

1 Introduction to sustainable property development

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1.0 Introduction

The built environment in general and property development in particular, have significant impacts on all aspects of sustainability, economic, social and environmental. The development process impacts on resource consumption, energy use, biodiversity, water consumption and water course patterns, waste production and the physical design and impact of urban spaces. This book examines the impacts that property development has at each stage of the process and identifies ways in which developers can reduce negative impacts and furthermore, how they can contribute positively to mitigate issues facing society such as climate change.

It is our contention that the concept of sustainable property development is not an absolute. We have only a developing understanding of the terms ‘sustainability’ and ‘sustainable development’; they are still contested and multi-definitional. Therefore it is possible only to speak of *relative* sustainability. That is to say that one building or property may be judged to be *more or less* sustainable than another one; but even this judgement is contentious.

With this as a starting point, this chapter seeks to explore some definitions of sustainable development, sustainability and sustainable property development. It illustrates that sustainability is a contested concept and describes what this implies for our conceptual understanding. The characteristics of sustainable property development and sustainable property, we argue, vary from land use to land use, from one time frame to another and also, from location to location. The chapter describes the various stakeholders and their respective roles and abilities to determine the level of sustainability embraced in any property development. Developing property sustainably is an essential goal, if we are to develop a built environment that has the least environmental impact possible and engenders a more equitable and healthy society for all. Whether this aim can be realised remains to be seen, but it should not deter us from trying as the philosopher Emanuel Kant said in the 1750s ‘it is often necessary to make decisions on the basis of information sufficient for action, but insufficient for the intellect’. It is on this basis that the strategies for developing property sustainably are posited.

1.1 Definitions of sustainable development, sustainability and sustainable property development – a contested concept

Most modern texts on sustainable development take as their starting point that of the Brundtland Commission (1987: 43) ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’ and it is this

definition which has been embraced and is embedded in much legislation – including that concerning property development. However, whilst undoubtedly laudable in ambition, it is difficult to translate into action, and it is action with which this book is concerned. Indeed the problem with the Brundtland definition was neatly summarised by Sir Jonathan Porritt (*The Financial Times* 1998) who opined: ‘Sustainable development is one of those ideas that everybody supports, but nobody knows what it means.’ When trying to define sustainable development, it is clear confusion reigns and that no single definition or interpretation exists or satisfies all (Byrch *et al.* 2007). It follows that if our understanding of sustainable development is flawed or incomplete, efforts to deliver sustainable development may be futile at best, or exacerbate the problem at worst. So; why is the sustainable development so difficult to define?

Sustainable development, sustainability and thus sustainable property development have the characteristics of ‘contested concepts’ (Paton 2010). Gallie (1956) introduced the term to the Aristotelian Society to facilitate understanding of abstract, qualitative concepts such as ‘social justice’ or ‘fairness’. To illustrate how social justice may be interpreted differently depending on one’s viewpoint; one only has to consider the saying ‘one man’s freedom fighter is another man’s terrorist’. In essence contested concepts are notions that involve endless disputes about their proper uses on the part of the users and second, cannot be settled by appeal to empirical evidence or logic. The disputes arise from a range of different, though reasonable, interpretations of the concept.

When analysing sustainable development, it is necessary to deconstruct the definitions and explore the interpretations that are possible. Returning to Brundtland, whilst the first part of the definition as set out above is commonly cited, the section goes on to place priorities in terms of the world’s poor, which they argued should be prioritised and the need to recognise ‘the idea that limitations imposed by the state of technology and social organisation on the environments ability to meet present and future needs’ (Brundtland 1987: 43). This latter extension recognises that shifting agendas and technology changes will affect the interpretations of what can or cannot be achieved.

However, frequently these extensions are omitted, which limits the breadth and depth of our understanding of sustainability (Byrch 2007). It is easy to say ‘that does not apply to me or my circumstances’; sometimes the issues are simply too hard to process and understand. Nowhere is this the case more than with property development, which all would recognise has long-term implications, but about which decisions have to be made with imperfect knowledge and often with a pressing economic priority. The definitions adopted and their interpretations demonstrate the difficulty in applying appropriate relative weights to environmental, economic and social spheres by different groups and how the concepts of impartiality, fairness and future are applied to these spheres. The analysis described below allows a more informed perspective of sustainability and sustainable development to be realised.

1.2 Sustainability from ecocentrism to anthropocentrism

The following section sets out some of the more theoretical aspects of sustainability and whilst, at first read, much of it would appear to be unconnected with the notion of property development, it is not as the philosophical arguments go to the heart of different policy approaches adopted both in the developed and developing parts of the globe.

So, what are the underlying philosophical, economic, social and environmental beliefs or constructs driving perceptions and actions and the executive? It is possible to analyse

conceptual understanding within the property sector alone, however this limits the overall understanding of sustainability and sustainable development across all sectors and importantly, how it relates to the rest of the world. Literature shows distinct characteristics and sub-groups that can be de-constructed and ordered to clarify shared and distinct characteristics.

A key division is between ecocentrism and anthropocentrism (Pepper 1984; Dobson 1990; Byrch 2007). An ecocentric worldview perceives ecosystems as part of an integrated environmental system with organisms, biological communities and ecosystems creating the mantle of life surrounding the planet. Ecocentrism is advocated by an environmental movement known as Deep Ecology (Naess 1990; Brown 1995), grounded in seeking the common good of the human and non-human world (Purser and Montuori 1996). Ecocentrics are radically egalitarian where animals, humans, rivers, seas and lakes all have equal and intrinsic value. Ecocentrics argue that only when this worldview is adopted will we substitute environmentally destructive policies for more benign policies. Paradoxically, in asking humankind to take responsibility for the whole of the ecosphere, ecocentrics express anthropocentrism. Furthermore, the egalitarian ecocentric world would collapse into nihilism if no distinctions of value are made, where for example the value of a child in a ghetto is equal to that of a family of rats (Brown 1995). Taken to extremes, ecocentrism lends itself to an ideology of domination, where eco police enforce eco policy (Dobson 1990). Whilst reduction in mankind's interference with the ecosphere is desirable, some forms of ecocentrism would lead to the rejection of human rights in favour of the ecosphere, for instance propositions of a human population cull advocated by transpersonal ecologists (Naess 1990). Within social and political systems, ecocentrics tend to dislike centralised systems and materialism and this puts them at odds with current prevailing neo-liberal paradigms.

Ecocentric approaches, although appearing radical, are rapidly gaining credence within governments and organisations at many levels. Hawken *et al's* (1999) strong call that natural capital should be quantified and fed through into definitions of growth argue strongly that a failure to recognise issues such as resource depletion is completely unsustainable. The United Nations Environment Programme's World Conservation Monitoring Centre (UNEP-WCMC) is an influential voice developing and supporting work in relation to assessment of the real value of ecosystems to wider economics. As tools are developed and adopted which provide economic data as to the value of natural resources, so they are becoming part of the property development decision framework. For example, within the UK significant work is being undertaken within the National Ecosystems Assessment Project to understand the value of species to both society and the economy (www.uknea.unep-wcmc.org).

Although there is a strong resurgence in ecocentric thinking in the newer guise of ecosystems analysis, the dominant worldview is still anthropocentric, where mankind dominates, only humans possess intrinsic value, are the rightful 'masters of nature' as well as being the origin and source of all values (Cook and Golton, 1994). As such, anthropocentrism is a very different world view to ecocentrism (Brown 1995). Within the anthropocentric paradigm resources are extracted without replenishment, and non-reusable materials such as plastics and nuclear waste accumulate. Some argue anthropocentrism is based in the positivist, objective-thinking characteristics in our scientific, mechanistic and technological worldview which emerged from the Enlightenment in the seventeenth century (Paton 2010). Anthropocentrism is perceived by ecocentrics as the root cause of the ecological crisis (Paton 2010). Anthropocentrics believe that mankind can provide a technological fix to the environmental problems; another term for this approach is technocentric (Cook

and Golton 1994). However the hegemony of anthropomorphic approaches, whilst still dominating actions, are been tempered by governments who increasingly recognise that to deliver sufficient sustainability to avert overwhelming levels of climate change, it is necessary 'to persuade civil society to break from the anthropocentric perspective where the environment affects and benefits humans' (Salinger 2010).

Even so, it is too simplistic to see a clear divide between ecocentrism and technocentrism, as boundaries are blurred and issues are complex (Byrch 2007; Pepper 1984). One issue between an ecocentric worldview as opposed to an anthropocentric one is: where does the line between fair use and abuse lie (Purser and Montuori 1996)? Or where does economic development become exploitative? Furthermore Pearce (1993) and Pepper (1984) perceived sub-groups within ecocentrism and anthropocentrism. Within anthropocentrism, those on the left, known as 'accommodating environmentalists', tend to be gradual reformers believing in careful economic and environmental management but without radical change to social economic and political structures (Cook and Golton 1994). Those on the right, known as 'cornucopian environmentalists', believe in unfettered economic growth and humankind's right to utilise the world's resources as they see fit. Within the ecocentric camp there is a divide between those on the right, 'deep ecologists', who put a greater emphasis on the limits to growth or carrying capacity of the earth, and those on the left, 'moderate ecologists' who believe in decentralised political and social institutions. Deep ecologists believe in compulsory restraints on human population growth and on resource consumption. Sitting between them all, are those responsible for property development who have to make decisions that sit within both their own value sets and the regulatory frameworks devised in the light of the debate.

Economically, anthropocentrists belong to the neo-classical school. Believing growth is always possible and desirable, they tend to reject interventions in the economy by tax or incentives which would promote sustainability; to them it is a 'market' issue. There is evidence that this stance is beginning to change and evolve in capitalist economies with an increased recognition of connection between the natural world and human wellbeing which is resulting in environmental legislation, at least as far as the connection between fossil fuel use, carbon emissions and theorised impacts on climate.¹ Further, this legislation recognises that the built environment is a major source of natural resource depletion and may be a catalyst in climate change through its contribution to carbon emissions. Matters of sustainability are increasingly being aligned in growth economics as related to risk as much as to reward, a phenomenon first put forward in the UK in 2000 by the then Sustainable Construction Task Group (2000).

Therefore even the most free market advocates are now prepared to accept interventions which seek to control carbon and energy use in buildings. For example, in 2010, the disclosure of energy consumption in commercial buildings in Australia became mandatory (Warren and Huston 2011) and in the EU the Energy Performance in Buildings Directive, 2002 (2003/91/EC) introduced by 2009 a mandate for every building (with some exceptions) to declare its asset energy rating (Energy Performance Certificates [EPCs]) upon sale or letting. (DirectGov, 2012); further, some public buildings have to display energy usage via a Display Energy Certificate (DEC). More contentious legislation in Australia was the introduction of a carbon pricing mechanism which commenced in July 2012, the notion of 'taxing' carbon pollution met with significant resistance in parliament during 2011. There was concern about the potential impact on the economy and the amount of the carbon price compared to other countries. The Australian Labor government largely offset potential negative political and economic impacts of the carbon tax with generous government assistance to households.

However, when the Liberal coalition government was elected in 2013, they repealed the legislation immediately. Within the UK, the introduction of a mandatory carbon reduction commitment programme affecting larger corporate organisations is effectively providing a taxation regime to encourage reduction in carbon emissions within some property portfolios held in both the public and private sectors.

Overall it is hard to say whether there is a temporary or permanent shift in the neo-liberal economic philosophy adopted by cornucopian environmentalists towards an economic outlook more attuned to accommodating environmentalism. What is of concern, is that within the built environment, improved economic performance through a perceived increase in rental or even capital value is often the main argument used to persuade property owners and investors to adopt sustainability (Eichholtz *et al.* 2009 and 2013; Fuerst and McAllister 2011; Newell 2008; World Green Building Council, 2013) and indicates that economic drivers remain paramount.

In summary, a spectrum of ideas and values exist within the concept of sustainability from weak to strong (see for example Costanza and Daly [1992]) which goes from dark green to light green, or as some have suggested to grey; implying that the pursuit of weak sustainability (the cornucopian set of values) does not deliver sustainable outcomes (Söderbaum 2011). The range of standpoints identified in the literature is expressed in Table 1.1. Five distinct groups are identifiable; two are anthropocentric (accommodating and cornucopian environmentalism) and three are ecocentric (transpersonal, deep and moderate ecology). Within the current context in which property development takes place, most frameworks lie within the weak sustainability framing.

Another way of presenting these beliefs and standpoints figuratively is shown in Figure 1.1 as the spectrum of sustainability concepts. Figure 1.1 illustrates the disconnection between transpersonal ecology and environmentalism. Elsewhere there is some overlap between the groups in their value systems and beliefs. There is a broader divide between ecocentrism and anthropocentrism where one is considered to deliver strong sustainability and the other weak sustainability. Current collective practice tends to fall in the environmentalist conceptual framework delivering very weak to weak sustainability. Is weak and very weak sustainability going to deliver sufficient changes for the generations to come and those already here to mitigate environmental damage? Brown (1995) asserts this level of sustainability will fall short of what is needed.

The built environment including property development is responsible for significant environmental impacts. Estimates vary but according to the Energy Savings Trust (www.energysavingstrust.org.uk) and the World Green Building Council (www.worldgbc.org) some 40 per cent of carbon use relates to buildings, significantly more if transport is taken into account. Further, buildings generate some 30 per cent of water use and are a major source of waste; in short they are critical in terms of global resource depletion. Buildings use resources during construction with the extraction of resources; energy and water resources are used in the transport and manufacturing of construction materials and components. Considerable amounts of waste are created at this stage. During the building's operational phase, energy resources are used in lighting, heating and cooling and water is used in building services. Occupant health is affected by the materials used during construction. At the end of the building lifecycle, unless materials are re-used or recycled, they will be transported to landfill where the resources are lost in perpetuity and further development may be prevented due to contamination.

Within the built environment, property developers are a sub-group who impact on the sustainability of the buildings they construct, design and sometimes operate and in

Table 1.1 Ecocentric and anthropocentric standpoints

<i>Stand-point</i>	<i>Transpersonal ecology</i>	<i>Deep ecology</i>	<i>Moderate ecology</i>	<i>Accommodating environmentalism</i>	<i>Commucoptian environmentalism</i>
<i>Belief system</i>	Religious level of belief	Bio-ethics and intrinsic value	Primary value of ecosystems	Intra and inter-generational equity	Support for traditional ethical reasoning
	Silent			Instrumental value in nature	Rights of humans
	Silent	Accepts 'carrying capacity' of earth argument	Accepts 'carrying capacity' of earth argument	Silent	
	Emotional and irrational			Rational and pro science	
	Silent	Lacks faith in technology			Faith in science and technology
<i>Population</i>	Population cull	Reduce population	Zero population growth	Silent	
<i>Resource consumption</i>	Silent	Extreme preservation	Resource preservation	Resource conservation	Resource exploitation
<i>Worldview</i>	Ecocentric			Anthropocentric	
	Lacks faith in technology				Faith in technology
<i>Waste</i>	Reuse, repair and then recycle			Recycle	

<i>Economic</i>	Capitalism is not sustainable. Rejects consumerism.	Heavily regulated economy. Capitalism is not sustainable. Does not favour overseas trade. 'eco'nomics. Rejects consumerism Little overseas trade.	Zero economic growth. Capitalism is not sustainable. Does not favour overseas trade. 'eco'nomics. Rejects consumerism. Little overseas trade.	Managed growth. Capitalism is sustainable. Consumerism is acceptable. Overseas trade is acceptable.	Maximise growth. Capitalism is sustainable. Substitution theory prevails. Laissez faire economics. Green consumerism is accepted. Promotes consumerism. Promotes foreign trade/agreements.
<i>Energy</i>	Preservation	Preservation	Conservation	Conservation	Nuclear is acceptable, conserve and increase consumption
	<i>Very strong sustainability</i>		<i>Strong sustainability</i>	<i>Weak sustainability</i>	<i>Very weak sustainability</i>

Source: Wilkinson (2012)

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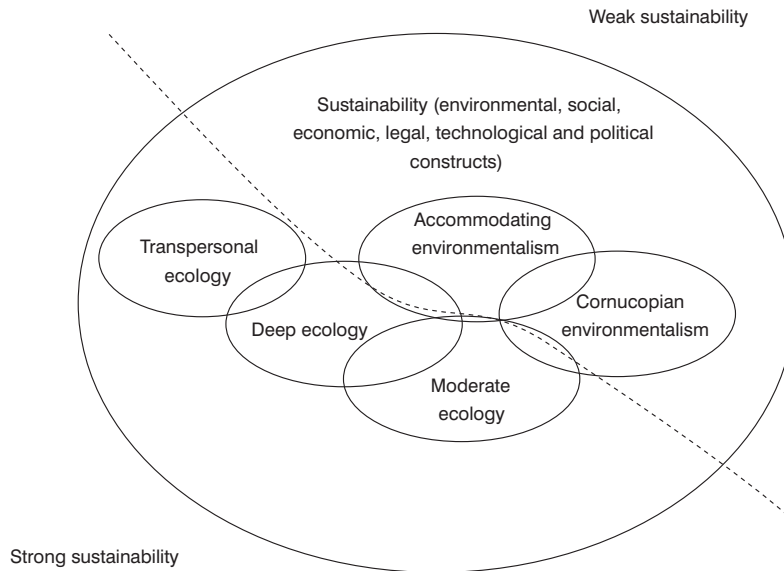


Figure 1.1 The spectrum of sustainability concepts
 Source: Wilkinson (2012)

this regard their conceptual understanding of sustainability is extremely important. It has become a current practice for many organisations, and not just property developers, to adopt ‘corporate social responsibility’ (CSR), or Corporate Responsibility (CR) as a means of organising, structuring, managing and reporting their environmental impact (Wilkinson *et al.* 2004). Indeed over a period of some 20 years the widespread adoption of CR practices has permeated deeply through leading companies and the notion of Responsible Property Investment (RPI) is becoming increasingly embedded (UNEP-FI, 2012). A requirement of CSR is to provide information about sustainability targets, policies and strategies, usually on company websites and here one can determine attitudes to and perceptions of sustainability.

Figure 1.2 shows property developers as a subset of the built environment. Other key stakeholders include architects, designers, building users, owners and policy makers and enforcers, all of whom may have divergent conceptual understandings of sustainability but which are important and collectively significant. Currently, within most developed countries which typically operate under a neo-liberal economic paradigm, sustainable property development tends to be applied and realised more in the context of economic goals, though social and environmental goals are noted as significant (Ang and Wilkinson 2008).

