

**FINAL REPORT**

**CREATING A SETTING FOR  
INVESTMENT**

**Report of a Scoping Study**

**for**

**South Yorkshire Forest Partnership  
and White Rose Forest**

**funded by**

**Yorkshire Forward**

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and  
Department of Town and Regional Planning**

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# 1. Introduction

This is the final report of a scoping study undertaken on behalf of the South Yorkshire Forest Partnership and the White Rose Forest, funded by Yorkshire Forward. The aim of this scoping study is to develop a project that will seek, through both research and action on the ground, to demonstrate clearly the link between environmental improvements and investment decisions.

This report will discuss evidence of the link between environmental quality and investment decisions from existing literature and from new research undertaken as part of the scoping study. The evidence will then be used to develop a detailed research methodology which will also inform the preparation of a separate bid to Europe for Interred IIIB funding. The scoping study itself will inform the research element of the full Interreg bid.

This project is based primarily around the use of environmental improvements as a means of stimulating private investment. The social, economic and environmental benefits of investment are seen as key to the regeneration of many parts of areas such as South Yorkshire. However, there has been little research to date aimed at examining just how improvements to the environment of regeneration sites and settings can stimulate private investment and development.

Investors, developers and occupiers are key players in the regeneration process. It is the decisions of these actors which determine whether investment flows into regeneration areas and into specific sites. The decision making processes of these actors and the role that environmental quality plays in such decisions are key to identifying the impact of environmental quality on investment decisions. The stimulus for development comes in the form of land values. At its simplest level, land values indicate whether a development scheme is financially viable. Land values are a function of general market conditions and also the perceptions and preferences of investors and occupiers. It is the interrelations and perceptions of these key actors which this report will explore in order to identify the impact of environmental quality and improvements on investment decisions.

## 1.1 Work required under the research brief

The brief sets out five main stages of work which form the basis of this scoping study. These are:

- A review of the key literature relevant to environmental improvements and investment decisions.
- Development of a detailed proposal for new research directed towards filling key gaps in existing research and providing clear evidence about the relationship between environmental quality and property investment decision making. This research should be applicable not only in South and West Yorkshire but also in other areas and other contexts.
- Develop a research methodology that will allow the aims and objectives of the new research to be satisfactorily met. The methodology should include an investigation of the attitudes and perceptions of a range of actual and potential investors, an examination of the added value that

high environmental quality brings to land values for development sites and an exploration of the other benefits that environmental quality may bring to potential investors, developers and employers which may have a bearing on decision making.

- Incorporate sufficient consultation and pilot work to test ideas and ensure the method will provide the information required.
- Ensure the method is capable of being implemented in a cost effective way and that the results are likely to be transferable to other parts of the region, UK and the EU.

## 1.2 Report Structure

This report addresses each of the study requirements and is structured as follows:

- **Section 2** contains a discussion of environmental quality, examining what constitutes high environmental quality and what physical works can improve the environment of a development site and its surroundings.
- **Section 3** reviews property investment and development decision making processes. The relationships between the key actors, the interaction of rents, yields and values are all examined and the role of environmental quality within this context investigated.
- **Section 4** reviews the relevant literature relating to the impact of environmental quality on investment decisions. Existing literature on the economic value of the environment, hedonic methods and the valuation of environmental quality and the impact of good design on property performance are all discussed. Two key pieces of research are then reviewed: a report by PIEDA on environmental improvement projects and an ODPM report on the private sector and regeneration. Both reports, although they do not attempt to quantify the impact of environmental quality on investment and development values, review and discuss the key issues surrounding environmental quality and its impact, on development in the former report, and on investment in the latter.
- **Section 5** reports the salient points of pilot interviews conducted with investors, developers and occupiers as part of this scoping study.
- **Section 6** develops the detailed methodology to be employed in further research as part of any future project, and describes a preceding pilot project. The various stages of the methodology and the potential outcomes are discussed in detail.
- **Section 7** summarises the report and makes suitable recommendations.

## 2. Environmental Quality

It is widely argued that there is a positive link between the quality of the environment, or environmental improvements where existing quality is low, and improvements in the economy through inward investment and retaining and creating jobs. The link has been articulated in a number of publications, but perhaps most persuasively in the document "Landscapes - Working for Wales" produced by the Welsh Development Agency (Welsh Development Agency, 1995). This document was prepared in the context of the Agency's Environment Programme, which was primarily directed at creating the quality of environment that would underpin economic objectives. The report is positive about the link between both investing in improvement of the Welsh environment and conserving its best existing qualities. It says:

*"We see two key features - Marketable Images and Quality of Life.*

### **Marketable Images**

*First impressions, often crucial in attracting investors and establishing confidence, can be influenced by environmental quality. It also helps to create positive marketable images contributing directly to economic performance.*

### **Quality of Life**

*People are at the heart of the economy. Given the choice, they will opt to live and work in congenial surroundings, and the same applies to businesses. They will leave or shun poor environments, preferring instead to invest human resources and capital in areas with a high quality of life - the markets in action."*

This theme recurs elsewhere. The North West Region, for example, has been prominent in recognising the importance of this link in England. This is reflected in the development of the Public Benefit Recording System (Jones, 2002), which has been developed as a way of assessing and prioritising derelict land sites for environmental improvement, mainly by the creation of sustainable urban woodlands, on the basis of the range of public benefits provided. The recording system scores Public Benefits under the headings of indicators of Social Benefit, Public Access, Economic Benefit, and Environmental Benefit. The section on economic benefits notes that *"one of the objectives of urban and community woodland establishment is to encourage inward investment in areas of economic blight and high unemployment by making business parks and industrial sites more aesthetically attractive to investors"*. It also suggests that woodlands can also provide screening to housing areas located near large industrial sites or unsightly business parks. The indicators used to measure the economic benefits of different sites are: the current economic climate of the area surrounding the sites, including reference to prevailing house prices in the district; and proximity of the particular sites to existing and proposed business parks and industrial areas as well as proximity to retail developments.

Despite these references and the apparently common recognition of the link between environmental quality and investment, there is little hard evidence to support this. Furthermore there is little clarity about exactly what aspects of environmental quality are important in influencing investment decisions. This chapter aims to briefly explore what is meant by environmental quality and to identify the aspects that are most relevant in creating the setting for investment.

## 2.1 Environment or Landscape?

The brief makes clear that there is a particular interest in this study in the effects of environmental quality and environmental improvements on investment decisions but that there is a particular interest in landscape quality, which might sometimes be thought of as visual amenity. Environment is of course a much broader concept than landscape and many different aspects of the environment have a bearing on quality of life and therefore could influence investors' decisions. Full consideration of environmental quality would require examination of a host of different factors including for example:

- air quality
- production of CO<sub>2</sub> and other greenhouse gases, either directly or indirectly
- access to or provision of less environmentally damaging transport
- access to or provision of less environmentally damaging waste management
- water quality in rivers and standing water
- quality of run-off to ground water or water courses
- natural habitat quality to support biodiversity
- soil quality and profile

All of these are of course important. They do, however, require quite sophisticated understanding of the nature of environmental quality and it is unlikely that investors' decisions are sufficiently sophisticated to be heavily influenced by such considerations. Rather, as the studies described above infer, it is the perceptions, largely of the landscape and visual appearance of an area, which is likely to be of more immediate concern. For these reasons this scoping study is concerned primarily with aspects of landscape quality and visual amenity, though it must be remembered that landscape in itself is a broader concept, which embraces natural and cultural dimensions of our surroundings as well as purely visual ones.

There are also some environmental issues that cut across any division between environmental and landscape concerns. Land contamination for example spans interests in both landscape and environmental quality. As land contamination relates most strongly to soil and water quality this might be considered to be a specific type of environmental issue rather than a landscape issue. Hence, even though the project will focus primarily on landscape issues – i.e. visible physical surroundings – it will almost inevitably touch on a broader range of environmental and other sustainability topics.

Further, more detailed, research could usefully explore this distinction between broader concepts of the environment and narrower definitions of landscape and examine the aspects of environmental quality that are of significance for the different actors who make decisions in the investment process. This would provide a test of whether the emphasis of the research is appropriate.

## 2.2 Consideration of scale: sites, settings and the wider area

Having determined that at this stage the study is primarily focused on landscape issues, the next question is to define the range of aspects of the landscape that may have an influence on investment decision-making. It is probable that those involved may be influenced by factors operating at several different scales, and particularly by the quality and image of:

1. the **region or sub-region** being broadly considered as a location for investment;
2. the **local area** within which the investment and development would take place and within which occupiers and their employees would live and work;
3. the area immediately surrounding and visible from any site being considered for investment and development, which can be called the **site setting or setting of sites** (i.e. what can be seen from the site that impinges on perceptions of the site itself)
4. the **site** itself, which is the area that the investor, developer or occupier will have either direct control over or some form of stake in.

One aim of more detailed research will be to find out what aspects of the landscape, at which of these scales are most likely to have either positive or negative effects on investment decision making. This will help public authorities and others to judge the most cost-effective interventions to assist in stimulating investment that is based, at least in part, on confidence in an area. This sort of investment might be considered to be more sustainable than, say, investment that is based almost entirely on temporary fiscal incentives.

It is likely that any further research will seek to discover which of these geographical scales are of concern to decision makers, if indeed they distinguish between them. At a more detailed level the research is likely to focus on:

- the landscape and visual amenity of **development sites** themselves
- the visible **setting of the sites**
- the character and quality of the **local area**.

The rationale behind this is that these are the scales at which landscape is most easily manipulated, especially at the level of sites and site settings, but also to some degree in the local area. Understanding which dimensions of landscape quality and at which scale have greatest impact, either positive or negative, on investment decision making should assist in planning measures designed to attract and retain investment in a more sustainable way. It will also be helpful to understand which parties have the ability or inclination to influence these aspects of landscape at the different scales.

Preliminary interviews with key informants as part of this scoping study have indicated that investors expect to be able to influence the nature of what happens **within the sites** that they purchase or rent. Whether any other party, including public authorities, has influenced the nature of the landscape treatment in advance of their arrival may be perceived as a benefit or a disbenefit depending on the nature of the treatment and the perspective of the investor. The investors perspective will be determined by the nature of what they want to do to and on the site and whether the existing treatment will pose unacceptable restrictions.

By contrast the **wider setting of sites** and the character and quality of the **local area** within which occupiers and their employees may live and travel, cannot usually be influenced by an individual site investor but may, in certain circumstances, be influenced by the public sector. The scope for involvement of the different parties in influencing the landscape at different scales is summarised in **Table 2.1**.

**TABLE 2.1 Scope for involvement of different parties in influencing the landscape at different scales.**

SCALE OF INTERVENTION	Public authorities	'Investors/Developers'
<b>Site</b>	None to considerable depending on whether in public ownership	Usually considerable but depends on land ownership and planning conditions
<b>Setting of site (visible from it)</b>	None to considerable depending on whether in public ownership	Rarely, if ever
<b>Local area</b>	None to considerable depending on land ownership patterns	Never

This suggests that the research might usefully aim to explore the benefits of potential interventions in landscape aspects of environmental quality as follows:

- Assuming that investors can usually manipulate a **site** themselves what are the most effective interventions that a third party could make in advance
- Assuming that site investors are not usually able to influence the nature of either the **site setting** or the **local area** around an investment site, what are the most effective interventions that a third party could make in advance (at both scales.)

In both cases the questions that would need to be addressed are: what measures would have the most positive effect; what would have little effect; and what would have a potentially negative effect.

## 2.4 What is meant by quality in the landscape

There is a wide-ranging literature on landscape quality but it is primarily concerned with the wider rural landscape and issues of landscape evaluation. There is little to tell us what is meant when we speak of the quality of the landscape of a development site, or its setting or of the surrounding local area. Some of the wider literature on landscape quality is relevant to deciding what landscape quality means with respect to the setting of sites and to the surrounding local area. It suggests that the presence and abundance of trees, woodlands, habitats and other green space of quality (that is mature, attractive, accessible and well-managed) are all important as are factors like local identity and distinctiveness. There is however, much less to go on when it comes to the design of commercial development sites themselves. Although there are guides to good practice for the design of specific public landscapes such as children's play areas, school and hospital grounds and housing areas little similar material is known to exist for commercial investment sites.

In the end it is a matter of what constitutes good high quality design in these circumstances. Initial review of competition and awards criteria concerning commercial development of this type suggests that aspects of quality in the design of commercial landscapes include:

- practical issues, including safety and functional user needs,
- aesthetic and cultural considerations such as: design legibility and coherence, appropriateness in terms of local character and identity, design innovation, sense of delight, stimulation and enjoyment for users,
- sustainability considerations including: resource use, energy implications, pollution abatement, CO2 emissions, benefits to biodiversity.

This list of factors is not intended to be comprehensive but attempts to cover the main issues that are likely to have an impact on site occupiers and their stakeholders. Consideration of the perceptions of a wide range of people using and experiencing commercial development sites will be helpful in understanding more fully the possible definitions of quality in these landscapes. Among the most important are the occupiers of the sites and their employees and business visitors, to whom the image of a site and its surroundings are likely to be most important. High quality sites and surroundings are likely to contribute to the attraction and retention of good quality staff, to increased worker productivity and reduction in absenteeism, and to the overall image of a company in the eyes of customers, clients, visitors and other stakeholders. Perceptions of neighbours and local communities as well as the public authorities who represent them will also be important.

Further research is needed, including review of existing commercial developments of different types and discussion with occupiers and other stakeholders, to establish more clearly which are the most important aspects of quality in the landscape of commercial developments.

## **2.5 Which landscape elements are important at the level of sites and settings**

At level of the **site** quality could be expressed in a number of different elements, which together might make up the treatment of a site. They include:

- Boundary treatments including the planting of trees and shrubs/use of other features to define or enhance the boundary of the site and/or of individual commercial plots within a site.
- Planting or other landscape features to define and/or enhance the entrance to the whole site or the entrances to individual plots on the site.
- Planting or other treatments to define or enhance any main routes to and through the site.
- Provision of accessible and attractive outdoor space for those working on or visiting the site.
- Provision of habitats that attract wildlife interest to the site.
- Provision of local amenity for the local community.

In terms of the **settings of sites** the elements that are likely to contribute to landscape quality are:

- Views to attractive landscapes and features from within the site.
- High level of trees, woodlands and other distinctive landscape features visible from the site.
- No visible evidence of dereliction or decay in the near vicinity or the surrounding area (e.g. coal spoil, rubble, remnant or derelict buildings, ruderal weeds, abandoned machinery or vehicles).
- Presence of habitats that attract wildlife interest into the surrounding area.
- Provision of accessible open land in the surrounding area.

In terms of the **local area** the elements which are likely to contribute to landscape quality include:

- Retention and / or restoration or creation of locally distinctive landscaper character and a sense of local identity.
- Presence, abundance and quality of trees and woodlands in visible locations.
- Appropriate and high quality restoration of land damaged by dereliction and decay.
- Presence of a wide range of habitats that attract wildlife.
- Presence of accessible, good quality green spaces and other accessible open land in reach of communities.
- High quality civic spaces in towns and villages.
- A good level of care and maintenance of the existing environment in the public realm.

Environmental improvement initiatives could be aimed at any for all of these different landscape elements within the development site itself, in the immediately surrounding area forming the setting to the site or in the local area. All could have an impact in changing the perceptions of investment and development decision makers. Research is needed to find out which elements are most important to these perceptions and the above preliminary lists of landscape elements and aspects of landscape quality would provide a valuable starting point in defining possible lines of questioning in a programme of interviews.

## 2.6 Summary

This section has explored possible meanings and definitions of environmental quality, and especially landscape, in order to integrate an understanding of these with an understanding of property investment processes and the way the variables impact on them. It is recognised that while a wide range of environmental variables may have some sort of relationship with investment decision making, for pragmatic reasons the research would produce more definitive results if it concentrated on variables that can be easily perceived and understood to have a direct impact on an investment location and that are also relatively easily manipulated by those with regeneration and development budgets. This leads to a focus on landscape quality, rather than, say, air and water quality, as a way of defining environmental quality in the context of the proposed research. Recognition is given to the possible interaction of landscape quality with other environment and sustainability variables and vice versa.

It is recognised that landscape features may have an impact on investment decision making at a wide range of scales from regional down to individual sites but that the private sector rarely if ever has any influence beyond the boundaries of individual sites. This implies that if the environmental quality of the settings of sites and of the wider local area are significant in investment decisions, then the public sector needs to take an interest and may need to consider proactive action to optimise investment interest - especially that which is most likely to be of a more sustainable nature.

