The Performance and Reperformance of Sustainability

An actor-network theory informed analysis tracing the performance of sustainability during the implementation of a new low carbon settlement.

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Abstract

Current academic debates on sustainability represent a shift in understanding from previous discussions of standardised, often ambiguous definitions to more recent questions of interpretation. They highlight how understanding notions of sustainability should be centred on the details underpinning interpretations, rather than seeking to produce standardised definitions. This work, therefore, focuses on the details underpinning these interpretations.

The concept of sustainability needs to be contested and deliberated in order for it to 'work' in any given context, and whilst this need is recognised, few have explored how such interpretations work in practice nor considered the influence this has had on planning practice. As Owens (2003) stresses, there is a need to explore further if sustainability practice is providing a forum for learning or if it has become a static and accepted notion.

This thesis presents a critical analysis of the planning processes at play during the development of a new 'sustainable' settlement. The research questions the different interpretations and aspirations of the key stakeholders involved in the planning and development of the settlement. By presenting a lifecycle analysis of the interpretation, performance and reperformance of sustainability throughout the planning and development of a new settlement, it is possible to explore how the performance of 'sustainability' affects both planning and development practices.

The work adopts a case study-based methodology, examining in detail the new settlement of Waverley. The analysis uses an actor-network informed conceptual framework to explore how and when interpretations of sustainability are contested and applied during a complex planning application process. The research concludes that the outcomes of large development projects are significantly influenced by the nature and timing of debates about 'sustainability', suggesting that we can no longer aspire to sustained economic growth if we wish to also achieve a 'true' sustainable urban form.

1. Introduction and Rationale

The research area

Sustainability for many today is simply a word that is frequently encountered, flooding political discourse, public policy and popular culture. Businesses publicise how they are achieving it, politicians propound how we can be better at it, the mass media critically analyse where we are failing and academics debate what it all actually means and there lies the crux: what do sustainability and sustainable development actually mean?

Whilst practising as a private planning consultant, publically arguing for sustainable developments that, in reality, were founded on furthering private, commercial and economic gain, I began to question the true understanding and applicability of sustainability across the development sector. As individuals we live in a consumerism-fuelled society, with governments aspiring to exponential economic growth, and yet, magically, we also aim to conduct our lives within spaces that represent spheres of sustainable development. Planning is, then, charged with balancing the competing constituent elements of a sustained economy, the environment and society without protesting too loudly or questioning whether we should change our accepted behaviours or aspirations for bigger, better and faster. Questions on this theme included the following: Do we actually know what sustainability means? Do we know what implementing sustainability involves? Do we think these actually represent sustainable developments or are sustainability assessments purely 'a needs must' bureaucratic exercise? Such questions began to motivate my desire to pursue further the research presented within this thesis.

This research, therefore, provides a detailed exploration of sustainability to gain an appreciation of the varying definitions and interpretations, questioning how the concept of sustainability informs planning practice and how planning practice informs sustainability.

The overarching aim of the research is to explore the interpretation and performance of sustainability within the planning context. Sustainability and sustainable development are terms that are subconsciously filling the public and private arenas of thought and practice. Planning and planning policy are no exception to this, and observations of such provided me with the motivation to explore further how the planning profession understands what constitutes sustainable development.

The research focus is even more pertinent given the UK's planning context today following revisions to planning policy and the publication of the National Planning Policy Framework (the framework). The framework emphasises that the overarching purpose of planning is '*to help achieve sustainable development*' (NPPF 2012, p.i). The aim of this publication was to reduce over 1,000 pages of detailed and complex policy to a more concise and accessible 50 pages so as to '*encourage and not act as an impediment to sustainable (economic) growth*' (NPPF 2012, p.6).

> *At the heart of the National Planning Policy Framework is a presumption in favour of sustainable development, which should be seen as a golden thread running through both plan-making and decision-taking.*
>
> NPPF 2012, p.4

The research explored in this thesis began before such policy revisions; however, sustainability and sustainable development were at the time this research began and remain exceptionally relevant concepts.

The work is set within a context that is conscious of current government targets, the ever-increasing threats posed by global warming and existing academic thought that stresses the increasing need to conduct empirical research into the influence interpretative practice has on planning practice (Owens, 2002).

The study is situated within the well-explored and documented academic and political appreciation of sustainability, providing an outline of the political climate of global warming and acknowledging the basic facts and events to allow the research to be fully grounded in its academic and political context.