1.3 Defining sustainable property development

The Australian Green Building Council, part of the World Green Building Council movement, defines sustainable property development in the following way:

The property industry is defined as all those who produce, develop, plan, design, build, alter, or maintain the built environment, and includes building materials manufacturers and suppliers as well as clients and end use occupiers.

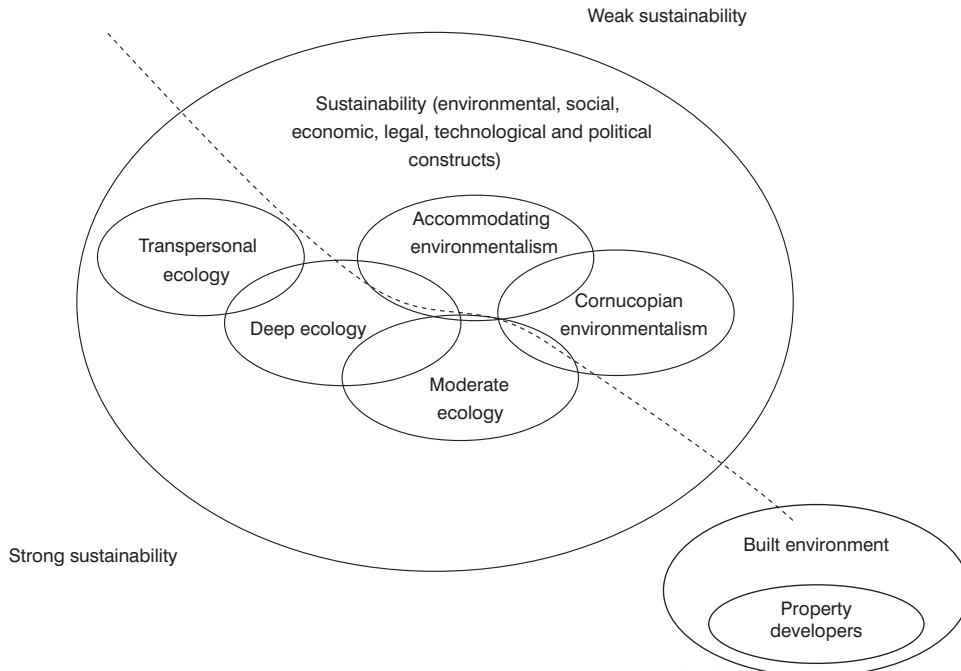


Figure 1.2 The relationship of built environment and property organisations to the spectrum of sustainability concepts
Source: Wilkinson (2012)

A sustainable property industry will balance environmental, social and economic issues to ensure a viable and valuable industry for future generations.

Building green is an opportunity to use resources efficiently while creating healthier buildings that improve occupant health and wellbeing.

(GBCA 2013)

This definition embraces social aspects such as improving occupier health and wellbeing, environmental aspects around using resources efficiently, and in the interests of economies, to ensure a 'viable' and 'valuable' industry, though it is acknowledged the terms 'viable' and 'valuable' are broad and capable of various interpretations. *Inter-generational* aspects are covered loosely in the mention of 'future generations' but *intra-generational* equity is omitted. Finally this definition embraces more or less the whole life cycle of built environment property (the end of lifecycle is omitted) in which developers are participants with other stakeholders. In this book 'sustainable property development' is defined as:

- Recognising that the environmental impacts of the sector – including but not restricted to impacts on climate change, potable water availability, resilience to flood and weather events, waste, biodiversity and natural resource depletion – are significant, and that mitigation of those impacts must take a beyond-compliance perspective.
- Accepting the link between property and social infrastructure, including the creation of a sense of place, contribution to social amenity and the inherent relationships between healthy workplaces and increased workforce productivity.

10 Sara J. Wilkinson and Sarah L. Sayce

- Acknowledging that business value, including but not limited to economic value, can be created by a committed and comprehensive approach to:
- using resources (such as energy, water and materials) in an efficient manner and sustainably where possible,
- anticipating and managing risks and opportunities across all levels of an organisation,
- recognising that all stakeholders, internal and external, expect improvements in economic, social and environmental performance.

(Department of Environment and Climate Change NSW, 2013)

Given the issues described above, it is acknowledged that the definition is not complete and may be wanting in some respects, nevertheless on the basis that 'some considered action is generally better than no action', it provides a framework in which to determine and, where possible, benchmark actions in sustainability.

1.4 The characteristics of sustainable property development

The following set of characteristics is proposed to evaluate whether a property development could be considered 'sustainable'. This section of the chapter briefly introduces those characteristics, noting that developers have varying degrees of control in respect of each development in terms of its contribution to sustainability. They are outlined in order of wider societal impacts to building related and individual impacts and are explored in more detail in subsequent chapters.

The discussion has been based upon and adapted from many sources but notably the Department of Environment and Climate Change NSW (<http://www.environment.nsw.gov.au.htm>) *Sustainable Property Guide 2013* and *Sustainable Design and Construction Toolkit*, London Development Authority, prepared by URS Europe 2005, www.lda.gov.uk.

1.4.1 Land use, urban form and urban quality

Urban design/place making: The creation of spaces which inspire individuals and encourage and facilitate safe pedestrian movement and that link logically and respectfully to their contexts, complementing existing features are all qualities which will not only make a development successful economically but which will promote longevity and hence sustainability. Whether a formal master plan process is involved or not, there is now recognition that engagement with local communities can not only speed up approvals but promote better urban design. Whilst community engagement has been promoted by theoreticians for many years, notably Arnstein's seminal ladder of participation (Arnstein 1969), it is only in more recent years that such engagement has been formalised into policy in some countries (see for example the Localism Act 2011 in the UK which increased the rights of local groups and individuals within the planning process).

Attractive site design: Sites should be designed to meet the needs of the end users, with consideration given to how the buildings, infrastructure or open space will be used in practice, while (although subjective) also creating attractive spaces. Depending on local climatic conditions, the orientation of the building within the site will also be critical in both the use of resources and the reaction of both those viewing the building from the exterior and those experiencing it internally.

Reuse of land and buildings: Using a 'brown field' or contaminated site in preference to a 'green field' site is written into planning policy in some countries. Not only does reuse

of previously developed land often reduce dependence on transport and promote more compact settlements, it could be seen as protection of important habitats. However, this must be balanced against the other environmental arguments against dense development, including propensity to flood due to increased hard surfacing. It is not just land reuse which is a sustainability consideration; much of current thinking is the promotion of retrofit and refurbishment of buildings. Such solutions can help to maintain a sense of place whilst reducing the creation of waste as well as increasing the period over which embodied carbon is amortised.

Density: Ensuring that a development is designed to a density appropriate density for the location is another critical consideration. Whilst high density around transport nodes may be optimal, there are trade-offs in relation to noise, traffic congestion and privacy and, as mentioned above, biodiversity and flooding. Where high density is deemed appropriate, measures such as sustainable urban drainage schemes (SUDS) can be critical.

1.4.2 Environmental protection and enhancement

Supporting biodiversity: As will be discussed in later chapters, considering and conserving ecological values including locally, regionally and nationally important species as well as retaining or improving habitat values is increasingly recognised not just as an environmental concern, but also as an economic matter as methods of quantifying the impact of species loss are developed and accepted politically.

Pollution to air, water and land: Construction and operation of buildings can produce pollutants which are harmful to humans, fauna and flora; some are capable of sterilising land for long periods; therefore for development to be sustainable due consideration must be given to minimising, mitigating or avoiding polluting emissions during construction and operation. Further, there is a strong relationship between energy production and pollution and contamination; there, for the energy sourcing used within buildings, is a material consideration in relation to pollution off-site.

Noise abatement: Excessive levels of noise can be detrimental to human health; not only can damage be caused to hearing, but it is associated with hypertension, heart disease, sleep disturbance and loss of academic performance (Passchier-Vermeer and Passchier 2000). In extreme cases, those responsible for excessive noise can be subject to legal action in nuisance, even where the development had been approved in planning terms. Noise has two main connections with sustainable property development. First, the ambient noise of the area or within the site will affect the quality of life and health of the occupants and those that live or work nearby during the construction period; this is something that has to be handled sensitively to mitigate adverse effects. Second, in designing and locating a development the long-term impacts of noise emanating from the use of the facility should be considered as well as the impact on the development of noise levels already prevailing in the area. In both cases, the use of careful mitigation works in terms of screening, orientation of buildings and user controls can be effective in reducing issues. However there is some research that demonstrates that a low level of background noise can lead to a sense of security; in an uncertain world those who live in urban areas can find a *lack* of noise disturbing, though it tends to be sounds from the natural world, such as birdsong, which promotes calmness. Designing for sound is now an important factor and that includes consideration of finishes within a building as these have a significant impact on sound levels.

1.4.3 Location and transport

Location and access: The role of location to successful property development is fundamental. However within the broad heading of location, accessibility is sometimes overlooked. Access via a variety of modes of transport is increasingly important to provide flexibility of use in the future and in the light of planning policies favouring public transport, although this will depend on the type of development and its overall location. For example, a logistics distribution centre must have good access by road, but rail connections is probably not an issue; within an urban setting however, easy walking distance to a public transport node can be key to occupier demand. Accessibility too means due consideration, beyond statutory requirements, to consider the needs of people with disabilities; these include not just mobility issues but can include design to allow access to those with visual or hearing impairment.

Further, access to local amenities will be very important for office workers where the ability to attract a good workforce may be partially determined by proximity to local shops and service facilities, such as restaurants, health and fitness facilities and schools. Some of the issues of proximity to local amenities may be overcome by including these within the scheme, but a lifestyle predicated on spending the entire working day within the confines of a single building is increasingly recognised as unhealthy both physically and mentally. Another recent move is the reuse of redundant office buildings for educational use – ensuring that working parents can overcome issues of picking up children from, locations remote from their own workplaces. This again is a further recognition that ‘access’ is taking on new dimensions.

Active and sustainable transport: There is increasing emphasis on the relationship between sustainable transport means and health and wellbeing. The Urban Land Institute’s ten principles for building healthy places (ULI 2013) draws down on an increasing body of research to argue that design at all scales (place to building) which promotes walking and cycling can yield positive health and economic returns. Their principles, explored later in the book, include the need to put people first, create mixed use which encourages interactions and make it easier to walk than drive. Whilst the ability to design for active transport will depend on the climatic and other conditions, the link between health and levels of physical activity can no longer be ignored by the development community.

1.4.4 Resource use

Energy efficient design: Energy efficiency is perhaps the leading issue in terms of the global agenda of improving the resource use sustainability of buildings. Efficient energy use is a key measure to reduce carbon dioxide emissions; mitigating the impacts of global warming and climate change. Not only are changes to building codes tightening in most countries, so developers can, at little or no extra cost, take advantage of the many technologies available to avoid energy wastage and track energy consumption during occupation. Within the EU, binding targets have been set for a 20 per cent reduction in energy by 2020 although the emphasis is now shifting from energy reduction to carbon reduction.

One of the major concerns, explored later is that, despite the introduction of rating schemes designed to promote good design, there exists a significant gap between the *designed* efficiency of many buildings and their *performance* in energy use terms. For example the work of the Useable Buildings Trust (<http://www.usablebuildings.co.uk>) has found that buildings can consume between two and five times more energy than originally predicted.

Further, it should be noted that the issue of energy differs between climatic regions, both in terms of scale and in terms of focus – with some areas requiring heating whilst others require cooling. What is of concern to some commentators is the expectation that, within the work environment, internal temperatures should remain almost constant all year round regardless of outdoor conditions. Such an approach leads to further disconnection between people and their environments which can be detrimental to raising awareness of the world around us.

Renewable energy: Of increasing concern is the *source* of energy, as well as its quantum of use. Renewable energy (solar, wind, water, biomass, ground and air source heat pumps) has the dual benefits of being both zero carbon and perpetual, depending on climatic conditions. It can either be captured for use in grid systems for wide distribution or produced on-site, which is generally less efficient. Whilst some countries, such as Iceland, New Zealand and Canada, have abundant sources of renewable energy which have been harnessed within main distribution systems, these are in the minority. The potential for renewables varies depending on climate and topography, but most developed countries have policies and in some cases obligations aimed at increasing the percentage of renewable energy. Within the UK, a ‘roadmap’ for renewables production of 20 per cent of needs by 2020 (DECC 2011) provides for a coordinated approach based on attracting inward investment for major schemes and financial initiatives (such as the Feed-in-Tariff and the Renewable Heat Incentive scheme) aimed at promoting the use of on-site schemes. The presence or otherwise of such financial schemes can have a profound influence on the design choices of developments.

Water conservation: Whilst too much water can itself present real sustainability issues in the form of flooding, the growth in world population combined with increased per capita use of water associated with increased wealth level, changing life styles and increased intensification of agriculture including intensive meat farming and the production of biofuels has placed pressure on potable water supplies. For example, within the UK, from an average consumption of some 20 litres per head in the late nineteenth century, it was estimated that by the early twenty-first century the average UK daily consumption was some 150 litres per head (Aquaterra 2008) compared with less than 110 litres in Belgium. However within the US, estimates put usage as high as 360–400 litres per day (<http://water.usgs.gov/edu/qa-home-percapita.html>). Not only is this a large occupation cost, but it is unsustainable. Although moves to change designs to capture and use rain, storm and waste water can all help, more drastic solutions are required in many countries, especially in developing countries where potable water systems are a new requirement and in countries where use has been profligate.

In some countries, like Australia, water economy is very important due to drought conditions that frequently prevail and this is often the driver for the introduction of regulatory measures which are becoming more common for both residential and commercial developments in the future. Current expectations focus on water efficient appliances and fittings, while new design ideas, including water sensitive urban design and water efficient technologies, such as composting waterless toilets, are becoming more commonplace.

Low-impact building materials: When developing the design of a building, the environmental impact of the materials used is a consideration. It is estimated that, despite increased awareness of environmental matters, natural resources extraction is 60 billion tonnes a year, an increase of some 50 per cent over that of only 30 years ago and one-third of this relates to construction (SERI/Global 2000, 2009). Therefore the minimisation of finite resources is a sustainability ambition and the substitution of finite resources with materials

that can be re-used or recycled, thus prolonging the life cycle and reducing the burden on virgin material sources. Further the transport miles of materials should be considered: importing stone half way round the planet is hardly a good option – but it is commonplace. Local sourcing should be the preferred option where possible. Not only is this better environmentally but it can help retain or develop distinctiveness of place and help local employment; it may also be a cheaper option. Finally, when designing, reuse of materials at the end of building life is a consideration as this will improve sustainability.

Minimising waste to landfill: Concerns about the volume of material going to landfill have risen in recent years. This may not be an issue where land is plentiful, but in regions of high density of population such as Northern Europe and cities such as Hong Kong, it is a very significant concern resulting in government action aimed at changing behaviours through pricing mechanisms (see for example DEFRA 2012; Yu *et al.* 2013). Waste can be reduced in the design phase by the specification of material to include re-used or recycled materials and thinking ahead to ensure that material can, at life end be used. The development of Building Information Modeling (BIM) can be used to aid with this. This approach, the cradle to cradle approach, typifies the moves towards a circular, rather than linear, economy and is explored in more detail later in the book. Waste can be also be reduced during the construction phase by good working practices, such as the optimisation of off-site manufacture techniques. Designers can also assist in reducing waste in occupation by ensuring that plans allow for inclusion of waste sorting on-site where appropriate, although this is not always the optimal solution; sometimes collection and expert sorting can lead to greater reuse and recycling.

1.4.5 Business and community characteristics

Local labour and skills: Sustainability is not solely concerned with environmental issues; economic and social concerns may be are less well developed as built environment development concepts but are nevertheless important considerations. Within the construction process, consideration of encouraging or giving preference to local labour through the construction process or during the lifetime of the completed development may have the economic and social regenerative effects of stimulating the local economy and increasing the skill base; in the case of controversial schemes it may also help to develop goodwill towards the development thereby easing the course of obtaining consent.

Sustainable and local procurement: Sustainable procurement chains are well established within some industries, notably food where schemes such as FairTrade have had a transformational impact on attitudes of many consumers towards the products they buy-provided that price is not significantly adversely impacted. However the concept of sustainable procurement is now deeply embedded within many organisations and indeed governments. For example, within the UK public sector policy as long ago as 2006 (Sustainable Procurement Task Force, 2006) makes clear that it is a priority area. Since then Green Procurement Policies (GPP), although they remain voluntary, are advocated strongly by both the EU and the UN (see for example http://ec.europa.eu/environment/gpp/pdf/handbook_summary.pdf). Whilst there is a difference between Green and Sustainable Procurement, the principles related to construction are the same including: employing consultants with appropriate skills, designing for energy efficiency and renewability, sourcing materials locally, building green capacity, acting fairly and or through local suppliers where economically viable and fair labour policies. Local procurement goes slightly further by the encouragement of prioritising the use of SMEs (Small and Medium Sized Enterprises) in the

award of contracts and within the UK has been given statutory backing (Public Services (Social Value) Act 2012). A study one year on found that adoption of local procurement had produced demonstrable benefits to the local economies.

Green and local procurement is not restricted to the public sector. Many private sector contractors, investing institutions and corporations also adopt such practices so their use within the design and construction process may be an attraction to those financing or buying out the development.

Community involvement/engagement: The case for engaging local communities within the planning and development process has been advocated for many years. From Arnstein (1969) onwards, theorists have promoted the notion that early engagement with local people will result in more sustainable development. Although some developers may still regard local stakeholders as potential impediments to their schemes, engagement is now deeply embedded within statutory processes. Creating interest and preferably buy-in from local stakeholders, achieved in part through community consultation and engagement initiatives over and above those required by the development approval process is now regarded as a normal part of sustainable development.

Community facilities: No developer will wish to provide facilities which will play no role in enhancing the economic value of the development. For this reason within some planning systems, there is statutory provision for developers to be required either to provide some form of community facility on-site as part of the consent or make cash contributions to pay towards community infrastructure. Within the UK two systems prevail: an S.106 agreement whereby a developer must provide, for example, a percentage of 'affordable' housing within a scheme and, in some authority areas the payment of a fixed tariff Community Infrastructure Levy to enable the local authority to provide facilities, such as clinics, schools, roads, parks or other amenities required as a result of overall new developments in the area. Whereas such contributions to community facilities may not be made out of choice, in large developments, economic value may be underpinned by designing in facilities for community or multiple users. This is more likely where the development is commissioned by a landowner who has the intention of long-term ownership.