Literature reviews, and other investigations with bodies having an interest in landscape quality, have revealed that there are apparently no prescriptions, other than for individual details, for what makes a good or bad quality landscape design in the commercial context. It has therefore been necessary to derive groupings of possible factors that can be tested for refinement and understanding of their relative importance in an investment context. These factors could in turn be delivered by attention to a range of different landscape elements within individual sites, their immediate visible settings and the wider local area and these are suggested as the possible basis for detailed lines of questioning with investment decision makers in order to identify their relative importance. They will also inform the visualisations of different site treatments.

### 3. The Property Investment and Development Decision Making Processes

This section examines the property investment and decision making processes and examines the role of environmental quality in such decisions. It discusses the key actors active in property investment and investigates the role of environmental quality in the decision making process. The analysis is aimed at those without extensive knowledge of the property market and will aid an understanding of the remaining sections.

The aim of this report is to examine the impact of environmental quality on investment. Property investment covers a range of different activities and different sectors, each with slightly different actors and processes. As a result, this scoping study concentrates on just one sector of the property market where we believe the impact of environmental quality is likely to be the most marked, namely business parks. This includes not only business parks in out of town locations but also those involving development in degraded urban areas.

The business park property sector is dominated by institutional investors, national developers and national and regional occupiers. The decision processes of the first two groups have been fairly well documented in the literature. This aids the research. Business parks vary widely in quality in terms of their external environment. If the quality of the environment has no impact in this sector of the market then it is very unlikely to have an impact in any other sector.

It is envisaged that any further research emerging from this preliminary study will examine the impact on a much wider range of property sectors, for example stand alone offices, retail, retail distribution and light industry.

#### 3.1 Key actors

The business park sector is dominated by four key groups of actors. These are:

- Developers
- Investors
- Occupiers
- Property Valuers

**Developers** develop the business park or plots of the park and either retain the development as an investment or sell it on to an investor. **Investors** purchase development schemes from developers in order to generate returns on their investment. These returns are generated through renting the property to **occupiers** who need property for their daily business activities and through capital growth if the business park increases in value.

Each actor has a significant influence on the property investment process. In addition to these three groups, **valuers** will influence the process by advising the actors on land values, rents and investment yields based on the demand and supply balance in the property market. The decision making processes of the three actors and the role of valuers are now examined in turn.

### 3.2 Key variables

There are three variables that are crucial to the operation of the property market. These are:

- **Rent** – the rent paid by tenants to occupy premises. Rents provide an income flow to investors and are determined by the supply demand balance for the relevant property type.
- **Yield** – in the simplest terms is an assessment of the returns achievable from an investment given the investment's risk profile. Yields are determined by investors based on the returns available for competing assets and the risk inherent in investing in a specific property. The lower the yield, the higher the perception of the quality of a particular property investment, the lower the potential risks to the investor and the higher its value.
- **Capital value** – the amount the property could be sold for on the open market and is a function of the rent and the yield. The capital value indicates the value of a property investment on the open market and the development value of a development.

These terms will be used throughout this report.

### 3.3 Investment decision making process

**Investors** purchase completed development schemes from developers or sometimes fund development themselves. There are considered to be four main investor classifications (Hargitay and Yu 1993)

- Personal Sector including the individual investor, executor and trustees (*Local investors*).
- Commercial and industrial companies (*Local and regional investors*)
- Banks (*Regional and national investors*)
- Institutions including pension funds, insurance companies, investment trusts and unit trusts. (*National and overseas investors*)

The institutions dominate investment in large scale property developments such as business parks and shopping centres. Local and regional investors tend to concentrate on smaller developments such as industrial sheds or individual commercial units.

Property investment constitutes only a small proportion of total investment in the UK. In terms of Institutional asset portfolios the 1970's witnessed property investment peaking at 15% before falling to 6% for insurance companies and 3% for pension funds in the early 1990's (Scott 1996). Proportions have risen slightly in recent years. Property companies and overseas investors have now overtaken insurance companies and pension funds as the largest investors in property assets (Ball et al 1998).

Hargitay and Yu (1993) identify five steps in the investment decision making process.

- 1 Definition of objectives and specific goals
- 2 Search for an alternative set of investment projects which promise to achieve the objectives and goals set.
- 3 Evaluate, compare and rank the alternatives in terms of the quantified expectations of risk and return.
- 4 Choose the most satisfactory alternative.
- 5 Evaluate the consequences of the decisions taken earlier, draw conclusions, and revise goals and criteria.

Stages 1 and 2 involve determining the particular investment media which in turn depends upon the goals of the institution's portfolio, whether they are seeking a diversification asset or an increase in their exposure to property or in a specific property sector. Once the property medium and a property sector (office, retail, industrial or mixed) have been selected then the risk return profile of the investor determines the investment selection.

Investment selection depends upon the risk of the investment compared to the potential return from the asset. Each investor will have a risk return profile where a minimum return will be required for a specific level of exposure to risk. Risk from property investment is both systematic, reflecting factors which affect all investments, and unsystematic, reflecting factors specific to the property. Factors which will impact upon return and therefore add to risk include:

- General movements in the economy
- National property market movements– for example property crash of the late 1980's
- Regional and local property market performance – falling demand for property in a local market
- Inflation – eroding the purchasing power of returns
- Liquidity – inability to dispose of the property when necessary
- Tenant quality – risk of tenant defaulting on the tenancy
- Rental voids – Property is vacant and therefore there is no rental income flow
- Interest rates – impact on interest payments and returns available from alternative assets.

Risk can be minimised by selecting properties in locations where there is high demand for property and by purchasing high quality properties which attract good quality tenants on long term leases that are unlikely to default. Key issues which influence the above are (Begg 2002 and **Figure 3.1**):

- Availability and quality of alternative property – demand and supply in the market
- Characteristics of the labour market – availability of labour supply for potential tenants
- Social factors including security – characteristics of the location
- Transport and accessibility – communication links vital for attracting tenants
- Regulatory and planning considerations

Investors will seek property investments that minimise risk and offer maximum returns for that given level of risk. The property yield is used within this investment

appraisal and will take into account the returns available on risk free investments (Government bonds) and the potential risk involved in investing in the property market and the specific property itself. The greater the risk, the higher the yield and the lower the price the investor would be willing to pay for the property. Together with the potential rent that could be received from letting the investment to a tenant, the investment worth of the property to the investor can be calculated. This is compared to the property price to determine whether the property will provide the required return.

### **Investment decision making and environmental quality**

Institutional investors are the most risk averse investors because they have to satisfy their shareholders. Their investment criteria include large lot sizes of upward of £15m to minimise management costs, tenants with the best quality covenants; often UK headquarters and overseas companies. This boils down to prime property in prime locations with good access to labour markets and the transport network. Institutions invest in the major property developments such as business parks because of the factors described above.

**Figure 3.1** describes the potential role of environmental quality in investment decision making. Environmental quality is possibly a factor, along with location, building specification, access to transport and labour markets that will attract tenants. If the investor perceives that high environmental quality will have an impact on attracting good quality tenants then this will reduce the risk of the investment and lower the yield raising the investment's capital value. The risk averse investor may, therefore, favour investments with a good quality environment or, if forward funding an investment, ensure that the development includes a high standard of external environmental quality. The extent of the impact will depend upon the degree to which investors believe that environmental quality is a factor in attracting tenants. This is examined during the literature review in **Section 4** and in the pilot interview in **Section 5**.

### **3.4 Development decision making process**

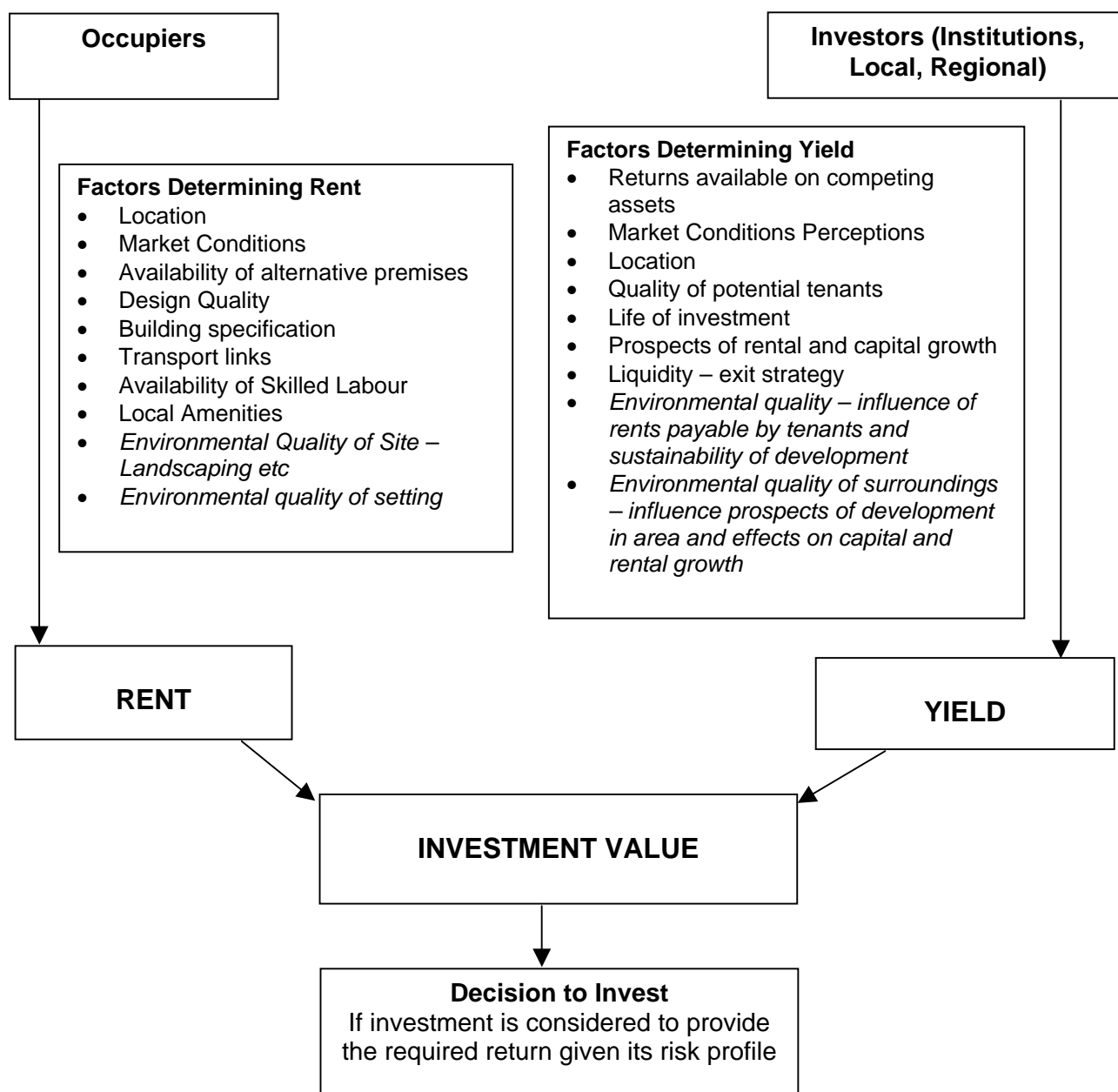
The developer's decision to develop is based on financial considerations, and particularly whether the developer can make the required return from the sale or the letting of the completed development. For this report, developers are categorised as either trader developers and investor developers. Trader developers develop a scheme and sell it on to an investor making a profit by disposing of that development at a price greater than the development cost (development value exceeds development cost). The investor developer will develop the scheme and then retain all or part of the development as an investment receiving an income stream in the form of rent.

The decision to develop is determined through an analysis of the cost to value relationship. The residual method of valuation is the financial technique used in this analysis. The rent achievable and the potential yield payable by an investor will determine the capital/development value. These variables are in turn determined by the supply and demand factors outlined in **Figure 3.2**. In the residual method the difference between the development value and the development cost of the scheme leaves a residual figure from which the developer removes his/her profit and the

remainder is available for the land purchase. If development costs exceed development value or the residual after developers profit is a negative figure then the development is not viable and will not proceed without public sector intervention. If the landowner requires a land price which exceeds the residual figure then again the development is not viable.

The developer will attempt to maximise the development value of the scheme by developing property which will elicit the highest demand from occupiers and investors. If developing property with institutional investors in mind, the developer

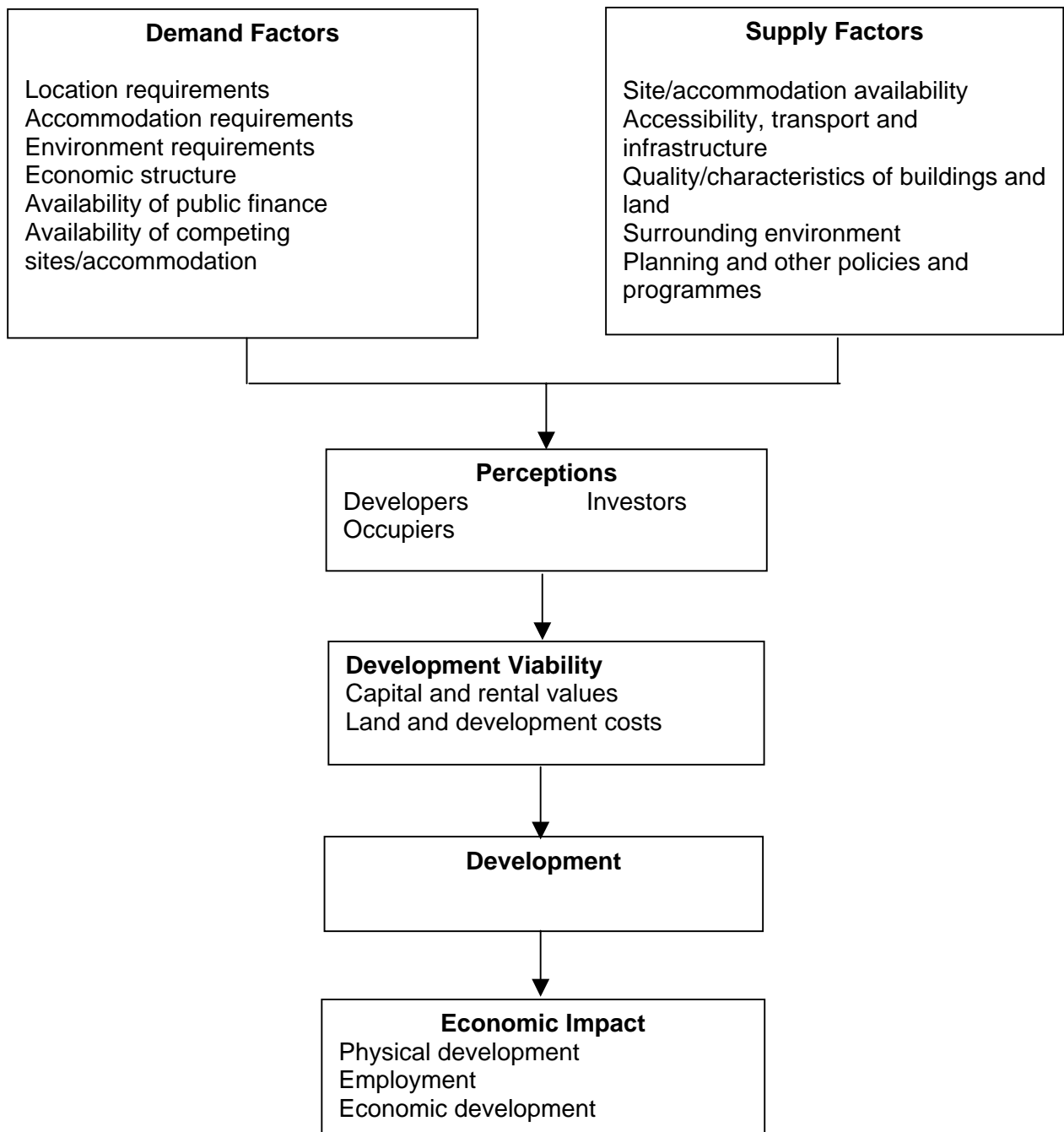
**FIGURE 3.1 Simple diagram of the Investment Decision Process and the possible impact of environmental quality**



Note: Potential Influences in Italics, remaining influences from Literature e.g. Hargitay and Yu (1993) and Hoesli and MacGregor (2000))

will aim to satisfy certain investment criteria: lot size, property in a location and of a specification that which will attract high quality tenants, good access to transport network and, if the developer thinks it will increase development value, high external environmental quality. Features which add to development costs such as high environmental quality, will only be included if their influence on development value is greater than their cost of development (see **Figure 3.2**).