Many are aware of climate change and global warming due to publicity in the mass media and well-documented and respected scientific academic debates. While many may argue over the rate at which such a change is occurring, this is not the place to debate the degrees or levels of perceived climatic change. What is important is to recognise the political context and its subsequent consequences.

Climate change and global warming are not new theories, but notions that have been accompanied by changes in academic thought, with policy responding accordingly. The current political stance includes a commitment to reduce carbon emissions by 80% (in comparison to 1990 standards) by 2050, to optimise energy use from renewable sources, to invest in energy efficient technology for buildings, to establish emission performance standards and to encourage home energy efficiency (Conservative Party manifesto, 2015).

Such commitments and political policies have inevitable implications for planning practice and the implementation of sustainable development. As planning is charged with implementing the concept of sustainable development, planners are faced with interpreting and assessing sustainability. Given the current topical nature of planning for low carbon futures and the profession's commitment to aiding the implementation of sustainable development, the research sits well within the political climate.

Aims of the research

The study's main aim is to explore the processes involved in the performance and reperformance of sustainability in planning practice. The work aims to examine the vague and widely debated notion of sustainability to explore how different professional groups use the different interpretations and knowledge to develop concrete policies, proposals and practices for new low carbon developments.

Critically the terms performance and performativity relate to the "*rationality of practices*" and the understanding highlighted by Law and Singleton (2014) during their exploration practices, performance and difference. Within which they considered how unlikely it is that we will ever look at a single thing, chosing insread to

acknowledge how things are seen differently by different actants, creating lots of practices with multiple realities (Law and Singleton 2014).

Considering the performance of sustainability using an actor-network theory informed approach allows for further exploration of '*the material semiotics of ANT and reframes how we think about the world and about policy because **it helps us to see that realities are multiple, and multiply realized, in policy and everywhere else***. *It acknowledges this, then, it tries to find ways of working on and in this multiplicity. And finally, **it asks how those realities might overlap with one another in ways that are not too destructive**, selfish or colonizing in practice*'. (Law and Singleton, 2014 p.389)

In essence exploring the multiple realities of sustainability and the appreciation of how it is recreated, enacted and evolves during the development of Waverley. This thesis therefore aims to expose the reality of sustainability, by exploring how it is performed via multiple performances and therefore arguably multiple realities.

Research objectives

1. To explore the performance of sustainability during the planning for and implementation of Waverley
2. To explore the implementation of the sustainability vision at Waverley and the resultant final settlement form.

Research questions

Each research objective also has a series of supporting research questions as outlined below.

Objective one – interpretation and application

To explore the **performance** of sustainability

1. How does sustainability perform during the planning process associated with the implementation of Waverley?

2. How do actant associations and assemblages influence the performance of sustainability?

Objective two – progression, amendments and impacts

*To explore the **implementation** of the sustainability vision at Waverley and the resultant final settlement form.*

1.   How does the (re)performance of actant assemblages and resulting associations:
   a.   change the final settlement?
   b.   change the nature and use of sustainability?
   c.   influence the planning and development process?

Essentially the research objectives and questions are designed to explore the performance of sustainability in reality, to understand how the final built form at Waverley matches the vision aspired to through-out the developmemt process.

The academic context

The study sits well within the existing academic context of notions of sustainability, planning for new low carbon settlements and defining a planner's role. The exploration of academic work involves exploring discussions of environmentalism, ecologism, deep green political thought (Dobson, 1995), environmental discourse (Hajer, 1997), sustainable planning practice (Owens, 2002), planning for new settlements (Breheny, 1993), compact cities (Frey, 1999), sustainable urban forms (Frey, 1999), the planner's role (Campbell, 1996), planning and justice (Campbell, 2009 and Fainstein, 2009), just sustainability (Agyemen, 2004) and collaborative planning (Healey 1997). It is only through exploring the variety and complexity of such academic work that it is possible to cite the study in its appropriate and justified context.

Academic notions of sustainability, therefore, shift thinking from standardised often-ambiguous definitions to questions of interpretation and performance. They highlight

how understanding notions of sustainability should be centred on the details underpinning interpretations, rather than standardised definitions.

The academic review of existing thought reveals the complexities inherent within the practice of planning and the interpretation of sustainability, exploring how there is no consensus across academia of the optimum sustainable urban form or the correct ethical implementation of sustainability via planning practice. Whilst acknowledging that sustainability needs to remain interpretative and contextually dependent, it is important that we trace the processes at play to appreciate how it is interpreted and subsequently performs within actual planning practice.