Designing for community: The point has been made above that early engagement with communities can both aid the speed with which a development is approved; it can also improve the very nature of the design. Bell and Morse (2003), in their work in southern Europe, found that working closely with communities enabled a real sense of belonging to occur and generated a sense of community. This is important. A building is a long-term asset; it should help to foster a sense of place and sit within a compatible context for its users and other stakeholders; in many cases it will help to generate a community and provide space for people to meet socially and accidentally.

Equality and diversity: Many neighbourhoods are characterised by a lack of social and cultural diversity – even though many government policies may seek to foster equality across communities through regeneration or development. However, this can be difficult to achieve – likeminded or culturally connected communities tend to cluster together leading to the development of areas of social exclusion. Whilst property development is not an exercise in social engineering and measures are in place to prevent developments being discriminatory on physical access grounds, having cultural sensitivity within the design process and, for large schemes, ensuring access to amenities required by a range of people, can help to promote equality and diversity actively.

Health and wellbeing: As discussed above the links between health and wellbeing and the physical setting to a building are well documented. The quality of the internal environment

is also important in relation to thermal comfort, lighting/daylighting, indoor air quality, ventilation and the presence of pollutants. With high rise buildings, it may not be possible to have natural ventilation, but many air conditioning systems if not well maintained can harbour contaminants or if not producing severe physical conditions may lead to discomfort. Seppanen and Fisk (2006), in an extensive literature review, found strong evidence linking poor indoor environmental quality with physical illness, such as respiratory disease and decline in worker productivity. For developments to be sustainable, due care must be given at the design stage to ensuring that good internal environmental quality is designed in; in many cases natural ventilation will be preferred.

Safety and security: People wish to live, work and play in spaces in which they feel safe. If they do not, then attempts to 'reclaim the street's and promote walkability will be destined to fail; further areas deemed unsafe or where there is obvious surveillance may lose value. However, achieving both the sense and reality of security can be problematic. It is over half a century since Jacobs (1961) criticised the design of cities based on the car rather than the pedestrian and more than 40 years ago that Newman (1972) developed the notion of 'defensible space' as a set of design principles based on territoriality, visibility/surveillance, image and impression and safe adjoining areas and uses. Compatible though the views of these major authors are with the concept of sustainable development, they are still not universally embraced. However they are again gaining prominence as recognition grows that developments which are designed to provide safe and well lit environments, accommodate mixed uses, overlook walkways and car parks and encouraging ground level walk-through are likely to prove more successful than those which do not.

Accessibility and diversity: As indicated above under construction considerations, making the development accessible to a diversity of users including the disabled, mothers with young children, visually or aurally impaired and the elderly is important. Whilst some of this is subject to regulation and design codes, notably those with mobility issues, sustainability can be improved through early attention to risks and opportunities during the design process. Further, with aging populations in some countries, it only makes economic sense to cater for the people who may have divergent needs and effective demand capacity. A further social consideration is that of the needs of more ethnically divergent societies. Within the workplace, prayer rooms, private spaces and specially adapted toilet facilities are required. For residential developments, the design needs to consider the nature of the likely occupant community. Whereas the 'standard' western view of a dwelling is based on the concept of exclusivity of occupation, there is a long tradition of shared facilities among many groups that does not appear to be well catered for within many cities. As globalisation sees increasingly mixed communities, so developers will need to adapt their designs.

1.5 Conclusion

This chapter has introduced the concept of sustainable property development sharing Gallie's (1956) attributes of a 'contested concept'; that it is in essence, 'all things to all men'. It is a notion that varies from market to market, location to location, land use to land use, country to country, and of course over time. As such, the best we are able to claim is that one property is, or may be, relatively speaking more sustainable than another; it is impossible to speak of sustainable property development in an absolute sense. In that case, we face the situation stated by Kant on the 1750s that sometimes 'it is necessary to make decisions on information sufficient for action but insufficient to satisfy the intellect'. It is also noted that the philosophical, political, economic and social constructs underpinning

our definitions of sustainability are broad and complex. It is shown that in some respects our current application of sustainability in the built environment draws on limited understanding and inclusion of selected and therefore limited aspects of sustainability. In particular when the research and policy agendas are examined they reveal that the pre-occupation has been with energy efficiency in buildings, at the expense of other environmental and social concerns. Given that there are concerns about the finite nature of fossil-based fuels and the observations of climate change, this is understandable, but not satisfactory.

It is highly desirable that a narrow perspective is broadened over time as we are in danger, as a sector of 'hitting the targets but missing the point'. The point being that our planetary resources are finite and our consumption levels, pollution and waste levels and widely accepted contribution to climate change continues to increase. Therefore the struggle politically is to decide how governments can respond. In relation to property development, this has primarily been through policy, fiscal and legislative moves which gradually improve the energy efficiency of new and refurbished buildings and encourage or mandate the use of renewable energy sources. Additionally, the pricing mechanism has been used to steer developments towards the use of less resources, notably water and the reduction of waste, particularly to landfill.

Sustainable development is however a much broader philosophical concept than reduction of environmental impacts; it has a strong social agenda aimed at equity both within and across generations (Brundtland 1987). This is harder to relate to sustainable development but there is now growing awareness that for buildings to be sustainable, matters such as health and wellbeing need to form part of the design and development agenda.

The chapter explained briefly the characteristics of sustainable property development from the macro or urban scale to the micro or building scale, noting that geographical location, land use type among other variables impact on the breadth and depth of sustainability delivered in projects. However it also highlighted that the very notion of a sustainable development could be considered an oxymoron; therefore debates have arisen around the concept of 'strong, semi-strong and weak sustainability. Further chapters will draw out in detail the factors, including sustainability factors that each stakeholder considers in the process.

Note

- 1 We put theorised in connection with the link between carbon and climate change as it is not the purpose of this book to argue the scientific case for this this. Although the authors are fully accepting of the science as developed and disseminated by the Intergovernmental Panel on Climate Change (IGPCC) (2013).

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2 Stakeholders through the development process

Sara J. Wilkinson and Sarah L. Sayce

2.0 Introduction

Chapter 1 introduced the concepts of sustainability and sustainable development and concluded that these are contested terms capable of widely differing interpretations depending on the perspective of the individual or organisation. The notion of sustainability, although only embraced widely in the last 30 years, is not new. Ruskin argued in 1849 that:

the idea of self-denial for the sake of posterity, of practising present economy for the sake of debtors yet unborn, of planting forests that our descendants may live under their shade, or of raising cities for future generations to inhabit, never, I suppose, efficiently takes place among publicly recognised motives of exertion. Yet these are, none the less our duties; nor is our part fitly sustained upon the earth, unless the range of our intended and deliberate usefulness include, not only the companions but the successors of our pilgrimage.

(Ruskin 1849: 171)

To Ruskin, the need to consider future generations was a duty, but to others it is not a matter of responsibility and duty to those who come after us – it is a current risk. Certainly the climate change agenda has been expressed not just as a future environmental impact but, as concluded by Stern (2006), a current economic imperative and a risk mitigation matter. Many companies who have developed Corporate Social Responsibility policies, see sustainability in social and economic terms as well as environmental; to them it is about good business sense, brand recognition and reputation (Sustainable Construction Task Group 2000).

Within the built environment the sustainability agenda has developed in two, initially discrete ways. On one side, fuelled by government-led positions, the *supply-side* of the industry has been in a ‘push’ position with regulatory frameworks developing, partly due to a lack of perceived movement among *demand-side* players. More recently, the demand-side has moved forward and the fracture between these interests, as elegantly expressed in the so-called ‘circle of blame’ (see Figure 2.1) has been argued to be converging into a virtuous circle (see Figure 2.2).

Whether such convergence has actually taken place is not the direct argument of this chapter; what is explored are the differing types of stakeholders in the development of the built environment, all of whom have a direct influence on whether the buildings that are achieved are ones that not only fulfil today’s occupiers’ needs but, in so far as we can predict,

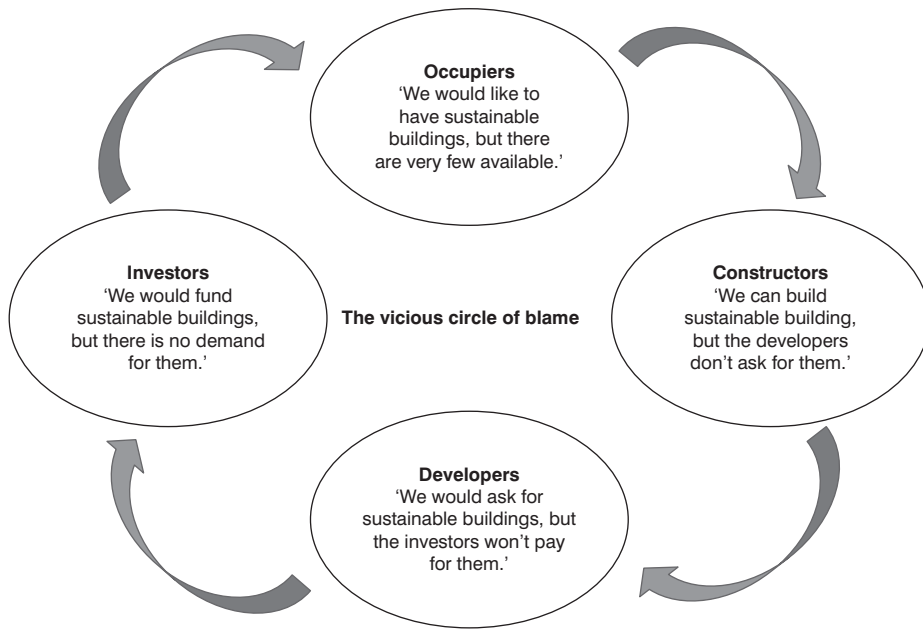


Figure 2.1 The circle of blame
Source: Cadman (2000)

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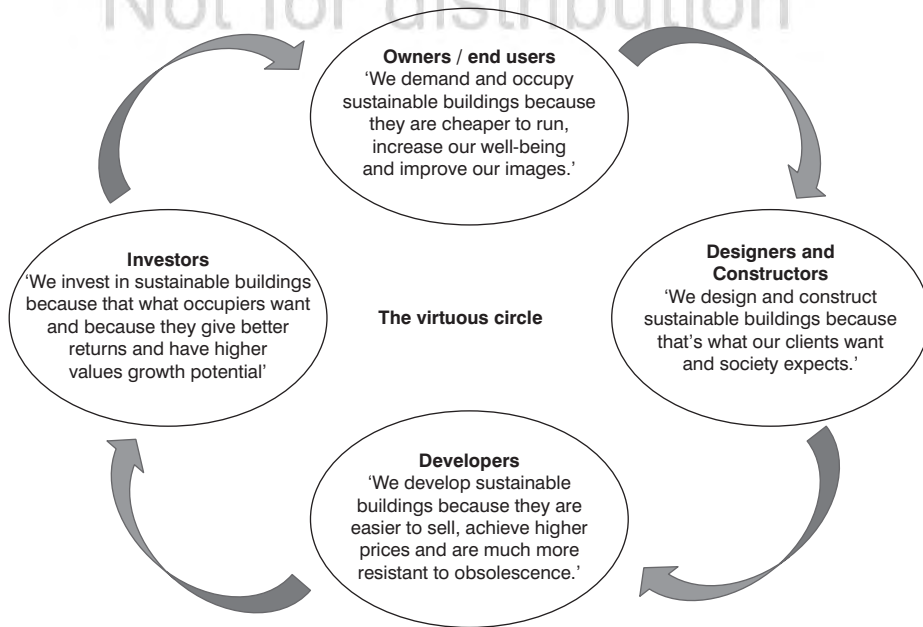


Figure 2.2 The virtuous circle
Source: Hartenberger (2008)

will continue to serve a useful purpose moving forward and not place unnecessary pressures on the environment.

In addition to the plethora of stakeholders, what has to be recognised is that, depending on the power relationships and cultural context, the influences brought to bear at each moment of decision-making throughout the development process will vary and influence the outcome. For example, at times of weak occupational demand, the perspective tenants' view will hold greater sway than when demand is high. Further the influence of banks and institutions that control the flow of funding will be critical: if they require, as a matter of routine, sustainability appraisals for the buildings on which they propose to secure loans, it will shift behaviours. If they do not, opportunities to drive towards sustainable development will be lost. It is therefore vital that stakeholder positions are understood and that they are provided with the knowledge, motivation and influence to support ambitions they may hold towards their own sustainability objectives.

2.1 Stakeholders

With each stage of the development process there are numerous significant stakeholders. Though each stakeholder adds to the outcome of the process, they may have very different viewpoints and expectations; the developer is required to manage the miscellaneous and possibly contradictory objectives of all stakeholders. The significance of the stakeholders fluctuates from project to project and not all feature in every project. Further some stakeholders are transient, for example most consultants and indeed many developers; others have an ongoing interest. Further, although many stakeholders will have a financial interest (we call these internal stakeholders), many do not. External stakeholders, such as visitors to a shopping centre can also exert significant influence, notably on redevelopment decisions (Walker *et al.* 2004).

2.1.1 Public sector and government agencies

In many countries, the public sector and government agencies are the most important developers and, in the wake of the global downturn earlier this century, public sector led construction activity is proving crucial in stimulating economics. However much depends on the political persuasion of the government. Currently, the US public sector is undertaking little direct development currently as a result of their neo-liberal perspective; however the UK, whilst it has shifted away from a direct development role in recent years, preferring to enter into public/private partnering arrangements (Dubben and Williams, 2009) is nonetheless not only a powerful stakeholder but, in their role as occupier and funder of private initiatives, an important influencer of markets. Within the UK, there is now a major commitment to public infrastructure development in the form of rail, air and flood management. In other countries, responses differ. For example, in Australia a National Stimulus Plan in the education sector, refurbishing and building schools was instigated by the Labour government, aimed to keep some momentum going in the economy as the global financial crisis took hold.

At the sub-national level, local authorities typically develop for their own occupation or community (such as housing) use and, to provide local infrastructure schemes but globally they are often limited by financial resources and their legal powers and requirements to be accountable to their communities. Involvement in development is contingent on whether they want to support or restrict development. Some authorities carry out economic

development to promote investment in their area; with more proactive authorities stimulating the process by sometimes supplying land and buildings. Authorities are often owners; maintaining a long-term interest, holding the freehold of developments and signing over long leasehold interests to developers, sharing in rental growth through the ground rent. This has been a prevalent feature of many town centre schemes, in which public ownership provides an assurance of civic society protection. Whatever the level of activity, the public sector undertakes as direct developer, the key aim of their policies and strategies will almost always be consistent with the ambition of long-term sustainability. In making their decisions, the tools used, which include for example Cost Benefit Analyses, are more to take account of *all* stakeholders, internal and external, than private sector developers. This last statement however does not necessarily apply to sovereign wealth funds set up by wealthy nations for the purpose of economic gain and long-term financial stability. The majority of these funds have been formed within the last 15 years (Lipsky 2008) and are estimated currently to control some \$6.3 trillion worth of assets (<http://www.swfinstitute.org/fund-rankings>), 14 per cent of which is estimated by McKinsey to be invested in real estate, excluding infrastructure (<http://voices.mckinseysociety.com/sovereign-wealth-funds>). They tend to act in line with private sector developers and institutions.

For governments, public sector and policy agencies require both good advice and deep internal knowledge to act as effective drivers of sustainable development. In many authorities, this may exist and certainly many governments worldwide are investing heavily in capacity building and knowledge creation. However for this to be *effective* they also require knowledge of the development industry, something that Adams *et al.* (2012) from an empirical longitudinal study in Scotland saw to be lacking. In their research, they found only limited understanding of what drives the development process or motivates individual developers; yet this, they considered to be a prerequisite to effective urban policy-making.

2.1.2 Planners

Planning systems were largely established in developed countries during the mid-twentieth century. The UK planning system has existed in comprehensive form since 1947 and is the major regulator of property development (see Chapter 6). Depending on the jurisdiction it can be nationally or locally led; often it is a combination of two or more tiers of administrative control in both policy-making and practice implementation. Planners can be divided into public sector policy makers/development managers and external private sector consultants (see section 2.1.6b). The development managers who are regulators, are liable to approve plans brought forward in compliance with government approved local plans; the role of planners is in reality ambiguous as, in many cases, decisions are not undertaken by the professionals but by elected local authority politicians, acting in the light of advice provided by their planners. Recent research within the UK (Green Construction Board, 2015), points to the role of planning as a 'negotiated hurdle' in which a process of consultation, often including community groups as well as reports from a wide variety of experts, feeds into the ultimate decision.

Ultimately, most planning systems aim to encourage desirable development with the guidance for determining applications set out in statute and policy guidance notes. Again to quote the UK, the National Planning Policy Framework (DCLG, 2012) states that 'the purpose of the planning system is to contribute to the achievement of sustainable development' taking five guiding principles:

- living within the planet's environmental limits;
- ensuring a strong, healthy and just society;
- achieving a sustainable economy;
- promoting good governance; and
- using sound science responsibly.

(DCLG, 2012: 2)

Whilst other countries have differing systems, in most developed nations, the aim of planning is to balance the desires of individuals with the deemed best interests of society – both for the present and into the future. Decisions, in theory, in relation to any individual application are made in the context of development plans, written government policy and advice, previous decisions and the application itself. However, such matters are frequently not straightforward and developers often engage planning consultants to advise them in negotiations prior to the application being made; hence the view that planning is a negotiated process – not an absolute one.

A modern feature of the UK planning system is the use of planning agreements and local taxation measures (Community Infrastructure Levy) to offset perceived externalities of the development or support provision of community facilities off site. Where tight public spending controls exist, the use of such devices is a way to ensure that the external costs of the development begin to be borne by those who stand to gain financially from the scheme. In this way, there begins to be a balance towards social goal achievement against economic gain and environment costs.