**FIGURE 3.2 Property Development Model, PIEDA/DOE (1995)**



Developers will develop either speculatively, where they will attempt to find an occupier and a purchaser for the development during the development process or after its completion, or will pre-let the development and develop with the specific

requirements of a tenant. Pre-let developments are less risky and will often find an investor to forward fund the development.

### **Development decision making and environmental quality**

The decision of the developer to develop a scheme with a high quality external environment will depend upon the demand for such property from both occupiers and investors. If developers can obtain higher rents and attract better quality tenants from such developments this in turn will attract investors, and particularly institutional investors, leading to lower yields and higher capital values. If the estimated increase in value exceeds the costs of the environmental works then the developer will include these works (see **Figure 3.3**). If costs are higher then the developer will theoretically develop to a level where cost equals value. However, if occupiers and investors perceive there are no benefits from high environmental quality with no subsequent impact on rents and yields then environmental quality will not be an important variable in development decision making.

### **3.5 Occupier's Decision Making Processes**

Literature is limited on the decision making processes of occupiers. General location theories aid analysis but there is no mention of the role of environmental quality. Models of location theory are described by Ball et al (1998).

The key decision of occupiers is where to locate. The location decision making process has two main phases. First, the decision to locate and second, the choice of new premises. The decision to locate is triggered by factors such as setting up new premises, outdated existing premises and the need to access new markets. There are a number of factors which influence the locational choice (Dunning and Norman 1987):

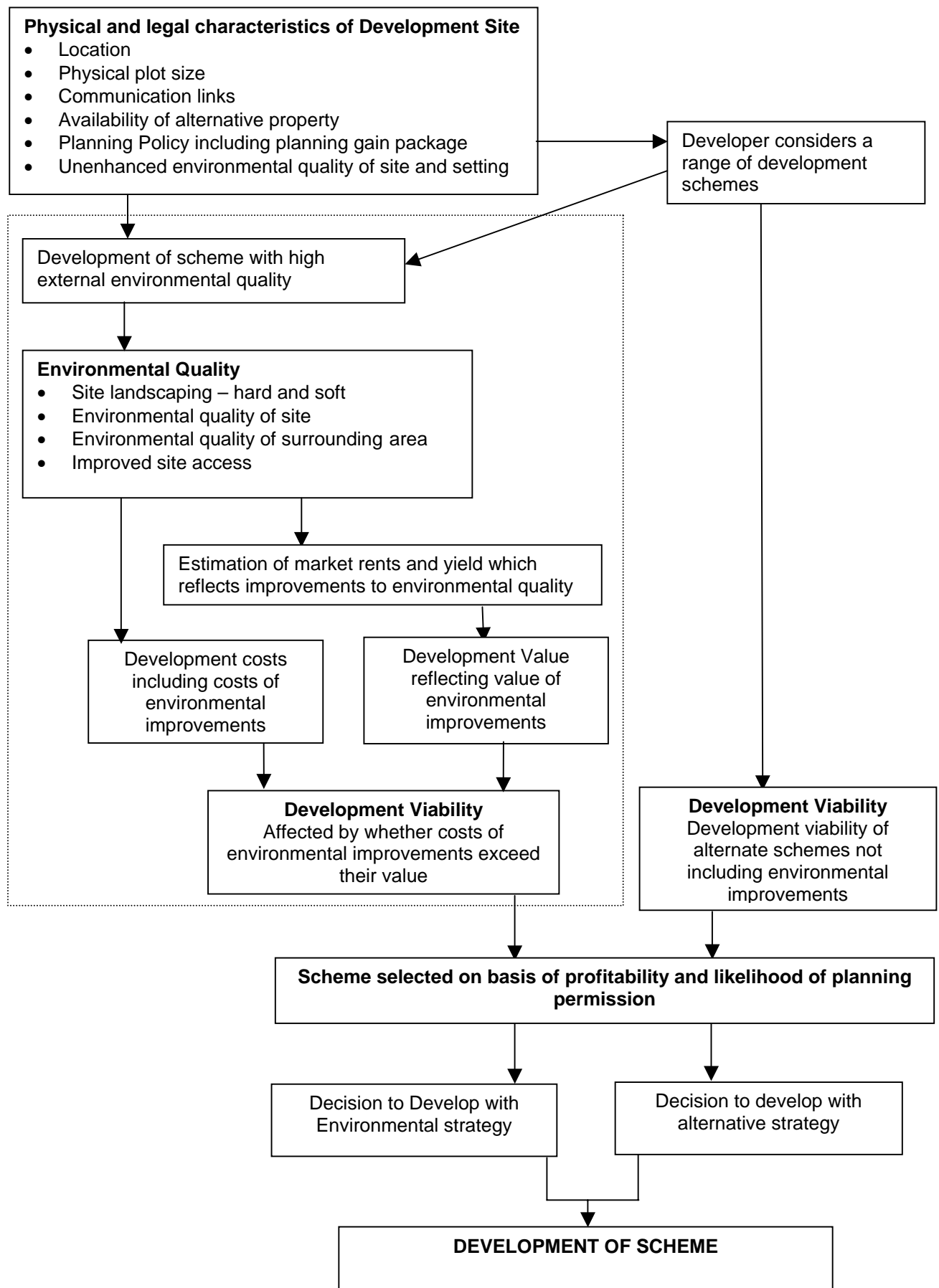
- Ease and quality of communications (proxy for market access)
- Housing and health care for senior executives
- Availability of suitable office space
- Language and cultural factors
- Overall cost of living
- Availability and quality of executive and professional staff
- Government attitude to new firms

The factors described above make no mention of environmental quality but the age of the research may explain this.

The initial choice of region is the key decision. The decision making processes surrounding this choice are not well documented and the role of regional image unknown. The role of agents marketing developments to occupiers is a key component in inter-regional location decisions. These agents locate suitable premises within regions for occupiers to view.

The choice of the region and sub region in attracting occupiers is key. Only then will environmental quality attract an occupier to a specific site or scheme. The decision making processes of occupiers related to regional choice is a subject requiring significant new research as part of any further research.

**FIGURE 3.3 Development decision making and environmental quality.**



### **Occupier decision making and Environmental quality**

**Figure 3.1** examined the potential role of environmental quality in determining rent. There are various factors such as location and building specification that will primarily determine rent but other factors such as environmental quality may influence the rental level. The extent of this influence depends on whether the occupier perceives it will impact on:

- Worker productivity: Will a good quality external environment lead to a happier workforce and increase productivity?
- Image: Will a good quality external environment reflect on the image of the tenant? This is especially important when clients visit the premises.
- Labour force: Will a good quality external environment attract and retain high quality staff?

If the occupier perceives that one or all of the above is true then environmental quality will be a key factor in decision to locate in specific premises (See **Section 5**). This will be reflected in the rent that occupiers are willing to pay for the premises.

### **3.6 The importance of land value**

Land value is a trigger for development. The residual process used by developers to determine the financial viability of a development scheme uses land value as the determinant of development viability. High land values indicate that development values are higher than development costs. **Figure 3.4** describes the role of land price in the planning process. Environmental improvements that increase the value of land will have an impact on property development viability and activity. However, the key determinants of land value are the demand from occupiers and investors. These key drivers have been discussed above.

### **3.7 Valuers and Environmental Quality**

Commercial property valuers are used by investors, developers and occupiers for advice on property value during the decision making process. They advise investors and developers on achievable rents and market yields and occupiers on passing rents. Valuers also value development land and therefore have a significant impact on the regeneration process.

The valuation process is heavily dependent on market transactions. Recent sales and lettings provide the valuer with the market, or comparable, evidence used to value similar assets (see **Section 6** for more detail). Past transactions reflect the perceptions of those involved in the sale or letting which manifest themselves in the rent or yield. As valuations are based on these transactions then they in turn reflect market perceptions.

If the demand from occupiers and investors is high for schemes with good environmental quality this will be reflected in the rents and capital values achieved on recently sold or let schemes. Valuers will then use such evidence to value similar schemes and reflect the demand for high environmental quality in the valuation. Problems arise where there are no comparable transactions on which to base the

valuation. The perceptions of investors and occupiers of the importance of environmental quality cannot be identified from similar transactions and thus must be estimated by the valuer. If the valuer valuing a scheme of high environmental quality believes this will impact on value then this will be reflected in the valuations. The reverse is also true.

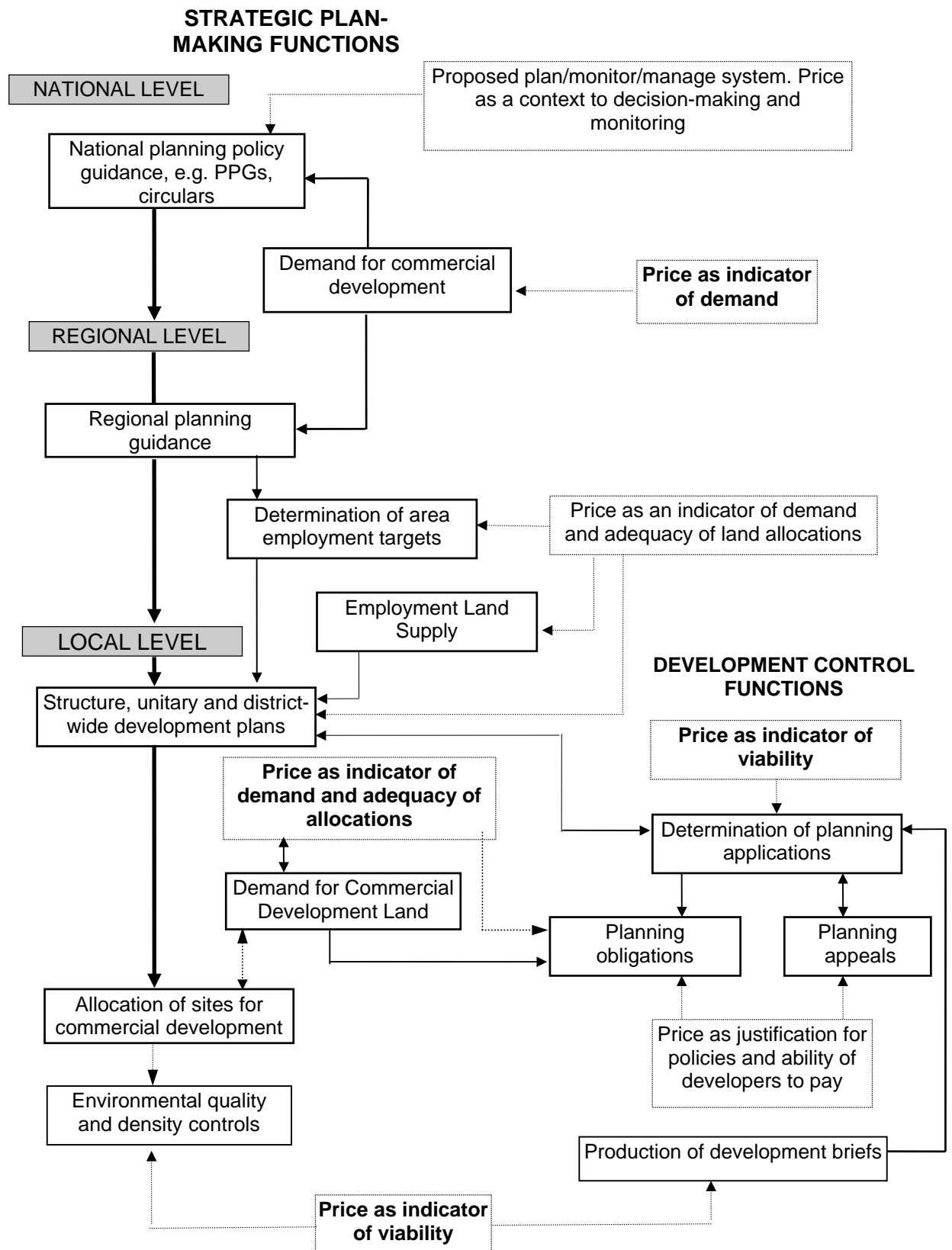
Valuers valuing land will reflect environmental quality in the land value if there is a higher demand for such land from developers who in turn perceive there is a demand from occupiers and investors for developments of high environmental quality.

Therefore, in markets which lack developments of high environmental quality the perceptions of the key actors are difficult to identify due to a lack of comparable transactions. The valuer then becomes crucial in reflecting the importance of environmental quality. Individual opinions may differ. In markets of low demand where such schemes are rare it is possible that valuers will undervalue the impact of environmental quality due to the lack of available market evidence. The actions of valuers are important in setting the market and reflecting the importance of environmental quality. The methodology in **Section 6** discusses the valuation process and describes a method which will identify the impact of environmental quality on land valuers as quantified by valuers.

### **3.8 Summary**

This section has described the decision making processes of the key actors involved in property investment. This aids an understanding of the role of environmental quality in the decision making process and its relative importance as described in subsequent sections. Where possible, the analysis has described where environmental quality fits in to the process. Diagrams describe the potential role of the environment. **Section 5** continues this theme describing the different perceptions of actors involved in the process, describing the importance of the variables. The analysis in this section is, therefore, vital to the understanding of that later section.

**FIGURE 3.4: Potential role of price in the planning system. Adapted from Whitehead and Monk (2001)**



## 4. Literature Review

This literature review surveys literature relevant to an understanding of the impact of environmental quality on investment decisions. It begins by exploring the literature on the economic value of the environment and reviewing such issues as the value of undeveloped land. A review of the use of hedonic analysis to isolate the impact of the environment on property values follows. Literature on the impact of good design on property values is relevant to the extent that good design is shown to benefit occupiers, developers and investors and this can be extended to an analysis of the external environment. Finally, two key reports which examine the impact of the external environment on development and private sector regeneration (DOE 1995 and ODPM 2002) are reviewed. Although both are relevant to the impact of environmental quality neither attempt to quantify its impact or isolate its impact on the decision making processes of key actors.

### 4.1 The economic value of the environment

A joint report by Eftec and Entec for the ODPM, "*Valuing the External Benefits of Undeveloped Land*" (ODPM 2002) reviews the key literature relating to valuation of the environment. Rather than extensively review this literature again, a summary of the key literature as identified by the ODPM report is described in **Table 4.1** below. The ODPM research used a variety of valuation techniques to determine the external benefits of a variety of land types.

The studies listed in **Table 4.1** generally use Willingness to Pay (WTP) techniques to estimate the amount consumers would pay, for example, to preserve the greenbelt around Chester (Hanley and Knight 1992). From the WTP analysis, a figure per hectare is calculated from the WTP figure per consumer multiplied by the relevant population. The higher the figure, the higher the WTP to preserve the amenity, for example.

**TABLE 4.1 Valuing the environment: Key literature.**

	<b>Author</b>	<b>Scenario</b>	<b>£ per hectare per year (2001 prices)</b>
<b>External Benefits of Public Space in Urban Areas</b>	Hanley and Knight (1992)	WTP to preserve the Greenbelt around Chester, England	889
	Lockwood and Tracy (1995)	Centennial Park, Sydney, Australia	54,092
<b>External Benefits of Forested Land in Urban Areas</b>	Bennett et al (1995)	WTP for access to the forest path network in Windsor Forest	503
	Bishop (1992)	WTP per visit to Derwent Walk Country Park and Whippendell Wood	1,875 - 2,102
	Bateman et al (1996)	WTP for establishment of a 100-acre woodland area	1,346 - 4,276
	Tyrvaainen (2001)	WTP to prevent urban development in several urban forest parks, Finland	1,101 - 4,357
<b>External Benefits of Forested Land in Rural Areas</b>	Garrod and Willis (1999)	Consumer surplus (CS) associated with the recreational use of six forests	11
	Hanley and Spash (1993)	WTP to avoid a bypass through an ancient woodland	6,626
<b>External Benefits of Agricultural Land</b>	Willis et al (1995)	WTP in taxes to maintain the ESA program.	3,170
	Hanley et al (1998)	WTP for environmental improvements at Breadbare ESA	3,110
	Bowker and Diychuck (1994)	WTP for farmland retention under threat from urban development, Canada	43-107
<b>External Benefits of Natural and Semi-Natural Land</b>	Willis and Garrod (1993)	WTP to conserve the landscape of Yorkshire Dales National Park	311
	Cobbing and Slee (1994)	WTP to protect Mar Lodge Estate, Scottish Highlands	1,128

Source: The value of undeveloped Land. ODPM (2002)

None of the research summarised above quantifies the impact of these scenarios on property values. The ODPM report provides a useful overview of valuation techniques used in the valuation of the economic benefits of the environment (ODPM 2002).