The theoretical approach of this research

In order to explore how key stakeholders interpret notions of sustainability whilst critically analysing the planning implications using an actor-network theory informed conceptual framework, the study uses a qualitative case study-based methodological framework. The methodological framework includes extensive archival documentary analysis and supplementary semi-structured interviews to explore the chosen case study.

The conceptual framework uses Callon's sociology of translation, derived from his *Some Elements of a Sociology of Translation* (1986), as the theoretical foundation for analysis of the chosen case study. It is, therefore, possible using Callon's four stages of translation to trace the processes involved in the planning and development of Rotherham's new sustainable settlement and the evolution of the overall actor-network of Waverley (the thesis' case study area).

Actor-network theory seeks to undermine the assumed divide between the human and non-human, to treat them symmetrically in order to understand the complex relations that make up our world. While for many this may prove too much of a leap of faith and departure from the expected tools and traditions underpinning social science theory, it is important to recognise that such limits are also the theory's true value, forcing us to question and examine the often overlooked, assumed and taken-for-granted elements that construct our world (Murdoch, 1996). Sustainable

developments do exist, but what does sustainability and to be sustainable really mean? What lies behind the 'black-box' assumption and what constitutes the achievement?

Using an actor-network informed analysis allows this thesis not merely to describe the entities involved in the networks of achieving a new sustainable settlement at Waverley, but to fully question the networks that formed and survived to create the stability that then created the vision of Waverley that is evident today.

Structure of the thesis

The thesis considers the relevance of existing academic debate, highlighting the gap in knowledge that it aims to fill. A full exploration of the conceptual and methodological framework then follows, justifying its applicability to the research presented here. The case study is then explored, evolving into the analysis, the wider discussion and, finally, the research conclusions. This thesis will, therefore, begin by considering existing academic thought.

2. Literature Review

Introduction

This chapter will explore the existing academic literature that is relevant to the exploration of sustainability and its application within planning practice. It will consider the relevance of current academic thought, appreciating the identified gaps in knowledge and their significance for this thesis. From considering the existing literature, it will be possible to understand the academic appreciation of sustainability, the debatable characteristics available for achieving the optimum sustainable urban form and the challenges planners face during the act of interpreting and applying the concept of sustainability.

Structure of the chapter

The literature review will begin by looking at the origins of sustainability, tracing the concept's emergence from the World Conservation Strategy in 1987 to the Rio Earth Summit in 1992. It will then consider the academic appreciation of sustainability, exploring ecological modernisation, social constructivism, green political thought, ecologism and environmentalism. Following the understanding of sustainability academically, the chapter will consider the concept's application within planning practice by appreciating literature-addressing planning for new settlements and the application of an exemplar sustainable urban form. Finally, the chapter will consider the role of the professional planner, providing an overview of the challenges planners face during the interpretation and application of sustainability during attempts to deliver sustainable developments.

Origins of the concept of sustainability

Sustainability for many today is simply a word that is frequently encountered as it floods political discourse and popular culture. From daily news articles to political manifestos, building design statements, transport plans, economic forecasts and energy systems, the term is everywhere. Businesses publicise how they are doing it, politicians push how we can be better at it, the mass media critically analyses where we are failing, and academics debate what it actually means.

While today the term spans environmental, economic and social arenas, it is still a relatively young concept, having developed only fully over the last 50 years. Notions of environmental sustainability began to form in Britain in the 1960s as individuals became increasingly environmentally aware. A continued interest in such issues socially, politically and academically throughout the nineteen seventies raised further the attention given to sustainability as people started to question fuel security and resource depletion. Firmly, defined political notions of sustainability can be traced to the United Nations (UN) World Commission on Environment & Development (WCED) and its publishing of the Brundtland Report (1987). Also known as 'Our Common Future', the report provided the foundations for the UN's 1992 WCED Rio Earth Summit and key statements on sustainable development. During this time, in the early 1990s, the notion of sustainability gained worldwide attention when politicians, professionals and academics began to consider its pivotal meaning. It is from here that the most frequently quoted definition of sustainability and sustainable development comes, with a popular statement citing sustainable development as:

> *development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*
>
> Brundtland, 1987, p.43

Further detailed consideration will be given to questioning the suitability and ambiguity of this and other standardised definitions later. First, however, a further discussion of the notion's origin is necessary.