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2.1.3 *Owners*

As Adams and Tiesdell (2012) argue, landowners may play an active or passive role within the decision to develop and indeed the development process. Owners may actively initiate sustainable property development when they wish to sell and/or improve their land; conversely if they do not initiate the process, they become a barrier to development. Without a willingness to sell their interest or partake in the project (unless compulsory purchase powers are used), no development can take place. Also the owner's motivation may affect their decision to release land for development, and this follows whether they are individuals, corporations, public bodies or charities, a point made strongly by Goodchild and Munton (1985). Further owners may take on the role of the developer, in total or in part. A classification of owners into traditional, industrial or financial produced in 1979 (Massey and Catalano, 1978) remains valid today, although the balance of assets has changed, with the role of the financial institutions and other investors playing a critical role. Notwithstanding this, owner-occupiers still account for some over 50 per cent of commercial property and significantly more in the residential sector.

In the UK the church, landed aristocracy and gentry, and the Crown Estate are regarded as 'traditional' owners and have significant amounts of land area and capital value. Similar institutions exist in other countries. A distinguishing attribute is that they are not being entirely motivated by the economic imperative; which is potentially beneficial in sustainability terms. Overall their purposes for ownership are broader than return on capital and involve environmental, social, political and ideological issues.

Conventionally financial owners see their proprietorship as an investment and participate if the return on their land is economically optimal. These owners have economic drivers and are often knowledgeable about land values and development or employ consultants with

real estate skills. The main group are financial institutions such as insurance companies and pension funds, which hold substantial amounts of land by capital value and invest heavily in property investment. Financial institutions develop directly or with property developers. Furthermore, major property companies own substantial portfolios of properties and carry out development. To these more recently can be added a growing number of high net worth individuals (HNWIs) who share the characteristics of requiring financial gain at acceptable risk but who act in ways that could be regarded as maverick as they do not tend to follow the established investment theory driven norms of the institutions. It is this collective group (the financial investors) to whom the notion of sustainable development has been seen as problematic. Driven by the requirement to produce optimal financial gains, they need to see a business case in order to incorporate 'beyond compliance' sustainability features. However, as explored in later chapters, such evidence is increasingly forthcoming (World Green Building Council, 2013)

Finally, industrial owners (perhaps now rather a misleading name) hold land for reasons related to their main purpose, some manner of service provision or production. This group includes retailers, manufacturers, industrialists, farmers, extractive industries and service industries. Public authorities that own land might be included in this group. This group is restricted and affected in their mind-set to land by their primary cause of their being, their product. Other constraints may be their legal status that may mean they will not always wish to maximise economic returns on land or property as that may be subservient to their key aim. As a developer group, their incentive will be driven primarily by function and form but increasingly, the requirement to produce a financial advantage over renting space may be a key consideration. Therefore, as a development stakeholder, they tend to operate only where the building they require is unobtainable to purchase as existing stock (for example a specialist production function) or where there are reasons of prestige that encourage them to develop for their own occupation. Where this is the case, there is even the possibility, with the embedding of social responsibility policies into corporate missions that sustainability will be a key requirement of the specification.

Owners impact considerably on the spatial layout and the type of development constructed, especially in respect of sustainability. Planning regulations may reduce the impact they are able to have on the type of development, but as this is a negotiated process, they have influence over the design as well as location and specification of the development.

2.1.4 Developers

In the private sector, development companies can range from transnational companies employing thousands of people to single person operations. They may operate primarily either as traders or investor-developers. For the majority, their purpose is to make a direct economic profit from the development, although the large organisations will tend to have well developed CSR policies. For example, Land Securities in their commercial 1 million square foot development at Victoria London, are working closely with Westminster City Council to find ways in which the development can assist with solutions to some of the area's most pressing social issues: homelessness, unemployment and opportunities for young people as a result of which they have set up long-term partnerships with homelessness charities and local schools which will include volunteering, job shadowing and contributions to affordable housing schemes; they have also set up an endowment model to award grants to a number of local charities and projects (<http://www.landsecurities.com/responsibility/news-case-studies/case-studies?id=53>).

Although it is fairly self-evident that the big investor-developers have a strong business case to engage with their local communities to underscore underlying confidence and values within areas, there is some evidence that developers, even where they may be developing for trading are changing in their approach away from a totally single bottom line profit approach. Partly this will be in response to stronger planning and building codes; partly it is a shift in approach. For example, in a survey of Australian developers, Taylor *et al.* (2012) found that, in relation to climate change issues, developers and their interest groups are seeking greater levels of participation and joint decision-making in public-adaptation policy and its implementation.

Most small developers have to sell the properties they develop because they do not have the capital to retain completed schemes; that is their business model and in most countries it is taxed as such. Some larger publicly listed developers trade some of their developments to capitalise on rising rents and values whilst retaining others within an investment portfolio. Trader-developers tend to use debt finance obtained from the banking sector to be repaid when they dispose of completed assets. Whilst such a position can be advantageous during periods of growth, it can lead to excessive borrowing and vulnerability when economic downturns occur because limited assets are inadequate to continue trading.

Developers will turn to bank finance where institutional funding (see below) is not available either due to the type of development or if the developer is either not prepared or unable to provide the required guarantees. Another option is to use debt finance in a period of rising rents and values to maximise the potential profit on completion. There are many means of obtaining finance from the banks for short- and medium-term finance, although this has been restricted following the global financial crisis of the late 2000s. The banks make a financial profit from lending money. Banks lend against a particular development or lend to the development company; using the property assets of the company or the property as security for the loan. Property is attractive as security as it is a large tangible asset with resale value. Banks wish to ensure that the proposed development is well located, the developer is able to deliver the project and the scheme is feasible. Where corporate lending is concerned, the bank reviews the strength of the company, in particular assets, profits and cash-flow. Where a bank is exposed to above normal risk, they may secure an equity stake in the scheme.

The alternative to debt funding from banks is to work with those who will become the long-term investor, through arrangement of pre-sale deals. This reduces their risk and may encourage designs which are better 'future-proofed' in sustainability terms. However such funders have very specific requirements in terms of what is 'institutionally acceptable'.

Many trader-developers aspire to become investor-developers, where profits are used for investment. Some large companies undertake little new development, managing their portfolio with increasing emphasis on retrofitting and redevelopments. In the residential sector, developers operate mostly as traders as the market is dominated by owner-occupation, however during the development process many are owners of large tracks of land. Further, when economic gains through the land conversion process are compromised due to uncertain demand for the finished product, developers can deliberately 'land bank' holding back land for development until such time as a developed land supply shortage starts to create 'value push'. Although this is sometimes viewed by governments as an unacceptable tactical position, the reality, as discussed later in the book, is that the value of land is a product of the value of the completed development – not the other way round.

It also follows that the kind of development undertaken varies considerably. For example some companies will specialise in a particular type of development, such as offices or retail,

and also in particular geographical locations; whilst others prefer to spread their risk across types and locations and countries. Some remain in a specialist type of development but cover a wide geographical, even international area. Property companies formulate their policy according to the interest and expertise of their directors and their perception of the prevailing market conditions. Unless they are investor-developers, they may have little fundamental incentive to prioritise sustainability unless there is a proven financial case so to do. In the past this did not exist; now in some sub-markets it may. In terms of the knowledge base, in a study of Malaysian property developers, Zainul Abidin (2010) found that, whilst some did have a good level of knowledge of sustainable construction, many did not, particularly those within small- and medium-sized companies. Further, their knowledge was limited to environmental issues, with little cognisance of social matters such as health and wellbeing concerns. Whilst Malaysia is still often regarded as a developing country and doubtless the situation has moved on slightly since this work was undertaken, the level of interest in sustainable development is high and the situation is believed to be similar in many other countries.

2.1.5 Financial institutions

Financial institutions, as sources of finance, have a vital role in the process unless a development is being financed wholly with the developer's own capital or that of a partner. The term usually describes superannuation or pension funds and insurance companies but also includes specialist property investors such as REITS (Real Estate Investment Trusts) and other financial vehicles. Nevertheless, there are many other financial institutions for example clearing and merchant banks (both UK and international), and building societies that finance development, as detailed above.

Financial institutions (pension funds and insurance companies) are motivated by their requirement to meet their fiduciary responsibilities to their stakeholders. Normally this means the pursuit of financial gain at levels of risk that are acceptable given their status. Property is but one of a range of investments and may represent only 5–10 per cent of their full investment portfolio, if that. Unlike most developers, they take a long-term view advised by actuarial calculations in order that their assets and liabilities match. Whilst at times this favours real estate development, more stringent liability modelling and a move from a requirement to invest in growth products for future pensioners, have seen moves towards income performance. Although superannuation, pension, life and investment funds are in theory long-term holders, their managers are assessed on their short-term performance with respect to other forms of investment and to the returns they realise against rival funds, which promotes a short-term approach which may not favour sustainability, but others do recognise its significance (Newell, 2008).

Institutions can offer short- and long-term finance to developers through forward-funding where they agree to purchase the development on completion whilst providing finance. Typically, almost all risk is transferred to the developer who usually provides a financial guarantee. Otherwise, institutions may act as developers to create an investment: they bear all the risk but do not have to share any profit. Some purchase completed and let developments only as they see development as too risky.

Whether acting as developer, financier or investor, institutions adopt conservative and largely homogenous policies which typically seek a balanced portfolio of property types, although some investment houses have specialist funds geared towards particular types of opportunities. For example, Igloo, part of the Aviva group, was an early specialist fund

seeking regeneration and sustainability opportunities. Furthermore most try for a good geographical spread of investments. They look for properties or developments that fit their specific criteria in terms of location, quality of building and tenant covenant (financial strength). As developers often rely on borrowed funds and have a requirement to be able to sell the eventual scheme, they will need to take account of the requirements of financial institutions in preference to those of users, where the two are in conflict. However, as the drivers for the financial institutions if they wish to buy property with the broadest tenant appeal in uncertain markets, there should be convergence between requirements, especially in markets where short leases prevail. However, some marketing advisors may take a cautious view and propose very high specification in the belief that it will lead to great lettable. Unfortunately sometimes, this can lead to over-specified, and ergo less sustainable, buildings (Cook and English 1997; van de Wetering and Wyatt 2011). Where they do consider the longer term, they can be very sensitive to demand led factors; further, most of the large institutional investors and investment management houses now have highly developed responsible investment policies. Over the last ten years since the publication of a seminal paper by Pivo and McNamara (2005), they have begun to link this agenda with their property stance.

In the residential sector, developers build housing for owner-occupation, normally utilising short-term bank finance, with their capacity to secure finance based on track record and the value of the development.

In the public sector, the sources for residential development are comparable though more challenging to obtain especially after the financial crisis, with very tight central government controls on public sector borrowing operating in most developed economies. Some authorities may obtain funding through grants for urban regeneration projects in specific geographic areas, from central government sources. In the European Union, so-called European Structural Funds have provided funding previously. However, access to funding is often competitive and sometimes targeted at schemes where partnerships between the community and the private sector exist. Developers may acquire economic support from government agencies in the shape of grants, rental guarantees and equity participation through the provision of land, though they have to prove that the project would not proceed without such assistance and that jobs will be created in the local community. For these reasons, at least in the UK, public sector engagement in the residential sector has almost ceased, with a shift towards third sector providers, many of whom are now entering into partnerships with private sector developers, either by choice or through planning requirements to integrate 'affordable' or 'social' housing within schemes. At best, such arrangements enable a deepening dialogue between different types of organisations which can lead to more inclusive sustainable design; at worst it is a recipe for an uncomfortable alignment of two-tier stock.

2.1.6 Producers

2.1.6.1 Construction firms

The conventional model is for the developer to contract with a construction firm and possibly, through them, a range of sub-contractors, to build the development. This model leads to the potential for disputes as each party pursues their own financial objectives, and any over-arching ambition towards sustainability can be jeopardised as a result. Larger firms with the relevant expertise can act as a management contractor and oversee all the sub-

contracts for the developer for a fee to minimise risk to the client. Although some firms are now developing an ethic for sustainability and expertise in sustainable construction methods where the supply chain is fragmented, such an ethic may become diluted or lost. Nonetheless, the impact of disputes is a major issue within the construction industry leading to time and financial loss (E.C. Harris 2013).

However, this is not the only model and many contractual systems for procuring property exist (see Chapter 8). In some cases, developers employ their own contractors whilst larger residential developers or house-builders lean towards in-house expertise. Other, normally commercial, organisations have a contracting division as an independent profit-making centre. Another widely-used model is design and build, under which combined control over design and construction aims to reduce the inter-organisational arguments and miscommunications which can increase cost and time and impact negatively on quality (Ng and Price 2010). Whatever model is adopted, a major determinant will be the type of development and the attitude towards risk, notably the liability for any cost increases. Construction firms, such as house-builders, which act as developers, assume the added risks related to development. When a builder is engaged as a contractor alone, the economic profit is related to building cost and the length of contract but where the construction firm is the developer, a larger profit is needed because of the risk.

Construction firms perform a specialist activity within the process, starting when there is maximum developer commitment and risk. A wise developer will vet thoroughly the ability of the construction firms to deliver the development, looking for the optimum balance between time, cost and quality. It is in neither the developer's nor the construction firm's interest to create circumstances where the construction firm is unable to obtain a reasonable profit. It is not in the developer's interest for the construction firm to compromise on quality or to go into liquidation; too frequently this happens.

Public Private Partnerships (PPPs) cover a wide range of different types of contractual and collaborative partnerships, such as the Private Finance Initiative (PFI), the introduction of private sector ownership into state-owned businesses, the sale of government services into wider markets and the generation of commercial activities from public sector assets through, for example, the Wider Markets Initiative. Over two decades, they have become a vital part of many governments' strategies, including the UK, to deliver public infrastructure or buildings such as hospitals and schools. Generally all PPPs have three objectives:

- to deliver significantly improved public services, by contributing to increases in the quality and quantity of investment;
- to release the full potential of public sector assets to provide value for the taxpayer and wider benefits for the economy; and
- to allow stakeholders such as taxpayers and employees to receive an equitable share of the benefits of the PPP.

Thus PPPs bring together a public body and a private company in a long term (normally 30 + years) joint venture for the delivery of high-quality public services for mutual benefit after which the facility reverts to the public sector. In theory therefore both parties are in the arrangement for the long term which should promote the inclusion of sustainability characteristics in the specification.

The original thinking behind PPP was that the public sector cannot always deliver major investment projects and the private sector could bring perceived benefits such as increased efficiency and innovation, a motivation to invest in high-quality assets to

optimise maintenance and running costs, and finally; improved management of the risks in delivering complex investment projects within time cost and quality constraints. PPPs provide additional resources for investment in public sectors and the efficient management of the investment although the benefits have been widely questioned on both cost and quality grounds (see for example, Akintola *et al.* 2003; Bennett and Ioassa 2006). Further, Hamilton and Holcomb (2013) argue that, despite many undoubted successes of PPPs in promoting sustainable development, many international operators are not motivated to make investments in developing regions where the need for social services is greatest.

Thus development is complex and most developers have neither the skills nor the expertise to undertake a major development without interfacing with other expertise. Consequently, developers employ different professionals to advise them at different stages of the process depending on their needs. In this way, other stakeholders can also influence the degree and extent of sustainability included or omitted from projects. These interactions can result in obscurity as to who in the final analysis makes the decision about the final specification of a building, including the approach to sustainability (Green Construction Board, 2015).

2.1.6.2 *Planning consultants*

Planning consultants, acting on behalf of developers or landowners, negotiate with local authorities to obtain the most valuable permission for a development. Where an application is rejected they can act as expert witness to make the case for the developer. In addition planning consultants advise owners to safeguard that their sites are allocated within the development plan to their most valuable or appropriate use. They may negotiate with the local planning authority at plan preparation stage or make representations at an enquiry into the development plan. In this role they can be significant initiators of the process. They can have an impact on urban sustainability in terms of issues such as transport and proximity of residential developments to services such as retail, health, educational, commercial and employment. Whilst they have a contractual obligation to work for their clients, they also have an ethical duty to act in the public interest which now might include an obligation to advise clients as to the implications for sustainability of their proposals. In preparing planning applications, consultants frequently have to employ specialists, such as ecological or sustainability experts to carry out biodiversity or other impact assessments, which can have a negative impact on costs and time.

2.1.6.3 *Architects*

Developers employ architects to design the form and construction of new buildings or the adaptation of existing buildings; as such they can have a substantial effect on the design and operational sustainability of the development. Architects sometimes administer building contracts on behalf of the developer and certify completion of the works. In the case of adaptation, building surveyors are employed to survey the existing property, advise on alterations and provide contract administration services. Where a planning consultant is not used, architects will obtain planning permission for new builds, whereas with an adaptation the building surveyor will perform this task. They are paid on a fee basis, typically a percentage of the total building contract sum.

The architect is appointed usually at the beginning of a project to ensure all design work is completed when construction begins. Developers look for appropriate experience,

reputation, resources and track record as well as the right balance of skills to generate fine architecture that is cost-effective and attractive to users. As this balance is hard to deliver, it is vital for developers to provide a clear brief as issues arise when there is a lack of communication between developer and architect.

Some architects offer project management, engineering and interior design services; however, though this may be effectual on some projects, most developers prefer to compile their own professional team. Finally some developers employ architects and design professionals directly. Architects often are highly skilled in relation to some aspects of sustainability but may take a techno-centric approach to the design at the expense of wider considerations. One such debate is whether sustainable development is better served by the construction of massive structures with high embodied energy but with the ability to retain heating /cooling over lengthy periods and designed for long life, or lightweight flexible structures which have lower embodied energy but may need efficient cooling and heating systems.

2.1.6.4 Valuation surveyors

Valuation surveyors or property economic consultants produce a detailed analysis of the market in terms of supply and demand at the evaluation stage. This information allows the developer to determine the profitability and risks associated with the proposed project. Many financiers, especially the institutions, insist on market analysis when evaluating funding proposals and within the UK, some lenders now require specific mention of sustainability within the valuation report. A major recent review of the business case for going green (World Green Building Council, 2013) has shown increasing evidence that within commercial property developments in large city centre locations, sustainability certified buildings may command value differentials over those designed to less sustainable standards. Valuers have been criticised for a lack of awareness and knowledge of sustainability matters (Warren-Myers 2011). This is beginning to change, and a requirement to consider the implications of sustainability within valuations is now explicit within the RICS's global standards to which all their registered valuers must adhere (RICS 2014: VPS 4: 60).