Other research reporting the economic benefits of the environment include the Economic Benefits of Community Forestry (CJC Consulting 2000). This report describes the social and economic benefits of community forests. It states the role that community forests can play in environmental regeneration by improving the image of an area and generating direct and indirect employment. However, other

than a wide view of the benefit of community forests, the report provides little firm evidence beneficial to this study,

#### **4.2 Hedonic analysis and the impact of the environment on property values**

Hedonic analysis is a statistical technique that has been widely used in property research since the work of Lancaster (1966) and Rosen (1974). Rosen defined housing as a bundle of structural, site and neighbourhood characteristics from which householders derive utility (Rosen 1974). The method of hedonic equations permits expenditures on housing to be deconstructed into measurable prices and quantities, so that rents for different dwellings or for identical dwellings in different places can be predicted and compared (Malpezzi 2003).

Research has been able to isolate the impact of the environment as a characteristic that affects property value. Several studies have examined the impact of environmental quality on house prices. Cheshire and Sheppard (1995), Garrod and Willis (1992) and Din et al (2001) are examples where measures of environmental quality have been added to the hedonic equation to determine their impact.

Measures of environmental quality include distance to the nearest open space (parks, golf courses etc.) and the distance to nature or an index composed of a variety of qualitative measures (Bender et al 1997). Significant quantities of research in the US have valued the negative impacts of landfills and storage tanks on property values (for example Simons et al 1992). These studies have been able to quantify a price per m<sup>2</sup> of housing added or removed by the particular variable being measured. For example, one study calculated an increase in the sales price of housing of \$2,105 if that unit was located within 1,500 feet of any open space and a further increase of 1.43% for every additional acre of open space (Bolitzer and Netusil 2000).

The vast majority of hedonic analysis has been undertaken on residential property values and in the US due to the availability of adequate quantities of data upon which the technique relies heavily. Limited research on commercial applications of the technique has been reported (Bender et al 1997, Din et al 2001) but none in the UK. An example Din, Hoesli and Bender (2001) derived a measure of environmental quality for commercial property in Geneva to input into the hedonic equation in order to isolate its impact.

The lack of available data in the UK and the problems associated in using the technique with commercial property, that is its increased heterogeneity, renders the technique unsuitable for analysing the impact of environmental quality on commercial property values.

#### **4.3 Good design and property values**

Literature on the impact of good design on property values covered by material published by CABI in the UK and a number of small studies outside Europe.

CABE recently published two studies: The Value of Design (CABE 2002) and the Value of Urban Design (CABE 2001). The reports discuss the reasons why good design increases property values.

### **CABE The Value of Design**

This report, published in 2002, describes a survey relating to the impact of good design and reviews the relevant literature. CABE commissioned a survey in the summer of 2002 which produced the following findings (MORI 2002):

- 85% of respondents agreed that better quality buildings and public spaces improve the quality of people's lives and the quality of the built environment made a difference to the way they felt.
- 77% agreed people are more productive in well designed offices
- 72% agreed with the statement that well designed houses will increase in value quicker than average

The survey shows that the perception of the public is that good design does have an impact on property value.

The literature review reports the following key points.

- An Urban Land Institute study of over 10,000 housing transactions in four pairs of housing developments in the US revealed an average sales premium of \$20,000 or 11% on schemes upholding basic urban design principles (Eppilli and Tu 1999)
- The University of Bristol carried out a survey of 600 households on a large suburban housing estate with little or no distinctive design quality. Residents exhibited more difficulties in selling and experienced more negative equity than those living elsewhere on more distinctively designed development. (Forrest et al 1997)
- An exploratory study carried out by Savills in 2002 indicated volume house builders who had invested in higher quality design in residential schemes could expect to yield a residual value per hectare of up to 15% more than conventionally designed schemes. (Barrow and Bachan 1997)
- A study by the University of San Francisco examining case studies across the US reported that the preservation and improvement of open land for public use creates a net increase in municipal tax revenues by increasing land values in the surrounding neighbourhood. (Lerner and Poole 1999)
- The hedonic method was used to determine that award winning buildings in Chicago commanded a rental premium that could not be explained by other factors. (Vandell and Lane 1989)

### **CABE The Value of Urban Design**

This more substantial report by CABE published in 2001 examines 3 pairs of selected commercial developments. One of each pair is considered better than the other in terms of design quality as rated by those involved in the developments and the research team, and the pairs are used to test the value of investment in high

quality urban design. The research concludes that the schemes considered to possess higher design quality provide a range of economic, social and environment benefits including higher rental levels, lower maintenance costs, enhanced regeneration and increased public support for the development. There was no attempt to quantify the impact of good urban design on the rental or capital value of the six properties.

The key actors in the development process are considered (CABE 2001) to receive the following benefits from good urban design:

- Investors – benefit through favourable returns on their investments and through satisfying occupier demand.
- Developers – benefit by attracting investors and pre-lets more easily and hence from enhanced company image. If they retain a stake in their developments for long enough they also benefit from good returns on their investments.
- Occupiers – benefit from the increased performance. Loyalty, health and satisfaction of their employees and from the increased prestige that well designed developments command with guests and clients
- Society – benefit from economic advantages of successful regeneration, including new and retained jobs and through access to a better environment and enhanced facilities
- Public authorities – benefit by meeting their obligation to deliver a well designed, economically and socially viable environment and often by ripple effects to adjoining areas

Three key links were made. Good design leads to favourable investment returns, presumably through higher achievable rents and lower yields although this was not explicitly stated. Employees benefit from good design and associated productivity increases benefit occupiers. Developers experience higher demand from occupiers for well designed premises. There is no reference to the part played by external environmental quality in good design but it might be assumed that similar benefits are attributable to developments with a high quality external environmental design.

The benefits of urban design are summarised in the **Table 4.2**.

### **Design and Value: Measuring value**

Qualitative approaches to assessing the value of design include studies by the RICS and Department of the Environment (1996), Verhage and Needham (1997) and Guy (1998). These studies focus on how decision makers perceive the importance of good design and how this relates to the decision making process. The studies do not attempt to discuss the external environment.

A more quantitative approach to measuring the impact of good design is found in the work of DNH et al (1996) and Property Council of Australia (1999). The DNH report measured the costs and benefits of properties with given levels of design quality. The Property Council of Australia study (1999) examined the financial performance of design award winning properties. They found a link between these buildings and high property returns.

**TABLE 4.2 Benefits of urban design**

<b>Economic Value</b>	<b>Social Value</b>
Producing high returns on investment (good rental returns and enhanced capital value)	Creating well connected, inclusive and accessible new places
Security and longevity of investment	Delivering mixed use environments with a broad range of facilities and amenities available to all
Placing development above local competition at little cost	Delivering development sensitive to its context
Raising land values	Enhancing feeling of safety and security
Responding to occupier demand	Returning inaccessible or run down areas and amenities to beneficial public use
Helping to deliver more lettable area (higher densities)	Boosting civic pride and enhancing civic image
Reducing management, maintenance, energy and security costs	Creating more energy efficient and less polluting development
Contributing to a more contented and productive workforce	Revitalising urban heritage
Supporting the life giving mixed use elements in developments	Occupiers image
Creating an urban regeneration and place marketing dividend	
Differentiating places and raising their prestige	
Opening up investment opportunities, raising confidence in development opportunities and attracting grant monies	
Reducing costs of rectifying design mistakes	

Source: The value of urban design, CABE (2001)

#### **4.4 The impact of environmental improvements on Urban regeneration – Department of the Environment/PIEDA (1995)**

The 1995 report by PIEDA for the DOE examines the impact of environmental improvement projects (EIP) on development activity (DoE 1995). Although describing in detail the impact of EIP there is no attempt to quantify the impact on property values. Environmental improvement projects are defined as projects whose main objectives are the physical improvement of the urban fabric for the purposes of attraction of private sector investment rather than simple consideration of visual amenity. The EIP are drawn from the Urban programme, Derelict Land Grant projects and UDC regimes.

Three types of developers and development activity are described:

- *Niche developers*: specialist inner area developers who tend to work within the constraints of the existing urban environment where EIP exercise less influence.
- *Urban renewal developers*: with an emphasis on comprehensive physical urban renewal to create a new environment. Here EIP can support projects with site assembly, clearance and highways and services.

- *General developers:* EIP support investment through site works and services but also help reinforce investment decisions through improvements to the general amenity of inner areas.

Through interviews, the research determines that each class of developer had a slightly different view of the impact of environmental improvements on development activity. General developers consider environmental quality as more important within development decisions than niche and urban renewal developers who concentrate almost exclusively on small, brownfield sites in urban locations.

The PIEDA study discusses, through interviews and case studies, the potential of EIP to influence the development process and investment decisions. The following findings are relevant to the impact of environmental quality on investment and development decisions:

- Changes in a location's visual environment or amenity were not found sufficient alone to induce investment but may reinforce investment decisions.
- External economic and property market forces influence development demand and EIP were found to be most effective when there is underlying property demand such that the local economy can support new development. This has implications for the potential to attract investment in areas of low market demand through environmental improvements alone.
- EIP had the greatest impact on development activity where they offered direct support to development investment by removing physical development constraints such as providing access, services and infrastructure, removing contamination and making sites available.
- EIP were considered unlikely to change the basic locational and accommodation requirements of occupiers.
- No matter how attractive a particular environment may be created, if it cannot meet location and accommodation requirements it is unlikely to attract investment.
- EIP were most successful in achieving economic objectives where they removed physical constraints to development.

The above issues were related to specific sites or schemes. Environmental quality of the development setting is also discussed. The quality and characteristics of the surrounding environment are identified as a factor in influencing development investment. Importantly, an attractive environment could be promoted to potential occupiers and users and, as such, provide evidence of a stable local economy as a basis for long term investment. Evidence of a stable local economy feeds through into perceptions of lower property risk. A stable local economy reduces development risk so raising development values. Where there is the prospect of an area's environment declining then even the most experienced inner area developers were found unwilling to undertake investment.

Therefore, capital and rental values may respond to EIP. This was found to be either a direct consequence of the enhanced amenity or environment achieved within a specific development scheme or as an indirect consequence of a change in perceptions of a particular area. In relatively depressed property markets the impact may not necessarily show in enhanced rental or capital values but through the attraction of development investment, increased levels of sales and lettings and a consequent decline in vacancy.

In summary, demand, location and accessibility are viewed as more important factors than environmental improvements but environmental quality was seen as a reflection of economic stability. This has significant implications for this project.

#### 4.5 Factors affecting the level and form of private investment in regeneration. ODPM/University of Ulster 2002.

The 2002 report by the University of Ulster (ODPM 2002b) discusses the role of the private sector in regeneration. As part of the wider study, the report examines the impact of the environment on regeneration although again there was an attempt to quantify its impact.

The objective of regeneration is to raise property values so that projects become viable and sustainable. Environmental quality is found to have an important role to play. Regeneration projects are discovered to impact positively on the surrounding area promoting further private sector development and investment. The creation of an image in an area is found to be an effective method of stimulating regeneration.

The report drew heavily on earlier research by Adair et al (1998). Their report considers the negative image of neighbouring environments as a principal reason for non investment in urban regeneration. The following extract from their analysis (**Table 4.3**) shows that the quality of neighbouring environments can act as a deterrent to investment. The quality of the neighbourhood was considered as the second most important variable for institutional investors behind the key financial inputs. 95% of institutional investors identify the quality of neighbouring environments as a major factor deterring private sector investment regeneration.

**TABLE 4.3: Importance of regeneration variables for investors and developers.**

	Number of Respondents	Percentage of respondents viewing the factor as important		
		Property investment companies (%)	Property development companies (%)	Institutional investors (%)
Quality of neighbouring environment	78	73	74	95
Grant regimes	82	90	78	85
Lack of or low rates of capital appreciation	76	70	74	90

Source: Adair et al (1998)

The ODPM reports site contamination as a significant influence on regeneration. The risk premia investors place on regeneration locations reflects the low environmental quality of many brownfield sites and the stigma associated with site contamination. Indeed, to attract the private sector there is considered to be a need to produce a major transformation within the regeneration areas in terms of environmental quality and image to influence the perception of an area. The quality of the environment, local infrastructure and image are seen as fundamental to the goal of raising value.

A perception of high crime and a lack of security are considered major concerns which blight a location resulting in little prospect of private investment. In such areas local entrepreneurs are seen as key to stimulating investment.

Changes are occurring at the edge of institutional funding with the English Cities Fund and Igloo specifically targeting regeneration investment. Regeneration funds take a long term perspective with the expectation of good returns as the property matures; frequently 3-7 years post completion. Institutions drive value and in general there is considered a need for much greater innovation on their part.

ODPM (2002b) support the contention that environmental quality has an impact on private sector investment and regeneration. A high quality environment stimulates investment, particularly from institutional investors, and a low quality environment has a significant negative impact on development prospects. In such areas local authorities and local entrepreneurs were considered vital to stimulate regeneration, improve the quality of an area and attract larger institutional investors.

#### **4.6 Summary**

This literature review has examined the key literature relating to environmental quality and its link to investment and development. There is a considerable body of literature generally relating to valuing the environment. This literature tends to use willingness to pay techniques to identify how groups of individuals value specific amenities or the loss of such amenities. This literature provides a sound basis for valuing the environment but does not examine the impact of the environment on investment and development processes or on commercial property values.

The literature on hedonic analysis is vast. This statistical technique is used to value the impact of a specific aspect of the environment on property values, for example proximity to open space or a sewage works. The technique has been used extensively in the UK, US and Europe but has concentrated largely on analysis of residential property due to the relative homogeneity of this property sector and the quantities of data available. So far there has been very limited research on the commercial property sector and none that quantifies the impact of scheme specific environmental quality on land and property values.

CABE have published extensively on the value of good design. Two key reports (CABE 2001 and 2002) describe the impact of good design on perceptions of value and property performance. The impact on value is not, however, measured. They present evidence that good design results in property increasing in value faster than poorly designed property and it also retains its value longer. To the extent that external environmental quality is an aspect of good design, the reports indicate, by implication, that environmental quality will also have an impact on value. The Property Council of Australia (1999) attempted to quantify the impact of good design by assessing the financial performance of design award winning buildings. They found a link between property performance and good design.

The DOE report of 1995 discussed the impact of environmental improvement projects on development activity. Using case study and interview techniques they showed that the quality of the environment has an impact on development activity under certain circumstances. The environment acts as an indicator of the strength of a local economy and as such will promote investment.

The ODPM report (2002b) supplemented by Adair et al (1998) discussed the importance of environmental quality as part of a wider literature review of private

sector led regeneration. Environmental quality was seen as a significant variable in institutional investment decision making and was a key instrument in raising land

values. The quality of the neighbourhood environment was a vital component in building investment confidence in an area and attracting private sector regeneration.

Although the literature reviewed is extremely useful it is notable none of it attempts to quantify the impact of environmental quality on property values in the way envisaged in the research brief. **Section 5** and the methodology described in **Section 6** address these gaps in the literature and suggest further research that will provide quantifiable evidence of the impact of environmental quality on values. Before this, the next section examines the use of environmental quality in the marketing of property developments.

## 5. Environmental Quality and Investment Decisions

### 5.1 Introduction

The literature reviewed in **Section 4**, particularly the reports by DOE (1995) and ODPM (2002b) identified a positive link between environmental quality and investment decision. The PIEDA report covered the views of developers relating to improvement areas and the ODPM briefly reported on the views of investors as part of a much wider study. Neither report concentrated specifically on the impact of environmental quality on the investment decision making process nor attempted to quantify it. This section starts to fill the gaps in the literature by reporting on a survey of the three key actors in the development and investment process; investors, developers and occupiers eliciting views on the role of environmental quality in decisions. It reports on 6 scoping interviews designed to examine the perceptions of key decision makers relating to environmental quality.

This section attempts to satisfy the research brief by addressing key questions left unanswered by the literature. For example:

- What is the role of environmental quality in decision making and the impact of environmental quality on investment risk?
- What aspects of environmental quality are particularly important?
- Can environmental improvements raise land values?
- What is more important: the environmental quality of the site or of the setting?
- What are the links between environmental improvements, contamination and investment?

It should be noted that, at this preliminary stage, the questions did not seek to explore distinctions between the attitudes to the environment of sites, their settings and the environment of the local area nor did they seek to explore aspects of what constitutes environmental quality and what different aspects contribute to decision making. This limitation should be borne in mind in the discussion that follows which focuses mainly on sites, although the distinction between sites and settings is covered towards the end of **Sections 5.2** and **5.3**.

The interviews concentrated on developers, investors and occupiers involved in investment and development decisions relating to business park developments. Business parks were chosen because if environmental quality does have an impact on investment decisions then it is the business park sector of the market where it is likely to have the greatest effect and be the easiest to identify. The same relationships are, however, also likely to apply to other forms of commercial and industrial development.

