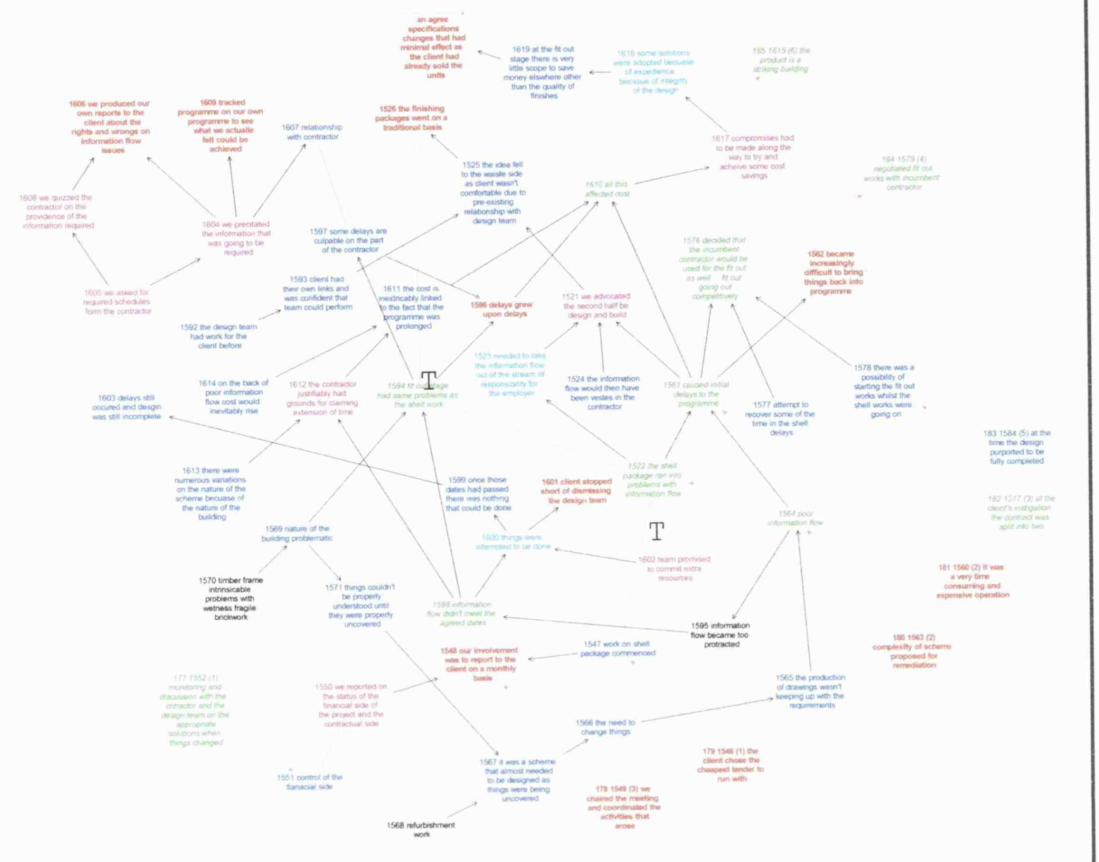
PS Cluster 4 Problems in fit out works



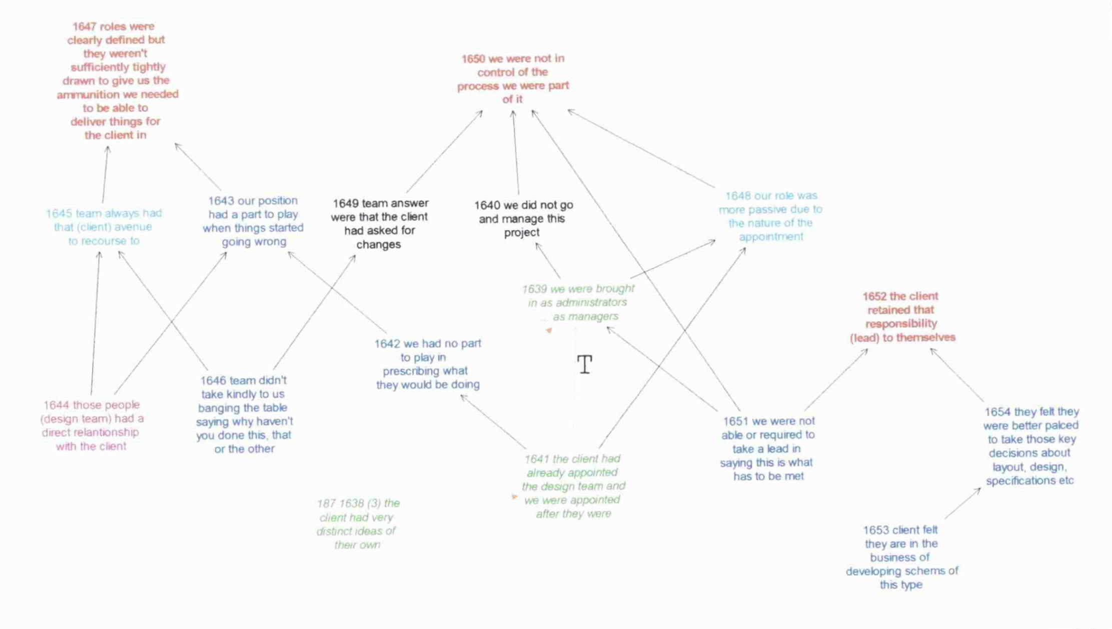
PS Cluster 6 Outcome of process



PS Cluster 5 Information flow and effects on cost



PS cluster 7 Role in project



Appendix 8
Topic Guide

TOPIC GUIDE
Preliminary Interviews

Give a general introduction to research.

1. NATURE OF BUSINESS
- What is your core activity
- Do you focus on certain areas
- What are your views towards property development today
- Have you been involved in any building conversion proposals or schemes

2. CONVERSION VIEWS
- General experiences or views with building conversion work
- General experiences or views with conversion to residential
- Advantages and disadvantages of conversion
- Lessons learned
- Views on modern vs. old

3. STEEPL factors and issues
- Do you have any strong views / objection or agreement with the hypothesis that: there are STEEPL factors and issues which influence main players and decision-makers to convert a particular building to residential use.
- To what extent do you think **Social** issues influence during the decision process / mention issues
  - Housing provision
  - Urban regeneration issues
  - Heritage issues
  - Character of building as a marketable aspect
  - Concern Employment levels in area
  - Safety and security of surrounding area
  - Users requirements, needs and wants/ giving them what they want or what is available
- To what extent do you think **Technological** issues influence during the decision process / mention issues
  - Type of building
  - Age of building
  - Size, depth, floor to ceiling height
  - Internal layout
  - Structure, envelope and cladding condition
  - Condition of existing services
- To what extent do you think **Environmental** issues influence during the decision process / mention issues