2.1.6.5 Construction economists or quantity surveyors

Construction economists or quantity surveyors (Qs) advise the developer on the probable costs of the total building contract and related costs. Their responsibilities can include costing the architect's designs, tendering the building contract, advising on the form of building contract (procurement), monitoring construction and approving stage payments to the contractor. Qs frequently manage the administration of design and build contracts, where their fee is based on a percentage of the final contract sum. As with the architect, the selection of the QS should be centred on experience and reputation. Furthermore the developer should appoint Qs who work well with architects and other professional team members to deliver cost-effective designs. The QS should be able to offer cost-effective alternatives to those proposed by the architect. With issues around perceptions (if not a reality) of increased costs of developing property sustainably, the QS has a key role in suggesting and facilitating cost effective sustainability solutions for developers, for example using a Life-Cycle Approach (LCA) to evaluate different options in the design and specification. It is therefore important that they develop skills in terms of methods of evaluating sustainability such as LCA.

32 Sara J. Wilkinson and Sarah L. Sayce

2.1.6.6 Engineers

Structural engineers advise on the design of structural components to ensure the stability of the building and they may contribute to supervision of the structural construction; their knowledge of materials' strength, longevity and environmental impacts can influence the final sustainability rating of a building. Civil engineers are engaged where major infrastructure works and/or groundwork is part of the project. On larger or more complicated projects, mechanical and electrical engineers design the building services and can have a significant impact on the sustainability of the design and operational phase of the development but in designing buildings it is critical that they do have a clear understanding of how a building will be occupied or their systems designed to minimise energy use, may simply not work. There is an increasing recognition that sustainability knowledge is a necessary component of the future engineering skill base. Engineers are usually paid a percentage fee based on the value of their element of the building contract.

2.1.6.7 Project managers

Project Managers (PMs) manage the professional team and the contract for the developer; and are particularly engaged for complex or large-scale projects. Typically they have been educated and trained as architects, engineers or surveyors prior to becoming projects managers; this initial training and education often influences their style of project management. Developers can act as a PM or they can appoint another member of the professional team to fulfil this role. PMs should be appointed before any of the professional team or the contractor so that they can counsel the developer on the best team for the scheme; as such they are in a position to influence the scope and extent of sustainability. Although their fees are often a percentage of the building contract sum, they can be incentive based for delivering the project on cost and on time. Developers can fulfil the PM role for building users who wish to engage a developer in constructing their own premises.

2.1.6.8 Solicitors

The services of solicitors are required at several points in the process, from the purchase of the site to the preparation of leases and contracts of sale. Furthermore they negotiate legal agreements covering funding arrangements entered into by the developer. When a developer appeals a planning application, solicitors and barristers may represent the developer. Where collateral warranties are demanded by purchasers, solicitors prepare the documentation. Collateral warranties are agreements under which parties with contractual obligations, in connection with the construction or operation of a project, accept liability to the lenders for their performance. With the growth of interest in so-called 'green leases' and the recognition that the owner/occupier interface is critical in promoting sustainability, Brooks (2008) argues that 'lawyers are on the front lines of lease negotiation, and can lead change'. However, to date there is little evidence that, with some notable exception, their knowledge base has so widened with the exception of some vanguard experts (Sayce *et al.* 2009).

2.1.6.9 Accountants and financial advisors

On occasion, specialist accountants advise on the complexity of tax and, in the UK, VAT regulations that can have a major cost impact on a project. They may advise on the structure

of partnership or financing arrangements. Accountants are not likely to have much impact on the sustainability of the development directly, unless tax advantages exist which benefit developers through the implementation of various sustainability measures. Regrettably, even where tax breaks do exist which can support sustainability objectives, these are not necessarily promoted by financial advisors.

The description of the professionals and specialists above does not completely cover the full range of professional expertise that is engaged in property development or indeed their roles in respect of sustainability within the process. There are many other specialists who may be needed depending on the project and its complexity. Other appropriate professionals may comprise of land surveyors, soil specialists, archaeologists, public relations consultants, highway engineers, landscape architects, and marketing consultants.

2.1.7 Marketeers – agents

Real estate agents often exert influence right at the start of the development process by bringing together stakeholders; their skills lie in understanding rental and capital markets and interpreting them. They tend to operate through strong networks of personal contacts among stakeholder groups and are therefore well placed to connect the developer and the end user, unless the developer employs in-house staff to perform this role.

Agents obtain direct financial profit from their fees charged to their client (developer or user). They may play a key role in initiating the development by sourcing a site or advising a landowner to sell a site on account of its development potential. In this way they indirectly influence sustainability. Unless they are retained to find sites for a particular use, agents identify sites for developers. The agent negotiates for the developer and advises on matters relating to feasibility. Agents may receive a fee for finding the site that is often a percentage of the purchase price. Furthermore if the purchase proceeds, they may be appointed to let the development or secure funding for the scheme. When an agent acts for an owner, they may provide professional advice on estimated land value and the likely market for the site; however whether they can provide value advice will depend on the jurisdiction in which they operate. They therefore have a critical role in understanding how sustainability characteristics are impacting on the demand side, which in turn can feed back into development decisions.

Frequently agents are not brought in at the concept stage and are only engaged as letting or selling agents. In this case, they may be too late to really influence the depth and breadth of sustainability incorporated in the design; it is therefore preferable that they be appointed from the early stages; it is also important that they develop a real understanding of the complexities surrounding sustainability rather than a superficial knowledge of accreditation and rating schemes. We return to this later in the book.

2.1.8 Consultees

Within most developed countries' planning systems, consultation with external stakeholders is a critical part of the pre-construction process. Such consultees may be statutory (i.e. prescribed in law) or they can be members of organisations or indeed individuals who wish to express views. Within the UK, there are five principal statutory consultees for major schemes. They are English Heritage, the Environment Agency, the Health and Safety Executive, the Highways Agency and Natural England, all of whom have informed voices in terms of sustainability, either social or environmental.

Whereas many consultees will be supportive and offer constructive and useful suggestions, others may object, leading to possible delay and in some cases abandonment of proposed developments. They might comprise self-interested neighbours and as such are often labelled 'NIMBYS' ('not in my back yard'). As such, they can have the potential for negative or positive impacts with regards to sustainability; but where there is a drive for development at almost any cost they can provide an essential counter-balance.

Objectors include some well-organised professional, permanent bodies at local and national level. At local level, they include amenity societies who consider every proposal affecting local environment and heritage, for example, the Victorian and Georgian Societies, the Society for the Protection of Ancient Buildings (SPAB) and the National Trust. They have influence on local planning authorities and are referred to on major applications; they also express views at the policy level.

Of most significance to sustainability are the environmental activists who emerged in the 1990s, usually focused on substantial projects. A good example of environmental protest is the Chinese Three Gorges Project. Protest can be direct such as occupation or passive, for example letter writing or petitioning to administrators. It is anticipated that environmental protests are likely to increase in scale over time as the evidence of environmental degradation increases and the impact of manmade climate change becomes more evident. However it is not just at the development phase that objectors make a difference to the type of buildings that get commissioned. As they gain power and influence over matters as diverse as energy policy and corporate responsibility, so they begin to impact on the actions and policies of those who will become the ultimate building occupiers and owners, and on the government level policy makers.

Developers, therefore, should be cognisant of potential objector/supporter groups and be ready to accommodate or contest their views. If these discussions can be carried out before the planning application is submitted long delays may be avoided. By embracing those with strong causes and significant research behind them, the scheme may prove more successful in the longer term. Over recent years, this message has increasingly found its voice (see for example BPF/LGA 2014a, b).

2.1.9 Building users

Actual or perceived user demand for accommodation is the basic trigger for the development process; it influences land prices and rents, to which developers respond; such is established though sometimes challenged, Ricardian theory (Ricardo 1817). If the user of a building is the developer or is known prior to design completion, they become a key stakeholder within the process and this is a desirable position as it improves the chances of the building operating successfully over a long period of time. However, it is often not the case. In many residential schemes, and some (though currently less commonly) commercial schemes, developers produce buildings geared primarily to the financiers' short or long-term requirements whilst failing to fully appreciate who might subsequently occupy the building and therefore failing to adequately plan for user needs. It is recognised now that developers should investigate and understand users' requirements and likely future requirements; so doing will assist in ensuring that the building meets with higher levels of sustainability. It is also likely that the building will be designed with flexibility either within use, or possibly across use, in mind. Building flexibility is regarded as a key criterion of sustainability (Ellison and Sayce 2007) as is discussed later.

When the user is known early, they are the most significant stakeholder, but an uninformed client may be strongly influenced in decision-making by their advisory team. In principle, the property will be designed and built to their needs, which can be specialised, especially for industrial or non-commercial, non-domestic users (e.g. education or health facilities). Where the known future occupier is a lessee and they seek to impose any features which the developer deems may negatively impact of future user demand, the developer will seek to negotiate a compromise to provide a more standard and flexible type of building, so that the investment market for the building is wider in the event of disposal and the value is protected as security for loan purposes. It could be argued that such an approach could better future-proof the building and hence enhance whole life sustainability. The counter argument is that if a building is designed to meet its users' needs, there is less likelihood of it failing functionally or being vacated prematurely.

Non-domestic occupiers mostly perceive the buildings they use as a resource and a necessary overhead cost of fulfilling their activities as services or product providers; they have little sense of their space as an investment asset. Many major occupiers employ in-house property or /and facilities management teams; however, despite strenuous moves to contain costs, many users still do not plan their property requirements pro-actively and expertly resulting in calls for changed behaviours (see for example Haynes 2012; Taylor 2013); they simply react to changes as they happen and this approach can and does affect the whole lifecycle sustainability of a development. Inevitably the property requirements of building users are influenced by both the short-term business cycle and long-term structural changes underlying the general economy. The design of property and its rate of development including its inherent sustainability are inevitably affected by this. As such, these attributes influence users at a specific level or across the business sector in which they operate. Their accommodation requirements are affected further by advances in technology impacting physical property needs; and, the move to more sustainable workplace practices.

Building users have been criticised for not knowing what they want, though many companies are gaining more understanding of the role of sustainable property within their businesses and their requirements in terms of specification (see for example, Harrison *et al.* 2004). This is partly demonstrated by the expansion of Facility Management (FM) as a role as well as sustainability rating tools for design and operational phases in the lifecycle. As users have divergent needs and concerns, it renders it hard for developers to produce sustainable buildings that meet the needs of as many users as possible. Financial institutions respond by looking for the best quality specification with space plans to suit the widest possible range of users. The result is users may have to lease space that compromises their requirements in terms of location or specification that leads to users stripping out buildings and retrofitting or fitting them out to their requirements. Frequent fit out is inherently unsustainable and there is evidence in some markets that short lease terms lead to fit out of waste of services, materials, fixtures and fittings (Forsythe and Wilkinson, 2015). In response, there is now a widespread movement to understand more fully how buildings can be designed to facilitate sustainable retrofits and refurbishments.

Lease terms highlight another area of divergence between financial institutions and users. Users require flexible lease terms to respond in the short-term to changes in their property requirements. In markets such as the UK, institutional investors conventionally prefer longer lease terms with upward-only rent reviews and repair clauses placing liability on the tenant. However when there is excess supply and a downturn in the market as with the global financial crisis, many will accept shorter lease terms with break clause options if the market is demanding such agreements and the tenant's covenant is strong, albeit that

value adjustment may result. In the US and Australian markets is it usual to have shorter lease terms and within the UK, this too has been a structural trend with commercial new lease lengths now being typically between five and 15 years. This could have an impact on the whole lifecycle sustainability of property as users typically fit out their space when taking new leases – if tenants relocated every five to seven years or so, the rate of fit out will be high with its attendant high embodied energy, higher rates of waste and landfill and so on (Forsythe and Wilkinson 2015). However, a new lease does not necessarily mean a new tenant, though there is little hard evidence as to the average occupation (as opposed to lease) length.

Another sustainability issue concerns the tendency to over-specify, notably in office developments. Although developers and the financial institutions arguably do consider user needs, in an effort to future-proof their developments against assumed ever greater reliance on technology, many office buildings developed over the last decade have been over-specified with over-use of non-renewable imported materials and are over-reliant on complex air-conditioning with a consequent increase in embodied carbon and also in-use greenhouse gas emissions (van de Wetering and Wyatt 2011). More recently, the trend is moving towards energy efficient buildings which maximise their use of natural ventilation, minimise imported materials and use air-conditioning only where absolutely essential. However in the interests of true triple bottom line sustainability, such specification changes should not be seen as a trigger to accelerate the pace of building replacement: that in itself becomes an unsustainable approach. In the interests of sustainability, it should be accepted that it takes many years to replace existing stock with new build and that process itself has high social and environmental impacts; therefore it is imperative to improve the existing stock.

In summary, decision-making in property development is complex, more so when the desire or requirement to embed sustainability in all its guises is embedded in the process. Much of this complexity arises from the lack of deep understanding of the issues; but some is the result of the interactions between the many stakeholders all of whom have legitimacy in influencing decisions to varying degrees and at different points in the process (Kincaid 2002). Each stakeholder represents a different interest and has different educational and professional backgrounds that further influence their decisions. Furthermore some stakeholders fulfil more than one role in the process. Table 2.1 provides a summary explanation of some of the relationships detailed above between the stakeholders and their respective roles and responsibilities as well as their influences or impact on sustainability in projects.

2.2 Conclusion

This chapter has described the role of each of the major stakeholder groups that engage with property development and it established that their actions can impact on the eventual level of sustainability achieved within the development. Whilst some groups, such as investors, constructors and developers, have an easily recognised role, it would be too simplistic to ascribe the sustainability or otherwise of a building solely to their actions. Table 2.1 indicates that they do indeed exert differing levels of influence dependent on the type of development.

In 2000, concern in the UK had become so intense that, despite strong encouragement from the government to stimulate ‘sustainable buildings’, developers were not seeking to go ‘beyond compliance’ within their schemes. And so was developed the notion of a circle of

Table 2.1 Stakeholders and their influence on decision-making and sustainability in projects

Stakeholders	Description and professional affiliations	Stage in development process where decisions are made	Degree of influence on sustainability/ impact on sustainability
<i>Policy makers</i>	Federal, state and local government departments	Direct influence on potential site supply and use. Indirect effect on decision-making in adaptation at all stages	High to low
<i>Regulators</i>	Local authorities, planners, heritage, building surveyors, fire engineers (Planning Institute of Australia, Institute of Fire Engineers)	During design concept and development stage (and possibly during construction if amendments are made)	High
<i>Owners</i>	Landowners, public and private institutions, individuals	Beginning and throughout if likely to be end user	High to low
<i>Developers</i>	Organisations that combine investment, production and marketing in whole or in part. Professionals from bodies listed in producers above and others	Throughout	High to low
<i>Investors</i>	Pension/superannuation funds, insurance companies, banks, independent investors, professionals who find capital to invest	Beginning/early	Low?
<i>Producers</i>	Professional team – facilities manager, quantity surveyor, architects, engineers, contractors, surveyors, suppliers (Royal Institution of Chartered Surveyors, Australian Institute of Architects, Australian Institute of Quantity Surveyors, Australian Institute of Building Surveyors, Australian Institute of Refrigeration, Air Cooling and Heating)	Varies depending on specialism (see above)	High to low
<i>Marketeers</i>	Surveyors, stakeholders, agents, professionals who find users for buildings (Australian Property Institute, Royal Institution of Chartered Surveyors)	During design (if selling off plan) and /or construction stage	High to medium
<i>Objectors</i>	Large institutional owners, individuals, business organisations, local community groups, pressure groups	Beginning/early stand eventual take out	Medium to low
<i>Users – corporate residential</i>	Large institutional owners and users Individuals Business organisations Users	Beginning to late	High to low

Source: Wilkinson

blame in which each major stakeholder group was seen to be in favour in *principle* but lacking a business case to move forward. Since then, market demand pressures have changed; so too have many of the regulatory frameworks which are discussed in later chapters. Undoubtedly, where buildings are commissioned for owner-occupation for the long term, the interests of differing stakeholders can coalesce and aid in the drive towards sustainability. Therefore, perhaps it is understandable that many case studies of sustainable buildings, including the early examples of those certified to the highest rating levels are buildings that lie within the public sector owner-occupation, such as the Wessex Water Building. This building, completed in 2001 achieved the highest ever rating at the time. In commissioning it, the company placed sustainability at the centre of its operational requirements; as a consequence, the project considered environmental, social and economic factors including staff opinions, the relationship with neighbours and the ability of the building to adapt to future change (Heid 2001).

However, what has also become more widely recognised is that there are many stakeholder groups, all of which interface in often complex and non-transparent ways which subtly or otherwise, impact on the decisions made regarding specification, design and execution of the development. The last decade, which witnessed the world financial crisis and consequent falling rents, caused many stakeholders to appraise both their attitudes and policies. It also coincided with the strengthening of the CSR agenda and the regulatory response to the challenge of climate change. Whilst collectively these pressures on stakeholders may not yet have completely turned the vicious circle into the desired virtuous circle, undoubtedly headway has been made. Further chapters will draw out in detail the factors, including sustainability factors that each stakeholder considers in the process.

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40 Sara J. Wilkinson and Sarah L. Sayce

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3 Site feasibility

Evaluating the site, commitment and sustainability

Sara J. Wilkinson and Sarah L. Sayce

3.0 Introduction

An evaluation of site feasibility and the purchase of the site are normally the initial stages in any property development, except where land is already held in either a 'land bank' or is held by the owner for prior use which is now redundant. Consequently the decision has a substantial and long lasting impact on the sustainability of any development. Site acquisition is usually the property developer's first major financial commitment to a project. Furthermore initiation, site feasibility and site acquisition are closely related and often occur concurrently. Considerations of sustainability should be embedded throughout the process. Ideally the purchase of the site should be completed after the site feasibility and development evaluation process has taken place, except where already owned prior, as detailed above. This chapter is concerned with the site feasibility, initiation and the acquisition stages of the development process. Initiation is defined as the 'Starting a process that can result in the authorisation of a new project' and 'the first, and most critical phase in the project life cycle where the project is defined, a team is assembled, and approval is given to proceed with the project' (PMBOK Guide 2013). Additionally the attributes which enhance sustainability are discussed, including any which might have a negative impact on sustainability, are highlighted. Legal and political influences on site acquisition are also covered.