The interviews were conducted either face to face or over the telephone, were open ended and lasted between 30 and 75 minutes. The names and organisations are not revealed due to a need for confidentiality.

The following analysis is divided by 'actor' and the relevant issues discussed in turn for:

- Investors
- Occupiers
- Developers

## **5.2 Investors**

Two institutional investors were interviewed. Institutions were chosen for two reasons. First; they are the main investors, along with property companies, in business parks due to the size of the investment opportunity and the quality of typical occupiers. Second; they are inherently conservative in their investment decision making. If this group of investors view environmental quality as a factor in the decision process then it follows that those investors with a higher propensity for risk will also factor environmental quality into the investment process.

### **The role of environmental quality in decision making**

Environmental quality was seen as implicit in the decision making process because it is reflected in the rental level achievable on the property. Developments of high environmental quality are viewed as more likely to be occupied by high quality tenants; notably the research and development, regional headquarters and overseas groups of occupiers and the types of occupiers where clients visit the premises. These groups are considered tenants of the highest quality where the risk of the tenant defaulting is extremely low. The yield is "nudged" downwards accordingly to reflect the lower risk. The combination of higher rents and a lower yield results in higher capital values when compared to similar developments with lower levels of external environmental quality.

In terms of analysis, it was emphasised that each investment opportunity is examined on its merits. There is no set method of analysing and quantifying the impact of environmental quality on investment value. The importance of environmental quality is not underestimated. "The business parks that have the highest occupancy rates and have attracted the highest quality occupiers have pretty special environments".

Although there are several key variables regarded as more important in attracting good quality occupiers, such as location, access to transport network and building specification, environmental quality was viewed as only slightly less important. However, in areas such as the South East where location and access are viewed as broadly similar within a 70 mile radius of London, building specification and environmental quality were seen as the variables that separate the quality of one investment from another.

The situation is viewed differently for investments outside the South East. Location and access are much more important, the level of importance depending upon the specific region and sub region. These are the variables which determine the investment decision. Environmental quality was viewed as a bonus in many respects but a factor that would separate competing developments all other things being equal.

These key factors, added to institutional fundamentals such as the size of the investment, its liquidity and running costs, are the main variables of the investment decision. The potential to attract quality occupiers (the preference of investors is for pre-let investments) is considered the most vital factor within a scheme. Environmental quality is seen as fundamental to this.

### **Do investors understand the benefits of high environmental quality?**

Both respondents thought that both investors and developers understood the importance of environmental quality in attracting high quality occupiers. The property agents have an important role in advising investors and developers of occupier requirements and the locations in which they are seeking premises. Building specification was however, viewed as more important and the flexibility of the actual building, the ability to let the property in a number of different ways (for example as a whole or floor by floor) was key to attracting occupiers and minimising rental voids.

### **Environmental quality: Site or Setting?**

One of the interviewees thought that environmental quality on the site alone was not enough and that a "little oasis of green" in the middle of a run down area "does not fool anyone". This is consistent with the findings of the DOE (1995) and ODPM (2002b) reports where the stability of the local economy was reflected in the quality of the surrounding environment and where improvements had been made this indicated the potential for stable long term investment conditions. Pepper potting high quality development sites was seen as having a "political if not economic logic to it." "Starting at one end of a big site and changing quite a large area, that would, from a property investment perspective, be more powerful and attractive."

The other respondent commented that there was probably a minimum level of environmental improvement required depending upon the existing quality of the setting. "If you are working in a nasty environment you have got to change the perception."

### **Site contamination and the role of third parties**

When discussing the role of environmental improvements in raising land values and increasing the demand for brownfield regeneration land the issue of contamination arose constantly. Institutional investors are very reluctant to become involved in sites that have been contaminated unless there is a guarantee - an insurance policy - covering the remediation works. Even then a discount on the land would be necessary to reflect the added layer of risk. In a difficult, low demand market the presence of contamination may "push it over the edge."

There was a role for a third party, such as Yorkshire Forward, to undertake decontamination, guarantee the works and then sell the land on to a developer. This, from the investors point of view, would remove the stigma associated with the contaminated land and be factored in to any investment appraisal. Environmental works in addition to decontamination could increase the demand for the land from developers.

### 5.3 Occupiers

None of the literature surveyed examined the impact of environmental quality from the point of view of occupiers. As stated in the investor interviews, occupiers are the most important factor. A pre-let investment to a good quality occupier will reduce investment risk and raise the capital value of that scheme. Two occupiers were interviewed to elicit their views on the role of environmental quality on decisions to occupy premises.

#### **The role of environmental quality in the decisions of occupiers**

Environmental quality is relatively important in the list of factors influencing decisions to occupy premises. The most important factors are, in order:

- The current and future needs of the occupiers core business.
- The location geography in terms of his business, infrastructure access such as roads/rail communication and accessibility to existing staff or skilled labour market.
- The quality of the working environment, both building quality and the external environment.
- The cost (prime and running) and utilisation of new premises compared to existing premises.
- The limits of his existing lease and contractual obligations

Accessibility is more of an issue the further the property is located from London. A suitable transport network in the South East is taken as given for high quality business parks and in such cases the building specification is more important. The external environment has a role to play and business parks with exceptionally high quality environments such as Green Park and Stockley Park attract occupiers on the basis of the working environment. A high quality environment is of most importance to occupiers where the prime business involves contact with clients. The occupier wants to promote a quality image. It is in these circumstances that the external environment plays the most significant role in decision making.

The external environment is considered particularly important when the office location is a considerable distance from services located in the town or city centre. In this case "occupiers have to provide something for the workforce to do during breaks and an external environment is part of this. The external environment is very important in attracting and retaining key skilled staff as competition for good staff is fierce."

"Environment is rated below access, building specification, people and price but in an area such as the South East where there are many similar locations competing for occupiers the external environment could tip the balance." As with investors, there is a South East view. Demand and supply are high and different factors become more important. In areas outside the South East where supply is limited, the most significant factors such as general location, access, building specification and access to labour become more important than the external environment. The external environment was considered in itself not enough to attract occupiers but it has a role to play in maximising achievable rents.

One respondent commenting on the move towards better external environmental quality stated: "You can precisely locate the beginning of the movement towards better external environments. It began in the mid 1980's when the business park concept began. When it became apparent that developments outside the town centre were possible which were surrounded by greenness then such developments took off. It has been reinforced in the mid 90's by the sustainability agenda."

### **Environmental quality and rents**

There were differences in opinion between the two interviewees over the impact of environmental quality on rents. One commented that occupiers would pay higher rents for a high quality external environment "especially where the occupier's perceived image in his market place is enhanced". Additionally, occupiers would also pay higher rents "where staff satisfaction is enhanced resulting in higher productivity." A link was made between the external environment and worker productivity. The investors and developers interviewed also made this link between worker productivity and worker happiness enhanced by a quality external environment. No literature was found to support this and this is a key area of research for any new research.

The second respondent stated that occupiers will not specifically pay higher rents for the external environment as the rent will be based on the location and building specification although there is a link in quality business parks between high building specification and environmental quality. The respondent considered that occupiers would be willing to pay for the external environment through increased service charges levied to pay for the maintenance of the environment.

### **Developers and occupier requirements**

"Developers are aware of the importance of the external environment. You just have to look at the money spent up front on providing the environment. A quality external environment is standard in business parks in the South East." Developers and investors seek to maximise returns and the ability to attract occupiers with strong covenants reduces risk and increases return. It is considered that in business park developments, developers and investors respond to the needs of occupiers and must do so because of the competition.

### **Marketing and environmental quality**

"The developers are advised by clever advisers who ride on the back of peoples' concerns, for example they now emphasise the quality of the environment as these issues are high on the occupiers agenda."

The use of "green" marketing material emphasising the environmental quality of the development is becoming more and more common according to both interviewees. This is as a result of the increasing awareness from occupiers that a quality external environment is important in attracting and retaining staff working on business parks.

Early business park marketing literature used artist impressions of developments to convey the feeling of green space but now use quality 3D images. Occupiers corporate brochures now include "photographs of their own "statement" headquarter buildings showing the high quality of the internal and external environments. These

photos will include landscaping, lakes, ornamental ponds, trees and local flora and fauna.”

## 5.4 Developers

The Department of Environment report (DOE 1995) discussed in detail the impact of environmental improvements on development activity. They found that certain types of developer, notably general developers, viewed the environment as an important element in a development decision and as an indication of the potential demand from investors for the local market. From this it would be expected that developers of business parks would view environmental quality as a vital component in the decision making process. The interviews explored this theme.

### Environmental quality and development decision making

The key drivers of development are accessibility, commercial attractiveness, the catchment area for staff and good transport links. Roads are still the primary concern for occupiers in a business park environment. Developers develop with institutional investors in mind and, as such, the concerns of occupiers are important. There are certain institutional criteria that must be met:

- the size of the development in terms of investment value
- the size of buildings
- the building specification, for example floor to ceiling height ratios, the internal environment (air conditioning, emissions and general running costs)
- The length of the tenancy

Developers also build with occupier's requirements in mind because they are aware that good tenant covenants will impact upon development value. Environmental quality is important if it will attract quality occupiers. High quality building specifications will attract high quality tenants and these tenants are likely to be the same tenants that demand high quality external environments. If developers wish to attract high quality tenants then they must satisfy the tenants' demand criteria.

On pre-let developments occupiers can have an input in the design of the external environment but the extent depends upon the timing. “Some [occupiers] would rate environment highly and some tenants even have a preference for the type of trees or planting. But for others it is not high on the agenda because although those entrusted with finding pre-lets are on the estates side and may have the interests of the workers in mind those that finalise the deal are from finance and are interested in minimising costs and if planting costs extra then that may be one area that is minimised.”

### Site versus setting and the level of environmental quality

“If the location is suitable the state of the site is of little concern.” The respondents commented that the site can be improved during the development but the location cannot. “We have developed in some pretty awful places. The overall environment does attract occupiers but at the end of the day it comes down to the employment potential and access and these are the over-riding criteria. If there are isolated plots in a wider area and the area is greened then this has some merit but it is not

enormously high on the agenda.” Therefore, the development fundamentals are more important than environmental quality.

Environmental improvements by third parties before the developer becomes involved can be problematic. Landscaping and the planting of trees on the site can remove flexibility from the development scheme. “There is little point landscaping the site as the developer wants to do it. Soiled and seeded is ideal. Any trees may be planted in the wrong place and would have to be removed. Peripheral landscaping is fine if suitable infrastructure is in place.” The developer wants maximum flexibility from the site but there are environmental improvements favoured. “The developer wants control of the external environment but structured landscaping between plots and around the boundary of the site is good.” The planting of trees on site boundaries for site screening and division of plots where appropriate are two useful measures.

### **Site contamination**

Land contamination is viewed as a significant problem. If there is serious contamination then a site cannot be developed commercially due to the difficulty of attracting investors. Where contamination is remediated, warranties are crucial for future investment because this removes the risk from the investors. Warranties should be transferable to future tenants and investors.

There is a role for third parties to remediate land and provide the warranties before selling the land on to developers. Local authorities are viewed as crucial. One developer has created a partnership with a local authority whereby the local authority has taken on responsibility for decontamination. The purchase price of the land reflects some of the costs of the remediation work. The main problem with third party decontamination is the cost of decontamination is so great that unless the third party can obtain the land free of charge it is considered very difficult to make a profit.

### **The marketing of environmental quality**

There was disagreement on the role of environmental quality in marketing. One developer viewed it as becoming increasingly important. But both viewed “greenness” as down the list of criteria emphasised in marketing material. “You would refer to the setting in the marketing but you would first identify the key criteria – the internal building, access etc. The external environment is marketed if it is exceptional.

As a result of the mixed views of the use of ‘greenness’ in the marketing of property, we carried out a brief survey of the marketing materials used by developers and their agents to establish the use of environmental quality in the marketing of development schemes.

For **business park** developments communication materials were exceptionally high quality in terms of professional production and presentation and obviously represent a significant investment. Images were mainly photographs of existing developments or photo-reality computer generated images of projected developments. Two types of images were dominant in the materials: cropped close-ups of modern, usually reflective glass and steel, architecture against blue skies and wide angle views of the exteriors of the same buildings set in obviously high quality landscapes – usually strongly green (but with little other colour) but occasionally a combination of hard

surfaces with specimen planting to soften the image. The portrayal is one of sleek buildings set in controlled, high quality natural landscapes.

One business park in the south east of England, funded by a major institutional investor, has developed a high quality environment as its unique selling point. One of Britain's best known architects was appointed to develop a masterplan that centres on the connectivity through the park offered by a strong and cohesive landscape design that is dominated by large quantities of green space and a large ribbon lake. Brochures for this development have taken the unusual step of hiring models to pose in the landscape to show how its use will enhance the experience of the development for staff and visitors. Other material associated with this development is dominated by an overtly green theme showing the confidence of the promoters of the saleability of this approach.

Other images in business park brochures include close-ups of vegetation which in reality probably bears little relation to the landscape material that will actually be encountered on site but which shows the willingness of marketeers to include strong visual messages about 'greenery' in association with business park developments. Some of these are semi-tones beneath blocks of text, almost as though the image were designed to send a subliminal message about the possibility of an attractive environment to the reader. Images of leaves appeared almost as iconic statements within the graphics of the materials. Images of external views framed by greenery were more common than the interior working environments on sale, presumably as it is the overall architectural statement that is more compelling.

Plans of site layout were common and the opportunity had usually been taken to emphasise the green element of the site by not just showing areas marked as green but also by clearly showing the layout of trees and other structure planting.

The verbal messages place a high emphasis on the quality of the landscape. A number of things are noticeable about verbal messages. One is that overall they are relatively sparse but despite this usually make room to mention the quality of the landscape, often at about selling point number 3 - after the convenience of the location and the parking provision. The second is that the wording places emphasis on the concept of 'landscaping' as a deliberate act specifically carried out to enhance the particular development. There is no sense that any such landscape was already in existence before the development occurred or that it is anything other than specially tailored for the development's requirements. Lastly, there are almost no verbal explanations (and relatively few visual clues) of the benefits that the landscape provision might afford to occupants of the development. If the marketers are aware of any proof of good working environments increasing worker productivity or other business benefits then they are not taking the opportunity to use this as a specific selling point. The exception to this is the overtly green based development mentioned above which makes the more subtle association of inspiring surroundings leading to innovation and hence business success.

In **urban office** locations developments tend to be in more densely packed urban environments but images still show what might be considered to be high quality environmental elements such as quality hard landscape materials and mature trees. Verbal information tends to be more sparing than for business parks and so may not mention the environmental aspects of the development at all.

For **commercial development land and industrial sheds** communications materials were of a lower quality than for business parks and other offices and

tended to feature aerial views of development sites with profile photographs of any premises where appropriate. Industrial and warehouse sites might show a range of environmental quality in their marketing materials from no obvious environmental enhancements up to mature trees and shrubs fringing hard standing areas.

One developer, describing themselves as 'niche' in "being totally focused to the occupier's needs", although having a low key website for marketing still put "high quality landscaped estate" as the second feature in its list of selling points for a design and build opportunity on an industrial park in the north west of England.

Aerial photos show screening and edge structure planting but these are probably only obvious to the attuned eye. There is no mention of such features in accompanying text.

## 5.5 Summary and implications for future research

The key findings from the interviews are that:

- Occupiers are the key group. Investors demand good quality tenants to reduce risk. Developers develop for investors so want to maximise development value by attracting tenants with strong covenants.
- Environmental quality on business parks is particularly important to occupiers where clients visit the premises.
- A high quality environment is important in attracting and retaining staff.
- As a result of the above, environmental quality is an important factor in the decision making process but behind key variables such as location, access and building specification.
- Investors and developers understand the benefits of a high quality environment.
- There was no consensus over whether the environmental quality of the site or the setting is more important.
- Marketing material emphasises the quality of the external environment in business park developments.

These 6 interviews begin to fill the gaps in the literature and answer the key questions posed by the research brief. However, considerably more research is necessary to examine in detail the perceptions of the actors of the importance of environmental quality in relation to both business parks and a range of other property sectors.

Several key issues require further investigation. The importance of the environmental quality of the site and the setting must be explored. How important is the image and quality of the region in attracting occupiers before the specific development scheme is identified? Does the marketing of a regional image play a key role in attracting occupiers? Do quality of life indicators play a part in attracting occupiers to a particular location? Generally methods of attracting occupiers to a location before the environmental quality of the site and setting become relevant need to be explored in detail.

The impact of environmental quality on rents is not clear and further research is necessary to determine if environmental improvements will raise rents. These issues and others will be addressed in any further research.