  - Governments view towards conversion as a sustainable activity
  - Re-using existing resources
  - Issues with lighting, ventilation dealt in regulations
  - Quality of building stock
  - Others
- To what extent do you think **Economic** issues influence during the decision process / mention issues
  - Cost estimation of acquiring the site, creating the project, carrying out the work
  - Estimation of profits
  - Obtaining finance
- To what extent do you think **Political** issues influence during the decision process / mention issues
- Compliance with zoning regulations
- Building codes (fire, ventilation, etc)

- UDP's
- Governments view towards building conversion
- VAT issue
- Affordable housing, parking, density, etc.
- PPG3 proposal
- To what extent do you think **Location** issues influence during the decision process/ mention issues
- Access to area
- Transport facilities
- Types of amenities
- Attractiveness of area
- Close work journeys
- Which do you consider to be the main issues which: a) push the decision, or b) limit the decision to convert

4. DECISION-MAKING PROCESS

- Description of process, stages that are followed.
- How does the process start
- What players are involved
- At what point or stage are other players involved
- Role that interviewee plays
- How does the interviewee influence the decision-maker/ in which way will the scheme be viable

5. RISK

- What are the potential risks in a residential conversion project
- How are risks identified and assessed

6. PROSPECTS

- Views on the future of the conversion activity
- What issues need to be addressed in order to improve or increase the activity
- Could you mention 2 examples of successful schemes which your company has been involved with
- Low-medium, high value. Location, previous use, reason for changing use, your involvement and number of units created.