Appropriate site selection is fundamental to development success, as it affects the nature of a development. If the site has a location which is not appropriate for the type, scale or specification of the proposed development, or the economics in terms of cost and developed value (see Chapter 4) render it unviable, no amount of good design, promotion or sustainability features can overcome the issues; indeed it will fail in terms of being a sustainable development. Site acquisition can be a frustrating and unpredictable process as many issues can impact on its success. Every site is unique and each project will require consideration of different variables to various degrees; however it is possible to outline a comprehensive list of considerations for developers (GSA nd). Figure 3.1 illustrates the typical sequence of development and where initiation and site acquisition sit with respect to feasibility.

The site feasibility study comprises the business proposal for the development. It establishes the budget for the site acquisition and also the buildings and profit. The study identifies the requirements of the development, defines viable alternatives, analyses alternatives and delivery methods and recommends the preferred solution. The feasibility study is reviewed at times depending on the project circumstances, timelines and external factors such as general economic trends in order to confirm the preferred solution is still the

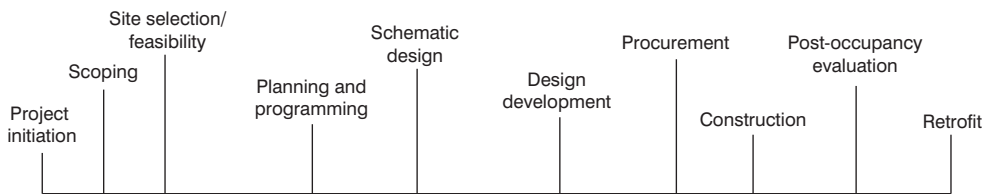


Figure 3.1 The development process: from initiation to retrofit
Source: Author (2014)

optimum. If not, changes will be made as necessary. In extreme cases, development projects may be temporarily or permanently shelved.

Developers need to adopt well-researched site acquisition strategies; however, its achievement, in the time and way originally envisaged, is often beyond the control of the developer. The following preconditions need to be in place for the development process to be initiated through site acquisition:

- 1 The site owner's readiness to sell the site on terms of agreement and at an agreed sales price which allows a viable development to proceed.
- 2 Proposed use allowable within the relevant development plan and regulations, or the acquisition of planning permission for the proposed development to proceed (see Chapter 6).
- 3 The existence of infrastructure and services to support the proposed development.
- 4 The existence of suitable ground conditions to support the development (if necessary after appropriate treatment at a reasonable cost).
- 5 The necessary development finance (see Chapter 5).
- 6 A known end-user or occupier demand for the proposed development (see Chapter 4).

If any of the above preconditions are not in place, either the development will not proceed or the development will present a significant risk to the developer. Local authority involvement and government assistance may be available in relation to compulsory acquisition, provision of infrastructure, site reclamation, finance or occupier/ investor incentives depending on the nature of the proposed development and its location. Most importantly, the requirements of occupiers and eventual owners/investors must be at the forefront of any developer's site acquisition strategy.

3.1 Sustainability issues affecting site feasibility

This section describes the characteristics affecting site feasibility in respect of sustainability issues at the macro and micro level. Starting with issues around urbanisation and population growth, the section moves on to look at transport and infrastructure factors and how they can impact on the sustainability of the development. The issue of site contamination or brownfield sites are discussed before covering climate change issues such as flooding.

3.1.1 Climate issues and development

Weather patterns are changing in ways consistent with a warming global climate (IPCC 2014) and scientific research points to rainfall patterns changing, in particular by greater

intensity and fewer events (Solomon and Qin 2007; Met Office Hadley Centre for Climate Research 2007; IPCC 2014). Although specific extreme events cannot be attributed to climate change, the consensus is that the frequency of intense rainfall events is rising over most site masses (including those where average rainfall is decreasing) and this is likely to continue in some seasons (Solomon and Qin 2007). Intense rainfall events can trigger flash floods, particularly in dense urban areas with low permeability, leading to serious impacts on the affected owners and occupiers. Furthermore areas previously unaffected by flooding may become more flood prone in future. This is a risk developers need to manage increasingly and if they develop and hold, their exposure to risk may be greater.

For example, in Australia, the prolonged droughts have been replaced by increased intense rainfall: the estimated cost of building remediation following the 2010/11 floods in the states of Queensland and Victoria varied from A\$9 billion to A\$20 billion (Companies and Markets 2011). The densely populated East Coast area was subjected to severe floods in two consecutive years (Bureau of Meteorology 2012). In the UK, the cost of flash flooding has risen in recent decades: 3.8 million properties in England are estimated to be at risk from surface water flooding alone (Environment Agency 2013). Extreme rainfall events in 2007, 2012 and 2014 caused localised flash flooding in city centres including Glasgow, Hull, Newcastle and York, with substantial damage and disruption and widespread flooding across a large area in the south west of England. The real cost to local economies may be long lasting and difficult to measure, as many businesses fail to recover after suffering flooding (Cumbria Intelligence Observatory 2010; Ingirige and Wedawatta 2011; Wedawatta *et al.* 2011). The flooding was so severe in the UK in 2014 that the authorities in affected areas are now considering whether 'floating' house design, already used in the Netherlands, should be adopted into the building codes for long-term sustainability. Further, developments in potential flood affected areas may become impossible to insure, and therefore in effect potentially unsaleable.

Development contributes to this problem, as the growing damage impacts of increased pluvial flooding are not attributable to changing weather patterns alone: it is exacerbated by increased development pressures and urbanisation (Jha *et al.* 2011). In the UK, for example, there have been effects arising from the policy of redeveloping brownfield sites, together with the popularity of paving green spaces to provide car parking; likewise, in Australia, urban planning has increased the density of development and amount of impermeable surfaces. Stormwater runs swiftly off these surfaces, rather than slowly infiltrating into the ground, as it would have done on open or agricultural site. Furthermore, in many city centres, piped drainage systems were installed when lower density development existed and their design has not been updated to accommodate the increased runoff (French *et al.* 2011). So not only are developers potentially exposed to greater development risks, but they also contribute to the problem with ill-considered development proposals. There are some low-lying coastal locations which, on current predictions will be inundated with water in the future. This is often now a planning issue (see Chapter 6).

One option developers can adopt is measures designed to restore, or mimic, natural infiltration patterns; by decreasing runoff volumes and attenuating peak flows, the risk of urban flooding is reduced. Within city centres, this could involve the inclusion of green roofs, permeable paving and other surface or near-surface drainage options in developments (Charlesworth and Warwick 2011). Infiltration and storage devices, such as permeable paving, can be employed around commercial premises to reduce runoff, whilst green roofs and rainwater gardens can absorb rainwater, thereby attenuating peak flows. Urban renewal and refurbishment provide an opportunity for such initiatives: in the US this method has been adopted in New York (NYC Environmental Protection 2011; NYC Environmental

Protection 2012) and Portland. In Portland, financial incentives were offered to increase the uptake of green roofs and disconnection of downspouts (Environmental Services – City of Portland 2006; Environmental Services – City of Portland 2011). Developers may, in some areas therefore benefit from financial incentives which also enhance sustainability. In other cases, flood risk to an urban site can be mitigated by ‘buying’ the right to flood elsewhere – for example, by designing flood holding basins upstream.

Other weather events related to a changing climate include intense heat leading to bushfires or wildfires in some regions. Parts of Australia and the US are particularly vulnerable to bushfires during certain periods of the year. With changes to the weather patterns, the bushfire season is variable and months previously not associated with bushfires then became associated with bushfires and the geographical areas experiencing bushfires also change. Developers not only need to be cognisant of local issues and to integrate effective design strategies within their projects, but also to consider whether some areas are suited to development in the long term. This might mean designing buildings which are flexible to later adaptation for a changing climate.

3.1.2 Urbanisation and population growth

Although urban settlements take up only 2.8 per cent of the earth’s surface, by 2008 they accommodated more than half of the world’s population (El Sioufi, 2010). There is an increased rate of urbanisation which is happening fastest in developing countries where a substantial demographic shift has huge implications in respect of poverty, natural resources and the environment. The ‘State of the World Cities Report’ (UN-HABITAT 2008) predicated average growth of 5 million new urban inhabitants per month in the developing world. In the next three to four decades, the developing countries will account for 95 per cent of the world’s urban population growth. Levels of urbanisation are expected to rise, with the least urbanised regions of Asia and Africa changing from rural to urban societies (El Sioufi 2010). By 2050, the urban population of the developing world is projected to be 5.3 billion; with Asia accommodating 3.3 billion people. More recent predictions indicate that it is unlikely that world populations will stabilize this century (Desa 2013).

Population growth and economic development can cause drastic changes in land use and where this is likely institutional arrangements need to ensure sustainable use of the increasingly scarce land resources. In developed countries, some of the critical issues include accommodating increased densification in urban settlements, accommodating aging populations and different family sizes, together with the impact of inward migration, often from developing countries. Compounding these population and social challenges in our cities and urban settlements are challenges related to climate change and extreme weather events. As noted in Chapter 1, some of the challenges of climate change globally that are predicted to impact the built environment are:

- Increasing threats in coastal areas due to sea water rise and severe weather risk.
- Increasing threats to human settlements in coastal areas and islands, and:
- Increased probability of droughts and erratic rainfall due to climate change.

(IPCC 2013)

The severity of these predictions vary from continent to continent and country to country. There have been warnings that sea levels are rising twice as fast as previously forecast (IPCC 2014), resulting in an increased threat of flooding and water-related crises for people living

in low-lying areas, coastal areas, deltas and small island states (IPCC 2014). If sea levels rise by just one metre, many major coastal or tidal river cities will be under threat. This means that Buenos Aires, Rio de Janeiro, Los Angeles, London, New York, Lagos, Alexandria, Mumbai, Kolkata, Dhaka, Shanghai, Osaka-Kobe and Tokyo, are among the major and mega cities that are under imminent threat.

While the threat of sea-level rise to cities is one problem, more extreme weather patterns such as intense storms are another. Tropical cyclones and storms, from 2008 to 2010 affected 120 million people globally, largely in developing countries (El Sioufi 2010). For example, in January and February 2014 extreme weather impacted countries in both the northern and southern hemispheres. In the northern hemisphere, the UK experienced almost unprecedented inland flooding, whilst Canada and North America experienced extreme cold and ice storms. Meanwhile, in the southern hemisphere, Australia suffered intense heat resulting in recording breaking temperatures around the continent. Globally, flooding and drought are occurring in the same place and in the same year more frequently and significantly impacting food security, energy and water supply in these areas.

There are many issues related to climate change that remain unknown. However, what we do know is that our cities will require change and adaptation, renewal and expansion. The question is: *will we have the foresight and will to make the necessary changes to policy and industry practices to mitigate the coming changes to our climate and to accommodate increases in populations?* Some of the changes will be instigated at a policy and regulatory level, whereas others will be the result of the efforts of enlightened and forward thinking property developers and other property industry practitioners. It remains the case that the cumulative actions of individuals lead to the consequences we reap as a society. On a micro level, the issues to consider with individual sustainable property developments are location, transportation and site survey and analysis.

3.2 Location

The oft-quoted mantra for property development is 'location, location, location'; and it is indeed critical to consider location when it comes to selecting development sites. When economies are growing, developers are able to increase their bid price for sites in highly sought after, quality areas; however, when economies contract, properties in prime locations may hold their value better than those in secondary locations which may fail to sell quickly and might therefore diminish in value. Developers may be influenced in their site selection strategy by whether they intend to develop and hold or develop and sell. Some developers may purchase in secondary locations with a longer term view of developing and then holding the development for some years in anticipation of the area undergoing a renewal. Other developers taking a shorter-term view of develop and sell may prefer safer prime locations despite profit margins potentially being lower in these areas.

Characteristics that affect location are views, proximity to amenities and services (Wilkinson and Reed 2008). Therefore, for residential developments, access to local retailers and schools are important characteristics for the site as are access to recreational activities. For industrial property development, the location factors are different; here proximity to transportation networks for delivery of raw materials and goods can be shipped to customers is vital. Retailers often seek to cluster, to enable comparison shopping, whilst good office locations increasingly demand access to a wide range of services.

In every case, transport links are critical and the growth of environmental concerns; notable carbon emission has led to accessibility to public transport nodes being critical in

many cases. Indeed, frequently, developers will be required to produce 'green transport plans' and they will estimate the number of vehicle trips generated by the proposed development as part of its environmental impact in order to fully evaluate the location. Location dictates almost everything that follows, from transportation access to environmental impact, to the occupier's involvement with local initiatives and economies to the place, cost and form of the development (GSA nd).

For developers looking to develop and hold, some identify sites to be held in land banks until such time as conditions favour proceeding with the development, or to allow them to strategically plan their workloads moving forward. For these organisations, the process is one of periodic review to determine whether the conditions favour development. However, developers, notably house-builders, are often accused of land banking in order to tighten land supply and driving up prices, a practice which research in the UK has refuted (Home Builders Federation 2014).

Typically, volume house-builders operating in UK markets work in this way (Isaacs *et al.* 2010), as do many US developers. However, residential development in countries like Australia tends to be different. Here developers purchase the site and sell off each parcel separately for individuals to develop independently. At times, developers offer packages where purchasers select from a range of housing types a suitable house for their site. Whilst this is uncommon in the UK, Urban Splash is experimenting with customizable modular kit homes sold off plan.

Other developers specialise in land uses and will search specifically for sites which meet the criteria they establish (Isaacs *et al.* 2010), such as 'out of town' or 'big box' retail developments. Here criteria such as the population within a certain catchment area are important, as well as the socio-economic characteristics of the area and the supply and vacancy rates for existing retail development. The site selection criteria the developers adopt in their searches relate to their level of risk awareness and risk taking. For example some developers may be prepared to take higher risks for higher profits, whereas others prefer a more risk adverse approach.

There is more room to move when it comes to profit margins in areas that do not have identifiable affordability ceilings. That is, locations that are so highly sought after and desirable that people are willing to pay whatever it takes to secure premium property in that particular locality, even if it comes at a record breaking price tag. Another reason to undertake developments in areas that support higher property values is that the cost of doing a development is much the same whether you are building in a high value or low value area. Many of the costs remain comparable irrespective of the final value of the buildings, such as sand, cement, pipes, cable and plaster. However, high value areas may also be volatile value locations, which increase development risk. Not only that, but the capital tied up in the development pipeline is higher.

As far as predicted climate change is concerned, developers need to consider, especially if they intend to hold a development over the long term, whether there are any risks which might affect the long-term viability and value of the project. For example, development consideration in coastal or low-lying areas must consider the risk of rising sea levels or flooding and evaluate the impact if the development becomes increasingly inundated with water over time. Such risks can deter future purchasers and leases and can therefore negatively affect value. Other climate change effects could be excessive rainfall undermining property developed on cliff locations or properties becoming affected by wildfire or bushfires with increasing temperatures and diminishing rainfall. Prudent developers will be factoring such issues to site feasibility.

3.2.1 *Transportation and infrastructure issues*

The principles of sustainability require developers and local authorities to consider the emissions associated with transportation. Therefore developments which reduce the need for travel or promote public transport systems, especially transport modes which have low emissions are to be encouraged. Sustainability can be enhanced where sites have good access to public transport networks. Some environmental rating tools, such as BREEAM and LEED, give credits to developments which allow workers or owners to use public transport as a means of travel to and from the development (for more details see Chapter 9). Often too, transport links are planning requirements. The use of public transport systems promotes cleaner air because of the reduction in transport related emissions. Using existing roads and sewers also saves on resource consumption. However, the targets to reduce emissions and consumptions are only achieved if the public transport system is well developed and used, and this is not captured in the rating tools. Interestingly, the type and amount of parking provision may also be significant, depending on building use, recognising the automobile-centric nature of urban cities.

The provision of supporting infrastructure is vital to site acquisition and local authorities and central governments normally play important roles in its provision, although developers can be required either to directly provide or pay contributions towards it. Infrastructure describes all the services which are necessary to support development, such as roads, sewers, open space, and community facilities such as schools, clinics, etc. The existence or proposed provision of roads is critical in evaluating locations for property development. Whilst proposals for a new road will generate pressure for development along its route, new development also creates new traffic pressures on the existing road network. As infrastructure is so critical to the viability of a particular development scheme, it directly influences site values. If the necessary infrastructure does not exist to support a development then a developer will take account of the cost of its provision in the evaluation of the site value or the possibility that other agencies will provide it. Developers may be rewarded by taking such factors into account with higher scores in the environmental rating tools they may adopt for the project (see Chapter 9).

Public authorities are largely responsible for deciding the level of infrastructure required and securing its provision, and they have to determine who is responsible for the cost of its provision. Whilst major schemes will normally be the responsibility of central authorities, local authorities are important at the district level. Using the UK as an example, the assessment of future infrastructure requirements at a strategic level is the responsibility of the county council or the unitary authority (see Chapter 6) as part of the process of preparing development plans and they now have the ability to set and enforce levies (the Community Infrastructure Levy). In most cases, it is the highway authority for the area that is responsible for creating these requirements, although they may delegate some responsibility to district councils. The highway authority will be consulted on all planning applications to establish whether a development can be supported by the existing road infrastructure. The Department for Transport (Highways Agency) is responsible for motorways and trunk roads. Similarly, water companies are responsible for the provision of sewers and the water supply in each area. When the increased demand on the sewer and water supply results directly from a particular development, the cost of increased load on the infrastructure is agreed directly with a developer of the development.

Many authorities embrace an active approach to the provision of infrastructure in recognition that new roads open up sites for development. The site is often assembled in

conjunction with the new road so that the authority can benefit from enhanced site values by packaging sites for disposal to the private sector. There is much debate about the pressure for development caused by new roads, particularly in the prosperous and environmentally sensitive areas, and how the cost of provision should be allocated. Again using the UK as an example, developers may be required to enter into Section 278 agreements (under the provisions contained in Sections 106 and 278 of the Town and Country Planning Act 1990) with the relevant highway authority or the Department for Transport, to secure a financial contribution to pay for improvements to existing roads required to accommodate traffic from a particular development proposal. Further under local agreements (known as S.106 agreements) they can be required to undertake onsite improvements. The UK government wants to reduce car travel by influencing the location of development schemes relative to the existing road network and public transport. They wish to encourage development which is accessible via alternative forms of transport such as walking, cycling and public services. Overall the aim is to encourage local authorities to co-ordinate site use policies and transport infrastructure to achieve a reduction in travel needs and the principles underpinning this are contained in the National Planning Policy Framework (for further details on PPG13 see Chapter 6). In addition, the government reviews major road building projects as evidence suggests that new roads create more traffic congestion. Patently there is a conflict here with accommodating ever more people in urban settlements and sustainability.