## 6. Developing the Methodology – Quantifying the impact of environmental quality on value

### 6.1 Introduction

As has been discussed elsewhere in this report, previous research on the economic aspects of greening has covered general, wider issues. The impact of environmental quality has been addressed in reports by DOE (1995) and ODPM (2002) but to date there has been no substantive attempt in the UK to quantify the impact that greening might have on land value and environmental quality on property value. This scoping study aims to address the gap by developing a two phase methodology that will first; quantify the impact of environmental quality on land values and, second; assess the willingness to pay of investors and occupiers for environmental improvements.

### 6.2 Basis for the methodology

The literature review and the pilot interviews identified that environmental improvements will have an impact on development values through higher rents and lower yields (**Sections 2 and 6**). Environmental quality will also have an impact on the value of land. The land value is the trigger for development by indicating in the development appraisal process whether the specific development scheme is viable in terms of profitability (**Section 2**). Site specific increases and raised land values in wider areas will reflect an increase in demand from developers for development land because of the potential for profitable development. Without quantified evidence that land value is increased through environmental improvements to sites and their settings, developers, investors, regeneration agencies and local authorities may be reluctant to spend money on environmental works prior to the commencement of development. The methodology suggested here will provide evidence as to whether specialist valuers of development land value land which has been 'greened', i.e. where the landscape quality of the site and setting has been improved, more highly than land which has not (**Module 1**). The methodology will reinforce this by assessing, more qualitatively, whether occupiers are willing to pay higher rents to occupy property in greened locations and whether investors are willing to pay more to invest in such property (**Module 2**). The methodology will, therefore, provide evidence which may assist key actors in their investment and development decisions.

Two key methodological approaches are proposed in this study to assess the impact of environmental quality on investment. They will form two discrete modules in the proposed research. The first seeks to quantify the impact of environmental quality on land values using a sample of property valuers. Previous research relating to the behavioural aspects of the valuation process is used to develop a suitable methodology that will identify a figure per hectare increase/decrease in land value attributable to environmental improvements.

Previous studies have used surveys of valuers to identify bias in the valuation process or the value attributable to a specific variable. Such behavioural valuation research has informed the development of a unique piece of research utilising

visualisation techniques and practising surveyors to quantify value. The previous research is reviewed in the next section with further detail in **Box 6.1**.

The second approach adopts Choice Experiment (CE), and Willingness to Pay (WTP) methodologies to identify the impact of environmental quality on rents payable by occupiers and investor yields used to value the worth of an investment. Such an approach is quite commonly adopted when assessing the value of an environmental good. As a result the approach is only examined briefly here.

### **6.3 Module 1: The Impact of environmental improvements on land value**

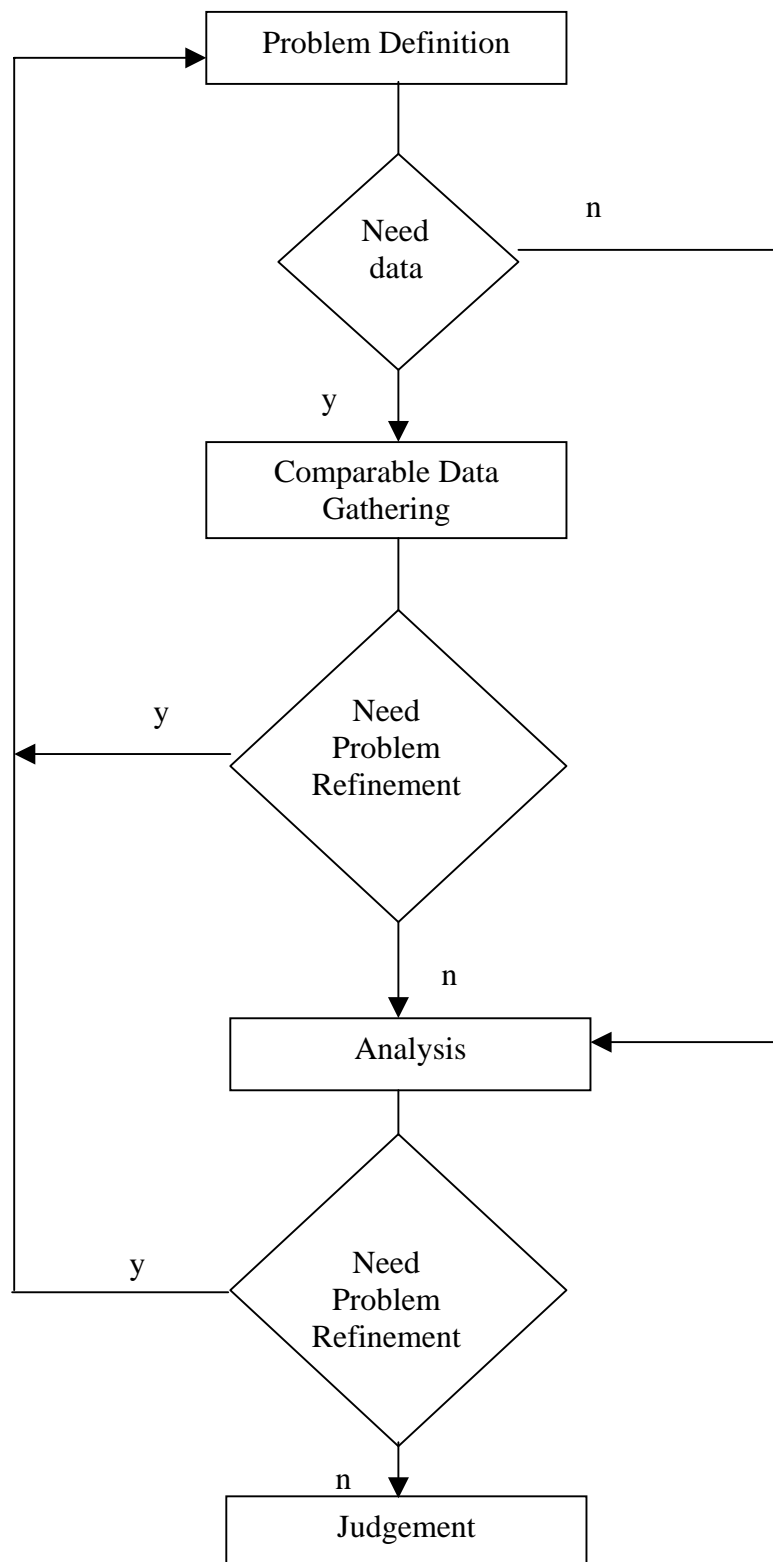
The research method proposed is based on a consideration of the limited behavioural literature on the valuation process and on its conduct by valuers. There are two key aspects of the valuation process: how it is supposed to be done – a normative model; and how it is actually done – a descriptive model. The only extant, holistic treatment of both is presented by Diaz et al (2002). The key aspects of this work are summarised in **Figure 6.1**.

#### **The Application of the Models**

The proposed research method draws upon both the normative and descriptive models of the UK valuation process described in **Box 6.1** below. In practice, that process is flexible, iterative and problem-focused. It has three key stages (see **Box 6.1, Table 6.1**). The first is problem definition. Here, the valuer draws on information relating to two matters: the instruction (that is, what the valuer has been asked to do – **Table 6.1, Steps 1c-e**) and the interest in property to which it relates (**Table 6.1, Steps 1a & b, 3a-e**). The second is the gathering of comparable data (**Table 6.1, Steps 4a-e**, with an emphasis in the UK on 4a & b). UK valuers are notable for the limited use that they make of general data. The third is the valuation analysis (**Table 6.1, Steps 5a-c**, with an emphasis in the UK on 5a). UK valuers prefer, overwhelmingly, to use the comparative valuation method.

Diaz et al's (2002) models are based on analyses of the residential valuation process. They explicitly warn against the "Extension of these findings into commercial valuation ... [which] ... is tempting but unwarranted at this time. Further study of commercial processes is needed to justify this generalisation." (Diaz et al, 2002, p. 325). There are at least two reasons for this caution. The first relates to the education of UK valuers. This stresses the use of the comparative method of valuation for residential properties. It also puts much emphasis on the conduct of physical inspection as an important influence on the formation of a view of value. Secondly, and in contrast, the treatment of non-residential valuations gives primacy to financial matters: particularly risk and return in relation to cost. Consequently, at least the content, if not the structure, of a descriptive model of the non-residential valuation process may be expected to differ from that of the residential valuation process.

**FIGURE 6.1: Descriptive Model of UK Expert Valuation Behaviour**



Source: Diaz et al (2002), Table 1, page 324.

**Box 6.1 Research on the Valuation Process**

**A Normative Model**

The bulk of the literature relating to normative models of valuation originates in the US. In part, this is because professional reporting requirements in the US effectively assume adherence to such a model. A normative approach to valuation adopts a prescribed path to produce a solution to a valuation problem. This path consists of a number of steps that may be divided into major categories and numbered sequentially (see **Table 6.1**). There is no requirement for steps within the major categories to be completed in any particular order. However, each set of category steps needs to be completed before the valuer moves to the next set. The normative valuation model therefore takes the form of a deductive process that begins with general data and then proceeds to successively narrower foci on the specifics of the valuation problem being addressed. The model is serial rather than iterative.

**TABLE 6.1 : A Normative Model of the Residential Valuation Task**

<b>Category</b>	<b>Step</b>	<b>Description</b>
1. Problem definition	1a	Property address
	1b	Identification of property rights
	1c	Date of valuation
	1d	Valuation basis
	1e	Definition of value to be estimated
2. General Data	2	Location details
3. Subject Property Data	3a	Description of subject plot
	3b	Building description
	3c	Title information
	3d	Council tax banding
	3e	Planning permissions
4. Comparable Data	4a	Comparable sales
	4b	Vacant land sales
	4c	Rebuilding costs
	4d	Comparable rentals
	4e	Years purchase
5. Valuation Analysis	5a	Sales comparison approach
	5b	Cost approach
	5c	Income approach
6. Reconciliation	6	Reconciliation and final value judgement

Source: Diaz et al (2002), Table 1, page 316

**A Descriptive Model**

There are two broad sets of influences that result in valuers' actual behaviour departing significantly from the pattern set out in the normative model. The first is generic. It relates to the way that people learn and intuit efficient, practical approaches to problems in the face of complexity. The second is particular. It relates to the socio-cultural differentiation of problem-solving behaviour that occurs between national settings. These two matters are dealt with in turn.

Theory relating to problem solving suggests that inexperienced decision-makers adopt normative models to guide their behaviour and that these are used in a 'recipe' fashion. In contrast, expert, experienced decision-makers approach problems in a highly efficient way. They apply implicit procedures called production rules that have

been developed gradually through practice. While novices must determine consciously what to do next, experts solve routine problems 'automatically'. Decision-makers have limited knowledge of problems and limited capacity for gathering, analysing and interpreting information. Consequently, production rules may be extremely efficient. As experience in problem-solving increases, recipe-like behaviour is gradually replaced by the application of production rules. Consequently, the steps of the normative model may be altered, recombined or eliminated by experienced valuers. The actual behaviour of experts may therefore differ quite markedly from the problem-solving approach they learned as students and new practitioners. Production rules, once in place, determine fundamentally the approach to the solution of routine problems. It may be expected that, in the face of increasingly complex and challenging problems, deliberate, conscious behaviour may be adopted in preference to production rule-driven, routine behaviour. However, research suggests that shifts from routine to deliberative behaviour by experts are slow to occur. So the use of normative models by expert valuers is unusual (Diaz, 1990).

The bulk of valuers in the UK are educated to first degree level. The nature and extent of the treatment of valuation in that education reflects professional requirements regarding the valuation process. In UK practice, such requirements are relatively flexible. Guidelines specify what is to be considered rather than defining approaches that must be adopted or specifying the form that reports should take. Training in valuation is similarly flexible. Students in the UK are not taught to follow a normative model of valuation; nor are UK experts expected to follow one. Consequently, UK students develop valuation expertise without any prescribed approach that may be provided by the offer of recipe-like procedures for undertaking routine valuations.

In combination, the generic and particular influences on UK valuers have resulted in actual valuation behaviour that follows the process presented in **Figure 6.1**. This descriptive model differs significantly from the US-derived normative model. Its essential character is iterative rather than serial. It is made up of four steps: problem definition, comparable data gathering, analysis and judgement. Experienced UK valuers make an initial definition of the problem and gather data immediately thereafter. As their knowledge of the problem increases and the inadequacies of the original problem definition and of the information they have collected become evident, so this process is repeated until the valuer is confident of proceeding to the analysis stage. The same iterative approach is taken to the transition from analysis to valuation judgement. When defining the problem, UK valuers make no distinction between information relating to the assignment, the subject property and the general market. UK valuers only use the comparative method of valuation in their analysis. Data relating, for example, to cost or income – normally employed in other valuation methods – is used to help with problem definition or the application of the comparative valuation method. Expert UK valuers consistently adopt an essentially iterative approach to valuation whether for routine or unusual problems.

## The Behaviour of Valuers

Galimore (1996) suggests three main approaches that may be adopted to explore the behaviour of valuers.

- The first is essentially an experimental approach. A test instrument such as a real or simulated valuation problem is presented to valuers and their response and its outcomes are observed and recorded. By dividing the valuers into different groups and altering the information provided for them, the impact of different influences on their behaviour and the outcomes may be tested. Such an approach may be pursued through a range of media, although those that offer the ability to control conditions are to be preferred.
- Alternatively, one might test for the effects of different influences. Here the valuations produced by valuers are the focus of attention. The analyst would select a circumstance where a particular influence on value was likely to be exhibited and where the relationship between the influence and the valuation could be established. The key problem with this approach is the identification of circumstances that allow the particular impact of an influence upon valuation to be distinguished.
- A final approach is to allow valuers to articulate their own views through a postal questionnaire or, with smaller numbers, through interviews. Their perceptions of the wider valuation process, of particular aspects of it, or of the impact of particular influences may all be sought. The problem with this approach is the potential difference between perception and reality – to the extent to which the one is not the product of the other.

The suggested research method for Module 1 adopts the first of Gallimore's (1996) approaches. It focuses on the three key stages of Diaz et al's descriptive model of the UK valuation process and on the primary types of information that valuers draw upon during the process. It allows for the potential difference between the residential and the commercial valuation processes. Module 1 research method is described later in this section.

## 6.4 Module 2: Choice Experiment

Where actual market data are lacking, the contingent valuation (CV) method seeks to elicit how people would value certain environmental changes by directly questioning a sample of the population concerned. These changes, and the markets in which they are to be valued, are hypothetical. Two concepts most widely used are Willingness to Pay (WTP) for an environmental benefit and Willingness to Accept (WTA) compensation for loss of environmental quality (Winpenny 1991). WTP is the most relevant in dealing with informed groups such as occupiers and investors and aims to determine how much the groups would be willing to pay for various hypothetical environmental improvements. In this case, the willingness to pay for changes to the level of environmental quality is examined in the form of changes to rents and yields.

The Choice Experiment (CE) evolved as an extension to CV in marketing and transport economics where individuals derive utility from the characteristics of a good rather than directly from the good itself. Respondents choose their preferred option from a range of alternatives (Davies et al 2000). The value of a good, in this case

environmental quality, is derived by evaluation of the preferences of participants for the characteristics of a good .

CE allows the researcher to infer (Hanley et al 1998):

- Which attributes significantly influence choice;
- The implied ranking of these attributes;
- the WTP for an increase in any significant attribute;
- the implied WTP for a program which changes more than one attribute simultaneously.

There are four steps in the design process of a CE. First, determining definitions; second, designing the experiment; third, questionnaire development and finally; choice of sample and sampling strategy (Alpazir et al 2001) Rigorous piloting is essential. Davies et al (2000) recommend the use of computer visualisation techniques to display the various choices available and ease comprehension. Groups of images are also considered more effective (Bisco-Werner et al 2001). Somper (2001) is careful to note the trade off between the complexity of the experiment and the quality of responses.

The underlying weakness of the technique is that it does not use observations of actual market behaviour and does not test consumers' effective demand by requiring them to back up their opinions with cash (Winpenny 1991). Respondents may feel that they can influence the course of real events by the shape of their answers and bias them accordingly. There are also various kinds of potential design bias. The way information is put across can be a powerful influence on the results obtained, for instance by revealing the researcher's bias or by stressing information known to elicit a certain kind of response. Another possible distortion is the researcher suggesting starting bids for WTP and WTA which may skew the possible range of answers. A realistic reference point, from market evidence for example, can help overcome this problem.

As the scenario being investigated is hypothetical, value depends upon the respondents having a good understanding of the issue, some imagination and the ability to relate questions to personal circumstances. Sample selection must be carefully considered and the way the survey is conducted can bias the findings. This makes extensive piloting even more essential.

## 6.5 Research Methods

There are a number of detailed steps within the two modules of the proposed research. **Module 1** gathers data on the impact of environmental quality on land value and **Module 2** explores the impact of environmental quality on occupiers and investors. Module 1 will provide excellent data on its own but will also aid the development of the visualisation techniques used in Module 2. The steps for each of the two modules follow the same structure but differ slightly in their content. The steps for Module 1 are described first followed by Module 2 although it is envisaged that these steps may overlap and can be undertaken in parallel as some of the actors are relevant for both modules (see **Figure 2.1**). Relevant to both modules is a continuation of the literature review from the scoping study. It will review any new literature and examine any additional European and US literature yet to be identified. The review will also examine wider literature relating to relevant areas.

## **6.6 Research Methods for Module 1**

Module 1 will provide a quantitative evaluation of the impact of environmental quality on land value and test the use of visualisation techniques in assessing environmental quality. These techniques, will be developed further for use in a more complex, qualitative context in Module 2.

There has been no attempt in the UK to quantify the impact of environmental improvements on land value. This methodology not only addresses this gap but develops a unique method combining valuation theory and computerised visualisation. This methodology directly addresses the specification in the research brief to examine the added value that high environmental quality brings to land values for development sites.

### **Step 1. Defining the Commercial Valuation Process**

Step 1 consists of an interview survey of commercial valuers in major industrial / business agencies. A semi-structured approach will be adopted in the discussions and a minimum of 10 interviews undertaken. Their purpose will be to further explore the process followed in the valuation of land for industrial / business use. Diaz et al's (2002) model will be used as a starting point and a revised commercial model will be defined. Particular attention will be paid to identifying:

- The various types of instruction and the one most suitable for experimental analysis (this is anticipated to be an assessment of open market value for a client considering the acquisition of a site for future development / investment).
- The type and extent of site and comparable data that a valuer would draw upon in practice to conduct such a valuation.
- The valuation method(s) normally used in practice to analyse the data (and, specifically, the degree to which residual, investment and contractors methods may be used instead of the comparative method).
- The overall processes and procedures pursued to arrive at a valuation.

### **Step 2. Preparation of the Experimental Materials.**

As part of the above interview survey, the researcher will collect specimen particulars of industrial / business sites offered for sale on the market. (S)he will discuss with the valuers the typical / appropriate form and content of such particulars, in terms of text, data and illustration. In addition, the researcher will discuss with valuers the structure and coverage of her / his company's comparable transactions database. This information will be used to produce the following experimental materials:

1. A set of hypothetical particulars relating to 16 sites for industrial / business use. The sites will be generally similar in size and character but will incorporate some limited variation. Of these sites, 8 will be developable but will have no / minimal landscape treatment (the brown sites) and 8 will be developable and will have significant landscape treatment (the green sites). That is, two parallel sets of materials will be generated, similar in all respects other than whether the sites are 'brown' or 'green'. Guidance on the size and

- character of the sites, on the general type of landscape treatment, and on variation in these matters will be obtained from the valuer interviews.
2. A database of hypothetical comparable transactions that conforms to the results of the valuer interviews in this regard. Effectively, the controlled nature of the experiment will allow valuations to be made on the basis of this evidence, interpreted against the particulars of the specimen sites. Thus wider influences, such as regional location, will be excluded.

### **Step 3. Conduct of the Experiment.**

The internet will be used as the vehicle for conducting the experiment. The sample frame will be the RICS Register of Members. This identifies, inter alia, the area of expertise of members (for example, industrial valuation) and their organisation setting. A random sample will be derived from the sub-set of surveyors with appropriate expertise. Potential respondents will be drawn from this sample population and invited to participate in the experiment. The main practical difficulty will be to get the agreement of valuers to undertake the experiment because of the demand it will make on their time. However, the membership of the relevant faculties of the RICS runs into the 10,000s, so that the proposed absolute response of 100 should be achievable.

Once identified, the participants will be asked to assess the value of a set of sites, using the particulars and the hypothetical comparables database. Two sets of sites will be used. In the first set, sites a-d would be brown, and sites e-h green, whereas in the second set, sites a-d would be green and sites e-h brown (the order of presentation of sites in both sets being random). By random assignment, half the participants would value the first set and half the second. In addition to indicating their valuations, the participants will be asked to provide categorising information relating, for example, to their experience and expertise as valuers.

### **Step 4. Analysis of the Results.**

The key results provided by the experiment will be the assessed values of the sites in the two sets. These will be reduced to a relative unit (£s per hectare). By comparing the valuations given by the two groups of participants, we shall then be able to determine the existence and extent of any uplift in valuation attributable to greening while controlling for other features of the sites and, crucially, without specifically drawing participants' attention to the presence or absence of landscape treatment. Intra-set and inter-set analysis will be conducted to establish whether there is a statistically significant difference in the assessed values of the brown and green sites and the scale of any difference that is identified. More detailed analysis, for example, of any relationship between the character of the valuer and the assessed values will also be undertaken, primarily to establish the robustness of the results.

## **6.7 Research Methods for Module 2**

Module 2 will use a combination of survey questioning and WTP techniques to assess the impact of environmental quality and site specific greening scenarios on the decisions of investors and occupiers using computerised visualisation techniques to simulate development schemes on three real sites. Each site will be subject to three greening scenarios:

- Minimal – only the very basic greening methods.
- Average – an average level of greening within the site.
- High quality – a very high quality level of greening within the site.

Occupiers will be asked, through a series of questions, to determine the rent they would pay for property within the scheme based on the three scenarios. Investors will be asked to determine the yield they would use to determine the development value of the site. Relating these results to the cost of the environmental works will provide an indication of the willingness to pay of occupiers and developers for the environmental works through changes in rents and yields based only on changes to the level of greening within these specific schemes. This technique can be applied to specific environmental improvements on actual schemes to identify whether such improvements will increase development profitability.

This module represents a unique approach combining research on environmental goods within a property context. It achieves two requirements of the research brief. First; an investigation of the attitudes and perceptions of a range of actual and potential investors and second; an exploration of the other benefits that environmental quality may bring to potential investors, developers and employers which may have a bearing on decision making. In addition the research method is designed to provide estimates of the impact of environmental quality on property values. This again is a unique approach providing qualitatively derived estimates of value.

Each step of the research method is now described in detail. It is important to note that the methodology will evolve as the research progresses and in the light of the findings of Module 1.

### **Step 1. Factors influencing value: Occupiers and investors**

The researcher will first collect marketing particulars for development schemes from developers and agents. Following the collation and analysis of this material semi-structured interviews with occupiers and investors will identify broadly:

- Factors influencing rents and yields
- Types and levels of environmental quality and their impact on rents and yields

The interviewees will also be asked to view the marketing material to identify the variables which are particularly important in satisfying the information requirement for the factors influencing rents and yields identified earlier in the interview. This will allow the visualisation of development schemes to convey the information vital for occupiers and investors in their decision making process.

It is envisaged that a minimum of 10 face to face interviews with occupiers and investors (local, regional and institutional) supplemented by a similar number of telephone interviews will participate in this step. These interviews will also provide data on the wider subject of the link between environmental quality and investor and occupier decisions.

## **Step 2. Identification of real schemes**

A minimum of three real development sites will be identified through partnership with local authorities in the South and West Yorkshire areas. It is likely that the three sites will be in areas of different location, supply and demand characteristics. Once sites have been identified then semi structured interviews with regional and local developers will determine the type of development scheme suitable for the site. Ten face to face supplemented by 10 telephone interviews will provide the data and also explore wider issues. Environmental quality will be excluded as a factor at this point. The interviews will determine for each site:

- Suitable property type
- Suitable property specification
- Rough estimate of the costs of the development scheme using a computerised spreadsheet. The developer should estimate net areas of building space available to let, building cost per m<sup>2</sup> for development scheme, length of development period and the rate of finance available.

As this stage in the development of the research method, the schemes should be kept simple in terms of the number of buildings and development phasing otherwise the visualisation process will be too complex.

## **Step 3. Visualisation of the development schemes.**

The researcher will identify three scenarios of greening. These are:

- Minimal – only the very basic greening methods.
- Average – an average level of greening within the scheme.
- High quality – a very high quality level of greening within the scheme.

The actual methods of greening, the materials used and the cost of the works for each of the three scenarios will be estimated for the real schemes. The researcher will identify the types, cost and levels of greening during the pilot interviews in steps 1 and 2 and through additional research.

Computer visualisation techniques will provide visual images of the completed development for each of the three real schemes. The images will convey sufficient information to satisfy the information requirements of occupiers and investors identified in step 1. The greening scenarios will then be applied to the development scheme. Three different sets of marketing particulars with three levels of greening will then be available for use on a sample of occupiers and investors.

## **Step 4. Analysis of the importance of environmental quality**

The analysis stage is a combination of basic survey questioning and willingness to pay analysis. The research will develop a series of questions designed to identify the importance of various factors relating to aspects of environmental quality and the impact these factors will have on the activities of key actors. Using structured interviews based on Likert ranking/rating scales these questions will provide valuable data on how occupiers and investors perceive the importance of environmental quality.

For occupiers for example:

- Impact on company image
- Site screening in an urban environment
- Importance of environmental quality in attracting and retaining staff
- Benefits of environmental quality on worker productivity

And from investors:

- Level of improvements and relative benefits
- Benefits of environment on sustainable investment
- Importance of the investment setting for capital growth
- Significance of environmental quality in attracting good quality tenants

The visual computer images of the development scheme with the three scenarios of greening will then be used to elicit occupiers and investors willingness to pay for environmental improvements. Occupiers will be asked to estimate the amount they would be willing to pay for the given level of environmental improvements and investors will be asked to determine the yield they would use to calculate the investment worth of the property for each scenario.

As a final analysis tool, the average rent and yield identified by occupiers and investors in the survey will be used to calculate the development value of each of the three scenarios for each of the three schemes. The difference between the development value of each scenario will be related to the cost of each of the environmental works. If the level of the increase in the development value from scenario 1 (minimum greening) to scenario 3 (quality greening), for example, exceeds the difference in the cost of the environmental works then the value attached to the higher level of greening can be calculated. This provides an estimate of the impact of environmental quality on property values in addition to the importance of environmental quality on decisions identified during the earlier questioning.

The skills of the respondent are key. Assessments of rents and yields are only possible where the occupiers and investors participating in the research have considerable experience in rent setting and investment appraisals. The methodology requires participants in the estates or property finance sections of occupier organisations and in investment appraisal departments of investment institutions. Where such respondents are not available the methodology will concentrate on the WTP analysis of the environmental improvements and not the assessments of rents and yields.

This methodology is essentially a qualitative tool suitable to identify the importance of environmental improvements in decision making. As such it does not require the number of respondents to ensure statistical significance as was necessary for Module 1 of the methodology. At this stage it is envisaged that a minimum of 10 occupiers and investors should undertake the process for each scheme. That means a total of 30 different occupiers and 30 investors in total. These are minimum numbers and a larger sample will provide higher quality data. The researcher will meet with the participant(s), go through the structured interview process, show the computerised marketing particulars and then ask the participant a series of questions based on the development scheme and finally ask for estimated rents or yields. It should be possible to survey a number of participants in a single session. Additional information, such as the information required to estimate rent and yield, will be shown to the participant at the relevant stage.

This technique can be applied to specific development schemes with specific levels of environmental works in order to assess the benefit of undertaking these works. Assessment can be made of levels of environmental expenditure on development sites and their potential impact on value to determine whether such works should be undertaken to increase demand for development sites and these figures can be marketed to potential investors and developers. This would be a very useful analysis tool for development agencies, local authorities and organisations such as Yorkshire Forward.

## 6.8 Summary

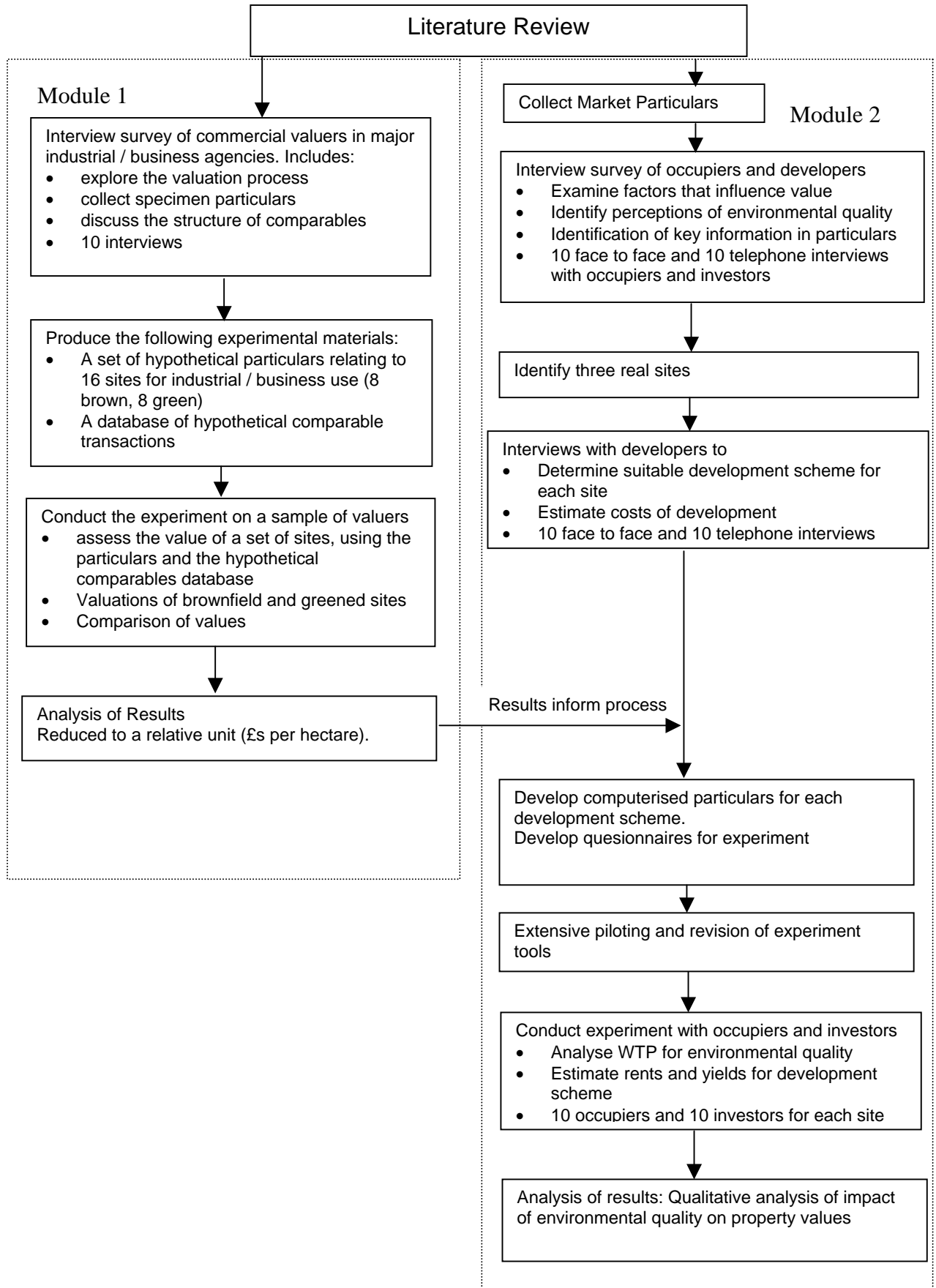
The proposed research methods will satisfy all the requirements of the scoping study brief which are:

- an investigation of the attitudes and perceptions of a range of actual and potential investors (**Module 2**)
- an examination of the added value that high environmental quality brings to land values for development sites (**Module 1**)
- and an exploration of the other benefits that environmental quality may bring to potential investors, developers and employers which may have a bearing on decision making. (**Module 2**)

Module 1 combined with Module 2 as envisaged in **Figure 6.2** will fill the gaps identified in the literature review by providing a measure of the impact of environmental improvements on land value on a £ per hectare basis. It will also provide detailed evidence based on an empirical investigation of the perceptions of key actors on the importance of environmental quality. It provides an analysis tool for organisation such as Yorkshire Forward in determining an appropriate environmental strategy for regeneration sites. The research methods should be transferable outside South and West Yorkshire and, if applied to the different actors operating in different countries in Europe, the EU.

It is anticipated that this research quantifying the impact of environmental quality will provide vital evidence to those actors who require a demonstration that investment initiatives can create value before they will become involved in such activity. The ability to cite evidence to support the potential impact of environmental improvement schemes should prove invaluable to those parties seeking funding from Government and Europe.