Many local authorities promote sustainability through public transportation, for example light railway/tram systems, in their areas to ease traffic congestion, for example, the tram systems in Edinburgh and Croydon, both of which have been introduced in recent years. In order to secure the necessary public funding for such transportation systems, UK government regulations stipulate that private sector contributions have to be secured in advance. This may not be the case in all countries however. Often developers and landowners with sites that will benefit from the transport system proposed are approached to make a contribution. However, there is a limit to how much developers can pay, as any contribution will impact on development viability. The same applies to contributions made by developers for road improvements as discussed above.

3.3 Site survey and analysis

A site survey undertaken by qualified land surveyors or geotechnical engineers establishes the extent of the site and whether the boundaries agree with those shown in the legal title deed. This is important where a site is assembled by bringing together various parcels of land in various ownerships. Here the survey has to establish that all the boundaries of the various parcels dovetail together and that the whole of the land is being acquired. It would be devastating if the developer discovered mid-way through a scheme that a small but vital part of the land had not been acquired. The developer would then have to negotiate from a very weak position with that landowner, effectively being held to 'ransom'.

The land survey establishes the site contours and levels. The presence of any waterways, cisterns or underground utilities which might affect development is identified. Geotechnical engineers also comment on the soil type and likelihood of shrinkage or swelling, corrosion, landslides, collapse, creep, seismic activity and liquefaction. Also, if ground water exists on the site, the survey notes the location and depth and makes comments and recommendations on means of controlling groundwater during construction. Where appropriate, recommendations are also made for further exploration and testing. In terms of environmental site issues, developers in some locations will test for the presence of

Table 3.1 Site analysis tasks

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- Identify existing conditions and topography
 - Identify access, reciprocal and utility easements
 - Review site boundary and topographic surveys
 - Identify logistical issues with regard to construction and/or operation
 - Review parking at proposed site and vehicular, pedestrian, bicycle, mass transit and building service access and safety issues
 - Review building orientation
 - Review preliminary stormwater management
 - Review legal description
-

Source: Author

methane gas and take necessary action. With some large-scale developments, and with public developments, in some jurisdictions, notably the EU region, Environmental Impact Statements (EIS) and Environmental Assessments (EAs) will be required. Similar provisions exist in the US where they are termed Environmental Impact Assessments (EIAs) and are typically required for all large projects and all public developments. An EA is a document prepared to determine whether an EIS is required. The EA typically describes the need for the development and includes a list of agencies and persons consulted. If the agency reviewing the EA decides a significant impact will result, then an EIS is required. The EIS is a detailed written statement focused on the environmental issues and the alternatives to the proposed action. In this case, the developer will need to engage environmental consultants to identify the environmentally significant features and aspects, and assess the likely impact of the development on them. Where necessary the EIS report will also outline how the developer proposes to minimise harm, mitigate hazards and safeguard the environment.

If any existing buildings on the site are to be retained in a scheme, structural surveys will be required. The legal search of the title deeds should establish responsibility for the maintenance of the boundaries. In addition, the access arrangements to the site need to be checked to ensure that the site boundary abuts the public highway and to identify where access points are allowed. If a public highway exists the solicitor needs to check whether it has been adopted by the local authority and is maintainable at their expense. If access to the site is via a private road, then the ownership and rights over that road need to be established. Table 3.1 identifies tasks related to site analysis.

3.3.1 Ground investigation

Unless reliable information exists regarding the state of the ground, a ground investigation needs to be undertaken by appropriate specialists. Ground investigations can vary in cost and extent depending on the proposed scheme and information already known. An investigation usually takes the form of a series of bore holes and trial pits taken at strategic locations on the site. Samples taken from the boreholes and trial pits are analysed in a laboratory to establish the composition of the soil and substrata, the depth of the water table and whether any contamination can be identified in the ground. The issue of contamination will be examined further below as it has an effect on sustainability. The results of the investigation will be given to the structural engineer, architect and quantity surveyor (cost estimator). They analyse the results to establish whether any remedial work is necessary to improve the ground conditions or whether any piled foundations are required, e.g. where the ground is made up with fill material. Both circumstances will have an impact on the cost of the

development scheme, which may affect the overall viability and impact on sustainability. Given that increasing percentages of developments are being targeted towards previously developed land (see below) ground investigations may be vital.

3.3.2 *Brownfield sites – contamination*

Sites previously developed for any purpose are generally known as ‘brownfield’ sites, whereas sites which have no previous development are known as ‘greenfield’ sites. The US EPA defines the term ‘brownfield site’ as real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Successful projects built on brownfield sites can improve water quality, remodel eyesores or restore community character (GSA nd). The fact that a site has been previously developed may, or may not, mean that it has any features which render redevelopment difficult or more expensive than the development of greenfield sites. However additional cost and delay are often the case, particularly where the previous development has involved industrial use which may have been associated with toxic materials (see below for a list of typical site types that are associated with contamination).

Further developments on brownfield sites may suffer residual value ‘stigma’ for residential units (see for example McCluskey and Rausser 2003), though as it becomes increasingly common to build on brownfield this is less likely to be the case. Further, in sustainability terms, it has been found that redeveloping contaminated sites can lead to increases in values of properties close by as a positive ‘spillover effect’, thus providing social sustainability benefits (De Sousa *et al.* 2009).

Property development is about assessing and managing risk; as such the existence of any contamination on a site cannot be ignored due to potential legislation and litigation as well as the physical and value uncertainties it presents. Broadly, similar legislation exists in Australia, the US and the UK with regards to contamination, though readers should refer to local legislation in detail as there is insufficient space here to discuss each in detail. Using the UK as an example, a contaminated site is defined in Part IIA of the Environmental Protection Act 1990 (EPA) section 143 as a ‘site which is being or has been put to contaminative use’ (and was brought into being by way of section 57 of the Environment Act 1995). The statutory definition of contaminated site (EPA 1990, s 78A (2)) is:

any site which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the site, that –
 significant harm is being caused or there is a significant possibility of such harm being caused; or
 pollution of controlled waters is being, or is likely to be, caused;

The important inference here is that ‘significant harm’ is resulting or is likely to result from the contamination, and not that there is possible harm from pollutants on the site. There is much debate about the point at which ‘significant harm’ ensues as there is definitive point where this occurs because each site parcel is unique in terms of geology, extent of pollution and so on. Three key factors impact on the amount of harm which can ensue and are:

- 1 the type of contaminant,
- 2 the pathway, and;
- 3 the receptor.

Different contaminants lead to different types of harm and the extent of harm depends on the pathway or way in which the contaminant migrates or moves around the site and in this way the geology of the site has a significant effect. For example, soils which are dense or solid allow less opportunity for pollutants to move around. Receptors vary from being animal, plant or human and different pollutants and concentrations have different effects depending on the receptor. Some pollutants such as zinc can make plant growth verdant and abundant, whereas the effect on human health is adverse and negative. Environmental consultants will examine the relationship between these three variables to establish whether 'significant harm' is likely.

The emphasis of government policy in many jurisdictions on environmental legislation is based on the principle that 'the polluter pays', following the example set by EU legislation (for further information see Beder 2013). Contamination is usually caused by a previous occupier's use of the site, though for many sites the use of contaminants is unrecorded which makes it incumbent on the developer to undertake a detailed investigation particularly of brownfield sites. Occasionally contaminants migrate onto site from other sites and thus pollute the land, clearly such an occurrence can cause complex issues to arise in terms of getting the polluter to pay costs of remediation. Site use types that have led to contamination include:

- Infrastructure sites:
 - cemeteries
 - docks, canals and shipyards
 - quarries
 - railway sites
 - sewerage works
 - petrol stations.
- Industrial storage sites:
 - landfill sites
 - military airfields
 - oil and petroleum refineries and storage sites
 - scrap yards.
- Power generation:
 - gas works
 - nuclear power stations.
- Manufacturing and industry sites:
 - dry cleaners
 - asbestos works and buildings containing asbestos
 - food processing plants
 - metal mines
 - brickworks and potteries
 - chemical works
 - steel works
 - plating works
 - munitions factories and test sites
 - paint works
 - paper and pulping works
 - printing works
 - tanneries
 - textile mills.

The emphasis, since 2000, is placed on the condition of the site itself and whether this would be likely to cause 'significant harm'. Earlier policies towards contaminated land had led to some sites being blighted and the UK government subsequently introduced the concept of the 'suitable for use standard' with regards to remediation. Previously, a policy of a total clean up (or gold standard) had been adopted towards remediation; however, the costs of remediating a site to such high standards meant that some development proposals were no longer viable. Some jurisdictions may adopt this 'gold standard' and developers must apprise themselves of local requirements. The 'suitable for use' concept means that any contamination is considered in the context of the use to which the site will be put. So for example a site with a proposal for residential units would have higher remediation standards than a proposal for industrial development on the same site.

Where contamination is present, the cost of ground investigation is much higher and furthermore represents a potentially abortive up-front developer cost. Developers should obtain as much information on the site history before ground investigation is commenced. This is achieved by looking at Ordnance Survey maps, local authority records and other sources of information, such as previous owners. In areas where contamination is widespread, the local authority may have records of contaminated land. In addition, local authorities hold information on waste disposal sites in their area. However, information obtained from records may be limited and will always need to be checked.

The ground investigation comprises taking soil samples down to the water table level, as well as extensive surveys of all underground and surrounding surface water because of the risk of contaminants seeping through water. The results of the ground investigation allow an assessment to be made of the extent and cost of remedial measures. There are many ways of treating contamination including removal, treating in situ or containment either under a blanket of clean earth or a capping. Ongoing measures may be needed after completion of the development, for example, venting methane gases to the surface. If the contamination is restricted to one part of the site it may be possible to design around the problem, for example locating car parking directly over the area. If the ground has to be filled with imported material as part of the process then, depending on the standard of treatment required, deep piled foundations may be required. Nevertheless, once on site, sometimes developers find during construction that, due to the selective nature of ground investigation surveys, contamination is more widespread than first reported. Such circumstances can impact on the economic viability of a project and represents another risk developers have to manage. When a developer is faced with a contaminated site then the remedial measures, typically costing on average in excess of £500,000 per hectare, usually preclude all but the higher value uses. The type of use under contemplation will also determine the level of decontamination required. For example, an industrial use will not require such a rigorous clean up as one to be developed for housing. However, grant assistance is available in some areas to offset these costs.

In view of the increasing concerns about contaminated land, the move towards urban regeneration, the increased use of brownfield sites, the debate about who should be financially responsible and the implications for sustainability, it is critical that developers spend time to thoroughly assess whether there is any contamination on site before proceeding with the development. Where necessary, the appropriate professionals should undertake a full environmental audit, which can later be presented to potential purchasers, financiers and tenants.

3.3.3 *Utility services*

The site survey ascertains the existence of utility services (water, gas, electricity and drainage). Utility companies should confirm that the services surveyed correspond with each of the companies' records. Furthermore, the capacity and capability of existing utility services to meet the needs of the proposed development should be determined. If the existing services are insufficient, the developer needs to negotiate with the company concerned to establish the cost of upgrading or providing new services, such as a new electricity substation. However these needs may be offset with sustainable design such as on site power generation from renewables. Where work needs to be carried out by either an electricity or gas company the developer will be charged the full cost of the work, but a partial rebate is usually available once the development is occupied and the company is receiving a minimum level of income. Sometimes the route of a service may need to be diverted to allow the proposed development to take place, and the cost of diversion and the time involved should be established at the earliest possible stage. Furthermore, the legal search of the title deeds will reveal if any adjoining occupiers have rights to connect to or enjoy services crossing the site. The developer may need to renegotiate the benefits of these rights if they affect the development scheme. Increasingly, even where a developer does not set out to be a leader in sustainability terms, planning requirements will place the requirement for a certain percentage of power to be generated on site through the use of renewable technologies; similarly there are moves to reduce pressure on foul drainage by the use of digester units.

3.4 **Historic properties**

Frequently developments integrate historic sites or heritage buildings and these can serve as examples of reclamation and reuse of cultural historic resources and signal the developer's commitment to historic preservation or conservation, sustainability and local communities (Wilkinson 2011; GCS nd). Such developments also demonstrate the developer's leadership in respect of heritage conservation. The architectural, social and/or cultural attributes of buildings should be considered to ensure projects are undertaken with minimum adverse effect on the qualities that constitute their significance. Developed countries have legislation which protects culturally significant buildings and requires developers to follow guidelines in their proposals. This retention of cultural capital can lead to the award of points under some of the environmental rating tools as retention of the buildings adds to social sustainability. In addition, reuse of historic and heritage buildings reduces the carbon footprint of the development because of the embodied carbon in the existing buildings. However, where the retention or inclusion of historic buildings is included within the scheme, risks are increased and costs can become open-ended. Therefore careful investigation as to the physical constraints they impose on the development need to be evaluated early on in the process. With sustainability in mind, the developer must balance the potential social spillovers of embracing heritage with the economic impacts (positive and negative) and the associated uncertainty.

3.5 **Legal title**

Developers appoint solicitors to deduce the legal title to be acquired and to carry out all necessary enquiries and searches before contracts are entered into with the landowner. The

developer's solicitor will apply to the Site Registry, or equivalent, to examine the official register of the title. If the site to be acquired is leasehold, the register will reveal brief particulars of the lease and the commencement date. Thereafter the developer needs to ascertain the term of the lease, the pattern of the rent reviews and the main provisions of the lease. The provisions have to be checked to ensure the terms are acceptable to the provider of the development finance (see Chapter 5). The solicitor also establishes that the site will be acquired with vacant possession and that there are no unknown tenancies, licences or unauthorised occupancies. The fact that a site or building is unoccupied does not mean that no legal rights of occupancy exist. The register should show if there are any conditions or restrictions affecting the rights of the landowner to sell the site. In addition, all rights and interests adversely affecting the title will be established, such as restrictive covenants, easements, mortgages and registered leases.

Any easements or other legal right may profoundly affect a development scheme. An easement may be positive, such as a public or private right-of-way, or take the form of a negative covenant, such as a right of light for the benefit of an adjoining property. Within the UK, some negative covenants are private but 'run with the land' and are revealed by searches; others such as rights to light are enshrined in statute (Rights of Light Act 1959). If easements exist to the detriment of the proposed scheme, the developer may be able to negotiate removal or modification to allow the scheme to proceed. Rights of light might affect the proposed position of the scheme and the amount of floor space provided and, as they are statutorily protected, may not be able to be overcome through negotiation.

Restrictive covenants may adversely affect a development, for example a covenant prohibiting a specific use of a site. Often it can be challenging to determine who benefits from a covenant, particularly if it was entered into many years previously. If the beneficiary can be found, the developer may negotiate the removal of the restriction. If the beneficiary cannot be found, in the UK the developer can apply to the Lands Tribunal for its discharge, although this is a lengthy process. Another option is for the developer to take out an insurance policy to protect against the beneficiary enforcing the covenant. The insurance cover will compensate against the loss in value caused by any successful enforcement action. However this latter course of action is not desirable: restrictive covenants were often put in place for good estate management reasons and it is a risk to rely simply on insurance.

Further developments often take place abutting other buildings. In this case, the development may create what is termed a shared or 'party' wall. If this exists before the redevelopment or will be created as part of the scheme, it is necessary to agree a schedule of condition with the adjoining property owner or make a party wall award of compensation. In the UK, a chartered surveyor with specialist knowledge on party wall matters may need to be appointed by the developer and by the adjoining owner(s).

A solicitor searches the local site charges register maintained by the local authority. This reveals any planning permissions for the site and whether any building on the site is listed as a building of special architectural or historic interest. In addition, enquiries are made of the local authority to establish whether the road providing access to the site is adopted and maintained at public expense. The existence of any proposed road improvement schemes might affect the site, e.g. a strip may be protected at the front of the site for road widening purposes. Enquiries are made of the landowner (vendor) and include standard questions with regards to boundaries and services. Enquiries will disclose whether any over-riding interests (rights and interests that do not appear on the register of the title) exist or, adverse rights (rights of occupiers of the site). Solicitors also make enquiries of the vendor which are particular to the site being acquired.

The developer must aim to acquire the freehold or leasehold title of the development site free from as many encumbrances as possible by renegotiating or removing the restrictions and easements. Financiers, particularly the financial institutions, prefer to acquire their legal interest with the minimum of restrictions which might adversely affect the value of their investment in the future. The developer has to be able to 'sell' the title to purchasers and tenants as quickly as possible without complications.

The worst scenario if legal title mistakes are made could be that the development goes ahead and subsequently has to be demolished – this is not a sustainable solution.

3.6 Site acquisition

The findings of the site survey and analysis investigations should be reflected in site acquisition arrangements. The degree to which developers reduce the risk inherent in the property development process depends partly on the type of transaction agreed at the site acquisition stage. Shrewd developers try to reduce risk to a minimum and site acquisition arrangements are important. If possible, no acquisition is made until all the relevant detailed information has been obtained and all problems resolved. In practice, however, it is almost impossible to remove every element of uncertainty. The degree to which the developer can reduce risk to the site acquisition stage depends on the landowner's method of disposal, the amount of competition and the tenure. It is possible to transfer some risk to the landowner, but this largely depends on the developer's negotiating abilities.

Most site acquisitions are straightforward, if executed on a freehold basis but it should be noted that once contracts are exchanged risks pass to the purchaser. The developer reduces the transaction risk through negotiation of the contract terms; for example, contracts can be conditional and payments phased or delayed. If no planning consent exists for the proposed development, it is usual for the developer to negotiate a contract subject to a 'satisfactory planning consent'. If such a condition is acceptable, the vendor tries to ensure that the term 'satisfactory planning consent' is clearly defined. The developer may obtain planning consent which does not reflect the optimum value of the site but satisfies the condition in the contract and then, at a later stage, obtain a better planning consent. It is not uncommon for 'top-up' arrangements to be made whereby the vendor benefits from any improvement created by planning consent obtained by the developer. Developers carefully weigh up the degree of uncertainty in relation to potential planning issues and make a judgment as to whether the risk is acceptable. If the vendor is undertaking to sell the site with vacant possession then the contract should be conditional upon this, for there could be a delay in the occupants of a building vacating.