**FIGURE 6.2 Research Methods: Key Steps Modules 1 and 2**



## **7. Summary and recommendations for additional research**

This section provides an overview of the scoping report, including the proposals for the development of new research, and recommendations for extension into action based research and a project involving European partners.

### **7.1 Background to the scoping study for proposed new research**

The study has been prompted by the realisation that there is need for clear evidence to establish and assert a positive link, if it exists, between environmental quality in investment locations and the propensity to attract more or better quality investment. The link is often inferred in regeneration policy and strategies but not always manifested in budget lines for action on the ground. It is perceived that lack of hard, quantitative evidence for the connection is preventing a strong enough case to be made on a regular basis for environmental regeneration to take place in concert with economic regeneration interventions.

A number of studies have made reference to the potential existence of a link between environmental quality and both economic and social regeneration but these have failed to quantify any link or provide empirical evidence to support this claim.

The aim of this scoping study is to assist the development of a project that will seek, through both research and action on the ground, to address this gap in our understanding by demonstrating clearly the link between environmental improvements and investment decisions.

### **7.2 The scoping study brief**

The scoping study is a response to the following brief:

- A review of the key literature relevant to environmental improvements and investment decisions.
- Development of a detailed proposal for new research directed towards filling key gaps in existing research and providing clear evidence about the relationship between environmental quality and property investment decision making. The proposed research should be applicable not only in South and West Yorkshire (where it is expected that it will be carried out) but also in other areas and other contexts.
- Develop a research methodology that will allow the aims and objectives of the new research to be satisfactorily met. This should include an investigation of the attitudes and perceptions of a range of actual and potential investors, an examination of the added value that high environmental quality brings to land values for development sites and an exploration of the other benefits that environmental quality may bring to potential investors, developers and employers which may have a bearing on decision making.
- Incorporate sufficient consultation and pilot work to test ideas and ensure the method will provide the information required.

- Ensure the method is capable of being implemented in a cost effective way and that the results are likely to be transferable to other parts of the region, UK and the EU.

The report discusses evidence of the link between environmental quality and investment decisions from existing literature and from new research undertaken as part of this scoping study

### **7.3 Examining the meaning and nature of environmental quality in the context of the study**

Considerations and definitions of environmental variables were explored in order to integrate an understanding of these with an understanding of property investment processes and the way the variables impact on them. It was recognised that while a wide range of environmental variables may have some sort of relationship with investment decision making, for pragmatic reasons the research would produce more definitive results if it concentrated on variables that can be tangibly experienced and understood to have a direct impact on an investment location and that are also relatively easily manipulated by those with regeneration and development budgets. This has led to a focus on landscape features and their relative quality, rather than, say, air and water quality, as a way of defining environmental quality in the context of the proposed research. Recognition was made of the possible interaction of landscape quality with other environment and sustainability variables and vice versa.

It is recognised that landscape quality is likely to have an impact on investment decision making at a wide range of scales from regional down to individual sites but that the private sector rarely if ever has any influence beyond the boundaries of individual sites. This implies that if environmental quality of settings and of the wider local area are significant in investment decisions, the public sector needs to take an interest and possibly proactive action to optimise investment interest - especially that which is most likely to be of a more sustainable nature.

Literature reviews, and other investigations with bodies having an interest in landscape quality, have revealed that there are apparently no prescriptions, other than for individual details, for what makes a good or bad quality landscape design in the commercial context. It has therefore been necessary to derive groupings of possible factors that can be tested for refinement and understanding of their relative importance in an investment context. These factors could in turn be delivered by provision or attention to a range of site related landscape elements and these are suggested as the possible basis for detailed lines of questioning with investment decision makers in order to qualify their relative importance. They will also inform the visualisations of different site treatments.

### **7.4 Property investment and development decision making processes**

The study has made a preliminary investigation of the key actors and their roles in investment decision making processes and how in turn their decisions may be affected by environmental factors. This has been based on an assessment of the business park sector as this is the most likely to be environment-sensitive. If links cannot be established within it this sector are unlikely to be established in others.

Understanding the roles and business interests of actors in commercial property investment aids an understanding of the role and relative importance of environmental quality in the decision making process.

Investigation of relevant literature and pilot interviews in the business park sector shows that there are four key groups of actors: investors, developers, occupiers and property valuers.

Three key variables affect the operation of the property market: Rent (as paid by occupiers), yield (an assessment that reflects the relationship between returns on assets and property risk) and capital value (which is a function of rent and yield).

Where possible the analysis has described where environmental quality fits into each area of the decision making process. One key area is consideration of factors determining the rent an occupier is willing to pay; this in turn is of interest to investors as factors such as rents, plus the reduction of risk in an investment (for example through attracting quality occupiers and stimulating further rent-boosting investment in an area) affect the assessment of yield. Examining the environmental factors that attract higher quality occupiers and boost investor confidence in an area would therefore lead to better understanding of how to influence decisions in favour of a particular area.

The development value of a scheme, which is a function of the rent and yield, is the main determinant on the decision of the developer to develop. This equation determines profitability and coupled with the likelihood of gaining suitable planning permission will determine whether a scheme goes ahead or not. Examination of the development decision making process shows that the interest lies in maximising the development value by eliciting highest demand from occupiers and investors. The preliminary investigation shows a need to investigate how different environmental variables and quality of the site, its setting and local area influence site value and compares the cost these environmental improvements with the value they add..

Consideration of occupiers' choice of location has been shown to be a turnkey aspect of the property investment process – at least in the business park sector. Investigation of how and which environmental variables influence business decisions will be key. The role of the region and sub-region, including the role of environmental factors, in attracting occupiers is also important and is identified as an area that requires significant new research.

Finally, this section of the report recognised the role of valuers in making professional assessments that include a reflection of the importance, or otherwise, of environmental quality. These assessments then influence the other three types of actors.

This part of the study provides an analysis of the property investment and development decision making processes vital to understanding the significance of detail gleaned from pilot interviews and, by implication, the details to be gained from carrying out the proposed research project.

## 7.5 Literature review

The literature review carried out for the scoping study examined the key literature relating to property, investment and regeneration and environmental quality. The study found a considerable body of literature valuing the environment, which tends to use 'willingness to pay' techniques to identify how groups of individuals value specific amenities or the loss of such amenities. However, although this literature provides a sound basis for valuing the environment it does not examine the impact of the environment on commercial property values. This is a gap in the literature that needs to be addressed.

The review also examined literature on the extensively applied statistical valuation technique known as hedonic analysis that is used to value the impact of a specific aspect of the environment on property values. The review concluded that this technique has concentrated on analysis of residential property. There has been only very limited research on related techniques in the commercial sector and none that quantifies the impact of scheme specific environmental quality on land or property values. It concludes that the technique is not easily transferable across the sectors as it relies on relative homogeneity and availability of large quantities of data to be effective and, unlike the residential sector, this is not typically characteristic of the commercial property sector.

Useful reference was made to the recent work of the Commission for Architecture and the Built Environment who have published extensively on the value of good design. Two key reports (CABE 2001 and 2002) describe the impact of good design on perceptions of value and property performance. The actual impact on value is not, however, measured. They present evidence that good design results in property increasing in value faster than poorly designed property and that this retains its value longer. To the extent that environmental quality is an aspect of good design, the reports indicate that environmental quality will have an impact on value. The Property Council of Australia (1999) attempted to quantify the impact of good design by assessing the financial performance of design award winning buildings and this study did find a link between property performance and good design.

A report by PIEDA (1995) for the then DOE discussed the impact of environmental improvement projects on development activity. Using case study and interview techniques they described that the quality of the environment has an impact on development activity under certain circumstances. The environment acts as an indicator of the strength of a local economy and as such will promote investment.

An ODPM report (2002), in addition to work by Adair *et al* (1998) discussed the importance of environmental quality as part of a wider literature review of private sector led regeneration. Environmental quality was seen as a significant variable of institutional investment decision making and was a key instrument in raising land values. The quality of the neighbourhood environment was shown to be a vital component in building investment confidence in an area and attracting private sector regeneration.

In conclusion, although the literature reviewed is extremely useful in setting the context and suggesting possible links between variables related to the environment and a range of factors related to property value and investment none of it attempts to quantify the impact of environmental quality on property values in the way envisaged in the research brief. Addressing this gap is identified as the focus for designing and

carrying out pilot interviews with 'key informants' as part of the scoping study and subsequently in designing the proposed research methodologies.

## **7.6 Environmental quality and investment decision making processes**

Pilot interviews were carried out with decision makers from each of three key actor types, investors, occupiers, and developers, involved in the business park sector in an attempt to fill some of the gaps in the literature and elicit a greater understanding of the relationship between environmental quality and investment decisions. Two interviews were carried out with each group.

The significant findings from the interviews are:

- Occupiers are the key group. Both investors and developers want good quality tenants as this minimises the 'risk' and hence maximises development values.
- Environmental quality on business parks is important to occupiers where clients visit the premises.
- A high quality environment is perceived as important in attracting and retaining staff.
- As a result of the above, environmental quality is an important factor in the decision making process but less so than key variables such as location, access and building specification.
- Investors and developers understand the benefits of a high quality environment in relation to their business interests

These interviews begin to fill the gaps in the literature and answer the key questions posed by the research brief. However, it was concluded that considerably more research is necessary to examine in more detail how actors perceive the importance of environmental quality in relation to a whole range of different property sectors, not just business parks.

Several key issues require further investigation:

- The relative importance of the environmental quality of the site, the setting of the site and the local area must be explored.
- How important is the image and quality of the region in attracting occupiers before the specific development scheme is identified? Does the marketing of a regional image play a key role in attracting occupiers?
- Do quality of life indicators play a part in attracting occupiers to a particular location?

Methods of attracting occupiers to a location as the stage before the environmental quality of specific sites and settings become relevant need to be explored in detail.

The interviews show the impact of environmental quality on rents is not clear and additional research is necessary to determine if environmental improvements will raise rents. This and the other findings from the interviews have been taken into account in designing the methodology for the proposed project.

## 7.7 Developing the research methods

The research methods aim to address the gaps in understanding of processes and influences relating to environmental quality and investment decisions as shown up by both the literature review and the preliminary interviews with key actors.

The proposed research comprises two modules, each of which has several steps.

### Module 1

Module 1 seeks to investigate the overall assertion that environmental quality improves land values by gathering data from valuers on the impact of environmental quality on land value. The method used has been chosen with reference to the decision making processes that are the norm in the UK commercial valuation profession. It is proposed that the experiment will be carried out by comparing the value placed on paired sets of industrial or business sites. Computer generated visualisations will be used to show half the set with little or no environmental enhancements (the 'brown' sites) and half with significant improvements (the 'green' sites). Information gathered from structured interviews will be used to generate the 'realistic' hypothetical sites.

A sample of 100 professional valuers will be asked to assess the value, in relative unit terms (e.g. £ per Ha), of the 'brown' and 'green' sites in turn and to provide qualifying information to augment the quantitative findings. Assessment of results will establish whether there is a statistically significant difference in values attributable to the effects of greening on the sites.

There has been no attempt in the UK to quantify the impact of environmental improvements on commercial land value. This research method not only addresses this gap but develops a unique method combining valuation theory and computer manipulated visualisation techniques.

### Module 2

Preliminary structured interviews with investors, occupiers and developers will be carried out to gain a deeper understanding of the factors that influence value, perceptions of environmental quality and key information that would need to be presented in test material to simulate a decision making scenario. Based on this, and the results from Module 1, two types of materials will be developed for testing with larger samples from each actor category. These will include questionnaires which seek to qualify attitudes and perceptions of environmental variables in relation to investment and business requirements and interests. In addition a number of real investment sites will be chosen for presentation in the form of industry standard marketing particulars. Photographs of the sites will be procured and then manipulated in order to present each site and its setting with a range of environmental qualities from low to high. Additional images representing differing environmental quality for variables in the wider area and region will also be considered for inclusion in the testing. After extensive pilot testing to ensure the technique is sufficiently refined and appropriately presented the materials will be tested on significant samples of investors, occupiers and developers using a 'willingness to pay' approach to the enquiry. This will aim to estimate rents and yields for each simulated development scheme for comparison. In addition carefully

constructed and presented questionnaire material will supply valuable qualitative analysis of the impact of environmental quality on property values.

## 7.8 Conclusion

Evidence from existing literature and pilot interviews undertaken during this study suggests that environmental quality can have an impact, both positive and negative,

on property investment. Where key factors such as location, access and communication network are in place then the environmental quality of a business park may be the key determinant of an investment decision or decision to locate. The poor quality of the local area or region can also act as a deterrent. To the extent that a good external environmental quality attracts higher quality tenants than competing schemes through providing an environment conducive to attracting and retaining staff and improving productivity, this can impact upon property yields and consequently development values. As long as the cost of developing the environmental quality does not exceed the resulting impact on the development value then environmental quality will have an impact on decisions to develop and invest in property. However, general market demand will certainly dictate the importance of environmental quality; for example the relationship will be different in the South East where demand is high when compared to South Yorkshire where demand is lower. Further research is necessary not only to quantify the impact of environmental quality on value but also to assess the significance of regional demand variations.

The proposed research methods produced during the scoping study will satisfy all the requirements of the scoping study brief which are:

- an investigation of the attitudes and perceptions of a range of actual and potential investors (Module 2)
- an examination of the added value that high environmental quality brings to land values for development sites (Module 1)
- an exploration of the other benefits that environmental quality may bring to potential investors, developers and employers which may have a bearing on decision making. (Module 2)

In addition they will fill the gaps in the literature by providing a measure of the impact of environmental improvements on land value on a £ per hectare basis. It will also provide detailed evidence based on an empirical investigation of the perceptions of key actors on the importance of environmental quality. It is expected that the research methods will provide an analysis tool for organisations such as Yorkshire Forward and local authorities in determining appropriate environmental strategies for regeneration sites. The research methods are applicable outside South and West Yorkshire and, if applied to the different actors operating in different countries in Europe, the EU.

Such a piece of research quantifying the impact of environmental quality would provide vital evidence to those actors who require a demonstration that investment initiatives can create value before they will become involved in such activity. The ability to cite evidence to support the potential impact of environmental improvement schemes would prove invaluable to those parties seeking funding from Government European sources.

One of the specific advantages of the methodology is that it allows, albeit virtual, immediate manipulation and subsequent testing for reaction of real regeneration sites using quantities of variables that would be unfeasibly costly and difficult to achieve on the ground in real developments. In addition it sidesteps the obvious problem of real regeneration taking many years to implement and mature to a point where analytical testing of investors' reactions to varying degrees of visible quality could realistically begin.

It is proposed that the technique could be applied to specific development schemes with specific levels of environmental works in order to assess the benefit of undertaking these works. Assessment could be made of levels of environmental expenditure on development sites and their potential impact on value to determine whether such works should be undertaken to increase demand for development sites. These figures could be marketed to potential investors and developers. As such this would provide a very useful analysis tool for development agencies, local authorities and organisations such as Yorkshire Forward.

## **7.9 Recommendations for possible future action research**

This study recommends two research modules which represent significant new research that will assist the pursuit of sustainable development in regenerating areas if the results they generate are integrated into strategy and policy making at a range of levels of detail with an intent for implementation. If conclusive the results of the research should provide evidence enough to draw up specific design and policy guidelines. However, these will inevitably be based on an element of theory even though the perceptions of real actors in the investment decision making process will have been thoroughly investigated. This is because the decisions examined in the course of the research are, strictly speaking, theoretical as the actors consulted are not necessarily going to make real investment decisions concerning the sites presented. It would therefore be of potentially great value to continue the research through to a stage that generates draft strategy, policy and design guidelines and then uses these to influence the implementation of regeneration on real sites and their settings.

This would be an example of action research informed by the preceding analytical research. The practical experience of such action would allow refinement of any such draft guidelines for greater effectiveness. If the action research findings were conclusive in favour of environmental quality actually being seen to positively influence investment decisions, the analysis and presentation of results would serve as a valuable 'seeing is believing' tool for promoting the guidelines and in potentially assisting the marketing to investors of environmentally regenerating areas. The promotion of the project outcomes, including the adoption of new strategies, would very likely boost investor interest in the areas and wider region taking part in the project.

In addition, the research methods described in Modules 1 and 2 and the ideas for the proposed action research could be usefully adapted for application in other EU countries where the actors, their roles, the processes and trends in investment decision making are significantly different. This would enable direct or near-direct comparison of the relative influences of environmental variables in areas with similar profiles and regeneration challenges to those in South and West Yorkshire and elsewhere in the UK. This will give better understanding of how to develop guidelines

for regeneration strategies and policies in the context of the global economy. It may also potentially lead to opportunities for sharing resources of various kinds in generating promotional materials and techniques for regions of similar profile which are all themselves competing with the honey pot core cities of North West Europe.

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