Whilst the normal period between signing a contract to purchase a site and the completion in the UK is 28 days, developers may be able to negotiate for a delayed completion, e.g. three months. Delays cost money, so the developer should ensure any potential problems revealed by investigations are dealt with before contracts are completed, or the time needed to resolve them is reflected in the evaluation and the price paid for the site.

As an alternative, especially if the planning process is likely to prove contentious, the developer may consider it advantageous to pay for an option to reserve the site. An option involves the developer paying a nominal (or higher) sum to secure the right at a future date to purchase the freehold. There is usually a 'long stop' date after which the vendor is free to sell the site to anyone if the developer has not taken up the option. The option agreement might specify that after certain conditions have been complied with, the developer has to purchase the site. Alternatively, the agreement may allow the developer to call upon the

vendor at any time to sell the site after sufficient notice. The developer aims to fix the value of the site at the time the option agreement is entered into but in practice this is difficult to achieve. Conversely, in a rising market, vendors usually try to ensure that the open market value is fixed at the time the developer actually purchases the site.

3.6.1 Finance

No prudent developer, unless there are sufficient internal cash resources, should enter into a commitment to acquire a site without first having secured the necessary finance or development partner to cover the cost of acquisition. This includes consideration of the interest on the acquisition cost while the site is held pending development. The developer should ensure the financial arrangements are completed to coincide with the acquisition of the site. If no financial arrangements are in place then the developer must be satisfied that either the finance will be secured or that the site can be sold on the open market if no funding is forthcoming. The developer must ensure that all investigations have been carried out thoroughly so that any financier or partner has a full and complete picture of the site. Every area of doubt must be removed if at all possible. In recent years, a number of incentives have been established by financiers and local authorities to enhance sustainability through favourable financing mechanisms (see Chapter 4).

3.6.2 Initiation: from theory to practice

Having set up considerations for purchase and formed a strategy as to the type, location and nature of development intended, a developer then needs to search for and identify potential sites. This can be achieved in a number of ways. However, before the various methods of site finding are described, it is important to understand that theory and practice often differ. A developer may have a thoroughly researched site acquisition policy but putting that into practice depends on various factors, many beyond the developer's control. The ability to acquire a site is dependent on the availability of site at any particular time. Furthermore the availability of the site depends on the state of the market, planning policies and physical factors, any tax regimes affecting land holding and the motives of the particular landowner. The various types of landowners and their motives for owning the site were discussed in Chapter 2. The developer, landowner, agent and public sector are the main stakeholders involved in the initiation process. The landowner may take an active or passive role in the process, depending on whether or not they retain a financial stake. In the case of local authority land ownership, for civic protection reasons, the authority may wish to retain the underlying freehold and grant the developer a long lease (typically 125 years) in order that they can retain some control over the type of development that takes place and its management.

Typically more land is brought forward for development when site values are rising rapidly as landowners are tempted to realise their asset values. The availability of land will be influenced by the land use allocation of sites within a local planning authority's 'development plan' (Australia and UK) or 'land use plan' (US) and the perceived chances of obtaining planning permission. Although a site may be available on the market and is allocated within the development plan for the proposed use, it still might not be suitable for development due to physical factors. For example, a lack of infrastructure such as roads and services might make a development scheme not viable. Also the state of the ground, which might be contaminated or unstable, may prohibit profitable development. The various ways of initiating the site acquisition process are examined below.

3.6.3 Developer's initiatives

A developer may employ an in-house team, an agent or a planning consultant to find development sites based on the criteria set out in the site acquisition strategy. Many developers who specialise in certain types of development (e.g. offices) and the large house-builders, employ 'acquisition surveyors' or 'site buyers' whose role is to discover and acquire sites in accordance with the company's strategy. The developer needs a thorough knowledge of the target area and relevant planning policies. Finding sites in this way may incur considerable hard work with no results. Searches commonly used to be made by car or foot to identify potential sites, but increasingly a first step is desk top using digital satellite mapping where this is available. This done, the next step is to ascertain who owns the site and there are various ways to achieve this, including examining the planning register, interrogating the Land Registry (in the UK), asking local agents or literally knocking on the door.

For example, in England all local planning authorities publish online all planning applications and permissions in a particular planning authority's area so a site's full planning history can be obtained via a free desktop search. When a planning application is made, the owner of the site to which the application relates, if they can be traced, must receive a statutory notice from the applicant. Therefore, an examination of the register will normally reveal the owner of a piece of site, provided a planning application has been made. However, the details of the landowner may be out of date. Local authorities hold a register of publicly owned vacant and underused sites which is also available for inspection. The Land Registry, the statutory registry of all legal titles to freehold and leasehold sites in England and Wales, is open to the public via a computerised statutory register of around 15 million properties in England and Wales. Developers can apply to the Site Registry to establish the name and address of the owner of a property, if it is registered, for a fee. However, despite registration having been compulsory for all transactions for very many years, there are still many sites that are unregistered as they have simply not changed ownership.

A developer may employ a planning consultant to carry out a strategic study of a particular area and identify suitable sites which are likely to achieve an appropriate planning consent taking full account of the policy context and analysing them against their planning history and the client's requirements, including any sustainability considerations.

The report will normally include sites that have not been allocated but where there is a good chance of obtaining planning consent by negotiation or on appeal. The best time to undertake this study is when the development plan is in the draft or review stage; at this time there is an opportunity to influence the plan by presenting evidence at any public inquiry. Therefore, it is crucial that developers are fully cognizant of the plans in their area and take opportunities to influence as and when the possibility arises. Whilst local authorities will normally make every endeavour to include sustainability considerations within their plans, a responsible developer can also help to ensure that this is the case.

Alternatively a developer may retain an agent(s) to find sites in a particular area. The agent is briefed as to the requirements in terms of the nature and size of sites, and should have a good knowledge of the area and its planning policies. The developer should also cultivate contacts with a number of non-retained agents as it is important to develop good relationships. If the agent is retained directly by the developer, a fee will be payable if the latter is successful in acquiring a site identified by the agent and this is often negotiated based on the agent's subsequent involvement in the development, letting and funding of the development scheme. Through their knowledge of the area, they can often anticipate

whether a site may come onto the market and with occupied buildings they may know when leases will expire and thus when possible redevelopment opportunities might arise.

The early identification of sites gives the developer the opportunity to negotiate directly with the landowner and secure the site before it goes on the market. A developer's ability to acquire sites off the market depends both on their negotiating abilities and the state of the market.

Developers can also identify sites in less obvious ways, for example by acquiring a company as a means of securing a site or an entire portfolio of properties which fit in with their acquisition strategy. Where a company is bought, the developer retains ownership of property assets and either sells the operating part of the business or ceases trading. Developers also may acquire individual properties or entire portfolios through direct approaches to other developers or property investment companies.

Any developer seeking to establish a reputation for sustainability should exercise caution in purchasing trading companies for the purpose of closing the operation as this could be viewed as socially irresponsible.

3.6.4 Agents' introductions

Agents may introduce prospects to developers directly. The opportunity may be a site already on the market or a site that is likely to come on to the market shortly. If the introduction leads to a site acquisition, then the agent will obtain a fee from the developer, unless they are retained and instructed by the landowner. The agent will look at the experience of development companies and their financial status in making their decision before making an introduction as they want the best possibility that the sale will proceed.

A development company, depending on its size and financial status, may receive introductions on a daily basis when market conditions are favourable. Therefore, a large development company may need to set up a record system so that they know which agent made the introduction in order to avoid any issues about who gets the introduction fee.

When introducing a site, the agent should provide enough details to enable an initial decision to be made by the developer as to whether to pursue the opportunity or not. Ideally, the particulars should include a site plan, location plan, planning details, and details of the asking price and terms.

The introducing agent is responsible for assisting the developers throughout the acquisition. The agent should advise on the local property market and rental values to help the developer in the evaluation process. Information on existing and proposed schemes of a similar nature is also vital. The agent will often negotiate the site price on behalf of the developer. This method is a two-way process. The developer must establish and maintain a good relationship and regular contact with local and national agents. It is important to provide those agents with details of site requirements to avoid a situation where site opportunities are continually rejected and the agent gives up and goes to a rival developer. Agents should provide a good service to their developer clients as there may be chances that other instructions, such as lettings, will flow from the initial introduction. Other property professionals such as solicitors, planning consultants, architects and quantity surveyors may introduce opportunities to developers.

Where an agent is a member of a professional body, they will normally be bound by standards and best practice guidance (for example the RICS has commercial agency and brokerage standards to which agents are expected to adhere (RICS 2014)).

3.6.5 Landowner initiation

A landowner may initiate the development process by deciding to sell their site or enter into partnership with a developer. A source for identifying development sites for sale is advertisements, whether in the media, internet, on a site board or via direct mail. Most countries carry property publications (e.g. Estates Gazette), but increasingly the use of internet is important as a means of connecting with possible buyers or their agents.

The property press carries advertisements each week for sites and development opportunities. Developers may receive particulars of a site for sale from a landowner or agent. Where a site is advertised on the open market the developer will be competing for the site. The degree of competition depends on how the site is offered to the market. There are various methods, including informal tender, formal tender, competitions involving one or several short listings and, finally auctions. The method of disposal depends on market conditions and the motives of the landowner. The developer may be in competition with any number of others or there may be a selective list of bidders.

3.7 Methods of sale

There are several methods commonly in use to bring property to market. The choice will depend on the market conditions, the size and specification of the property and the likely buyer profile. Each is considered briefly below. At all times, the method used should be carefully discussed with the vendor as the method chosen can have a significant bearing on the terms finally achieved.

3.7.1 Informal tenders and invitations to offer

Informal tenders or invitations to offer involve inviting interested parties to submit their highest and best bids within a time scale. This usually involves all parties who have expressed an interest in the site and the invitation may include an indication of the minimum price acceptable. For example, it might state that offers of over £5,000,000 are invited and indicate what conditions attached to the bid may or may not be acceptable to the landowner. The important point from the developer's perspective is that the bid made is subject to any necessary conditions. After a bid has been accepted by the landowner, the developer has the ability to renegotiate the price if there is some justification to do so before contracts are exchanged, though there is always a risk that the landowner may not accept a revised price and may go to another party who made a bid.

Private treaty informal arrangements as set out above tend to be the most common and preferred choice as they allow bids to be made on the developer's own terms. However, the more conditions a developer attaches to a bid, the less likely it is that the bid will be acceptable, even if it is the highest received. The landowner generally accepts the highest bid unless the conditions are unacceptable or the developer's financial standing is questionable; however where the vendor is seeking to ensure that the site is developed to high sustainability standards, they do have the ability to choose a bidder who they consider will reflect their standards. However to impose this is difficult unless adjoining land is retained and a covenant imposed or the disposal is by way of long lease rather than by freehold.

After receiving the bids, the landowner may negotiate with several of the parties before making a decision in an attempt to vary conditions or the level of the bids. It is within

this process that a developer can show their sustainability characteristics most clearly and thereby possibly seek an advantage over other potential buyers.

3.7.2 Formal tender

A formal tender binds both parties to the terms and conditions set out in the tender documentation, subject only to contract. It involves an invitation to interested parties to submit their highest and best bids by a deadline. The invitation sets out the conditions applicable. The document will usually state that the landowner is not bound to accept the highest bid. This method may or may not involve a selection of the interested parties. Generally developers do not prefer formal tenders as it reduces flexibility and increases risk. It also requires them to bid to their highest point, for risk of losing the site. The only time when developers are normally prepared to enter a tender is a situation in which all the possible unknowns have been eliminated, e.g. where a detailed acceptable planning consent was in place, a full ground and site survey had taken place and the site was being sold with full vacant possession. Tenders are used in strong market conditions or where the level of value is very hard to determine. In this method, it is the vendor who can drive sustainability by placing requirements on the purchaser.

3.7.3 Competitions

Competitions are used by landowners when financial considerations are not the only criteria for disposal of the site. For example, competitions are used by local authorities and other public bodies seeking a developer to implement a major scheme. They are used more informally by other landowners seeking development partners, for example, a landowner may want to obtain planning permission before disposing of the site and, therefore, the developer may be selected on the basis of planning expertise and track record. Alternatively, the landowner may not wish to dispose of the land and will seek a developer to project manage the scheme for a profit share.

As most competitions involve local authorities and other public bodies, this discussion is confined to public authority competitions. Local authorities and public bodies invite competitive bids on a tender basis, whether formal or informal, and the bids will normally be judged on a financial and/or a design basis. As a first step, the authority will usually, advertise their intention to set up a competition and invite expressions of interest. Alternatively, the authority may choose the developers to enter the competition. If the former method is adopted, developers are usually invited to express their interest. They will be asked to provide details of relevant experience and track record, financial status (usually a copy of their company report and accounts), the professional team if appointed and any other relevant information. Relevant information could be that the developer may own an adjoining site to the competition site or that the developer has been involved with the subject site for some considerable time.

The public authority will assess the expressions of interest and compile a shortlist to enter the competition. This may or may not be the final selection process, and bids may be invited from those shortlisted in order to compile a final shortlist. The number of steps in the selection process will depend largely on the numbers of interested parties and the complexity of the competition. If the authority is asking developers to submit both financial and design bids, and the design submission requested needs to be fairly detailed, then the number of developers shortlisted for the final process should be no more than three to five,

due to the costs involved by the bidder. Competitions for public bodies and local authorities are likely to have a greater emphasis on sustainability considerations in the development proposals and are usually adopted when the *quality* and social and *economic regenerative impacts* of the scheme are deemed critical to the owning authority.

It is important that a development brief is prepared to provide guidelines for the competition, including a statement outlining the basis of the competition and details related to the criteria by which the developer will be selected. The development brief will set out the design requirements of the public authority with regard to such matters as total floor space, pedestrian and vehicular access, car parking provision, landscaping and any facilities which the authority considers desirable in planning terms. The public authority may include a sketch layout or outline sketch drawings illustrating the development required, but in the majority of cases it is the developer's responsibility to bring forward design solutions, so the developer will normally be working with a design team. The brief should state how flexible the authority will be in assessing whether the bid meets its requirements. The developer needs to find out whether they will be penalised for not strictly adhering to the brief. Generally developers who follow the guidelines in the brief will be looked upon favourably, unless a developer proposes a better solution from that outlined in the brief. It may be that, through their ability and expertise, a developer may produce a higher financial bid by proposing a higher density scheme than that envisaged in the brief whilst still producing a sustainable and sensitive design. Every competition is different and it pays the developer to study the development brief in depth and look at all possible angles that can be used to advantage. Competitions are the least attractive method of acquiring development sites as the process demands time and expense in the preparation of drawings and financial bids, which are abortive if the developer loses; however they bring prestige and publicity which can be very positive.

3.7.4 Auctions

The trigger to choose a sale by auction is often that the site is unusual and difficult to value, therefore it is a case of what potential buyers see in the proposition. For example, a rail company may use auctions to dispose of disused railway embankments and sites with no, or limited, access. Other types of assets that are auctioned are secondary or short-life investments and properties in a dilapidated condition. Developers regularly look through auction catalogues for opportunities. At auction, the highest bid secures the site, providing that the reserve price has been exceeded. The landowner instructs the auctioneer of the reserve price which is the lowest price acceptable. If the reserve price is not reached through the bidding then the lot is withdrawn or negotiations are made with the highest bidder in an attempt to meet the reserve price. The auction sets out the standard conditions of sale and special conditions of sale relating to each lot. Once a bid is accepted, the successful bidder exchanges contracts at that point by handing over the deposit and details of their solicitor. If a developer acquires a site at auction a thorough evaluation and all other preparatory work should have been carried out beforehand. Another option is to acquire the lot prior to auction by direct negotiation with the landowner.

When market conditions are favourable, competitions and tenders are often the vendors' preferred approach to sales, though developers prefer to obtain a site off the market, thereby avoiding competition. If a developer enters a number of competitions and tender situations, they could all be lost, or all or some could be won. There is no certainty and the developer may become very frustrated, wasting much time and money. Success is based on the

developer's ability to judge the right opportunities to pursue and the right level at which to submit a financial bid. However, in many instances it may be a case of luck and being in the right place at the right time. The site acquisition process is very competitive and it must be realised that even the best thought out acquisition strategy may not be achieved in the way, and in the timescale, first envisaged.

3.8 Conclusion

This chapter has traced the steps that have to be undertaken to establish feasibility of a site, excluding considerations of planning or financial appraisal. Prior to that, it has linked the issues of climate change and environmental and social concerns to the choice, location and characteristics of the site. As a result, it is argued that site feasibility, selection and acquisition have a significant impact on sustainability and viability of any development.

A commitment to sustainability begins with site location – avoiding inappropriate sites, reducing the environmental impact of building on a site, channelling development to areas of existing infrastructure and locating near to alternative forms of transportation. Site issues should be considered early in the development process and should be investigated prior to purchase as they will impact on price (see Chapter 4). Site selection involves a series of data collection and assessment tasks that become more specific over time as the development proposal moves from the realms of uncertainty to that of certainty.

The steps that developers have to take in order to reduce their exposure to risk are also outlined. Considerations of sustainability should be embedded throughout the process and this is highlighted throughout the chapter. This chapter examined the site feasibility, initiation and the acquisition stages of the development process. Furthermore, attributes which have a negative impact on sustainability are highlighted with suggestions for minimisation and mitigation of developer risk.

The site evaluation informs the feasibility study which comprises the business proposal for the development. Here sustainability issues related to the site should be identified and the strategy and proposals for site sustainability set out, along with building sustainability. It establishes the budget for the site acquisition and also the buildings and profit. The study identifies the requirements of the development, defines viable alternatives, analyses alternatives and delivery methods and recommends the preferred solution. The feasibility study is reviewed at times depending on the project circumstances, timelines and external factors such as general economic trends in order to confirm the preferred solution is still the optimum.

Finally, it is often not acknowledged that the way in which a property or site is brought to market, can be instrumental in determining the extent to which sustainability features are included within the final scheme. By choosing a method of sale which allows either or both parties to insist on sustainable solutions being part of the scheme moving forward, both landowner and developer can move the process forward.

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