The World Conservation Strategy

The Bruntland Report (1987), whilst marking the concepts '*coming of age*' (Kirkby et al., 1995), was not the first time questions of sustainability had received worldwide attention. Earlier, the Club of Rome – Limits to Growth (1972) had begun outlining areas for concern. Although the Bruntland Report (1987) is commonly regarded as marking the first time sustainability notions were fully debated, strategies for sustainable development were previously considered and included in the International Union for Conservation of Nature and the Natural Resource (IUCN) World Conservation Strategy (1980). Here sustainable development was considered in terms of addressing resource depletion and acknowledging the limits of the earth's natural carrying capacity. Strong emphasis was given to appreciating the needs of conservation with an explicit environmental focus, recognising the detrimental yet ever increasing examples of soil erosion, deforestation, pollution, desertification and the loss of croplands and ecosystems. This early strategy expressed the need for acknowledging global responsibility and embracing a framework for conservation that managed living resources to maintain ecological processes and the preservation of genetic diversity. Although this early political notion of sustainability focused on environmental preservation, it also outlined the necessary qualities for achieving future sustainable development. The strategy promoted developing a world where people would be willing to address the inequalities between rich and poor, establish a more dynamic yet stable economy whilst and stimulating economic growth in the poorest of countries and reduce poverty. Such early political thought focused on addressing environmental capital inequality across the existing global stage whilst suggesting the need for more conscious population policies balancing the number of people against the resources available and constraining the affluent population's resource demands.

The Brundtland Report – 'Our Common Future'

Fully published in 1987, 'Our Common Future' highlights that sustainable development should prioritise the needs of the world's poor. It became famous for stressing that '*limitations imposed by the state of technology and social organisations*' were the key to enabling the environment to meet the needs of the present and future (Brundtland, 1987). However, unlike the World Conservation

Strategy, 'Our Common Future', which predates it, also acknowledged the social aspects of sustainability. It considered how individual expectations, energy and material consumption, levels of need and standards of living could be interpreted and affect the environment's capacity to provide. The report discussed in detail the possibilities of changing access to resources, the distribution of costs and benefits. It questioned the level of need against levels of consumption and considered negotiating expectations or standards of living and having 'reasonable' aspirations. Taking almost four years before being published, the report provided the foundations for future global environmental thought.

The Rio Earth Summit

The UN's World Commission on Environment & Development (WCED) met following the Brundtland Report (1987) in Rio de Janeiro, Brazil (1992). With increasing concern surrounding fuel security and environmental degradation, high numbers of government officials, non-government organisations (NGOs) and media representatives attended, with in excess of 30,000 individuals descending upon the global gathering. The meeting had three main purposes to agree on: the Earth Charter (or the Rio Declaration), Agenda 21 and securing sustained funding for the developing nations. It aimed to address issues of continued future development that was mindful of protecting the environment whilst also creating a global action plan for sustainable development. The summit had mixed success. Whilst agreeing on six conventions addressing climate change and biological diversity, it was criticised for failing to address adequately issues of sustained poverty and social equity. However, the summit did agree on the Rio Declaration and Agenda 21, both of which need to be considered further in relation to the notions of sustainability.

The Rio Declaration

Originally envisaged as the Earth Charter and later condensed to form the Rio Declaration, this set of 27 non-legally binding principles aimed to shape the world's governments' responsibilities to development with continued environmental protection. It stressed a common but differentiated approach linking long-term social and economic progress to consideration of environmental protection (Rio Declaration, 1992).

Agenda 21

Considered by many as the most complete and influential document of the summit, Agenda 21 has been used as the foundation for a basic understanding of sustainable development and subsequent strategies. At 40 chapters long, the agenda attempts to offer guidance in balancing the conflicting demands of production, consumption, development and protecting the natural biosphere. Agenda 21 marks the full acknowledgement of social and economic impacts on environmental futures. It signifies a turn when political notions of sustainability developed from the World Conservation Strategy's emphasis on resource depletion to recognising the impact of economic and social actions. Further detailed analysis of the definitions, interpretations and objectives outlined for sustainable development throughout Agenda 21 will be conducted before the fieldwork is presented. With Agenda 21 symbolising the grounding of political notions of sustainable development and sustainability, it is important to consider more generic interpretations before exploring the wider academic debates.

The academic appreciation of sustainability

With notions of sustainability still gaining global, political and media attention, it is important to question what the word means. Sustainability for many may simply be a term that is observed in the media, and in policy and political discourse. These individuals when pushed to answer what the word means may refer to notions of sustaining equilibriums, while others may cite environmental understandings. However, those exposed to it on an educational or professional basis will almost certainly divide the term into three constituent parts: economic, social and environmental. This simply means that those who are regularly exposed to the word have learned to acknowledge the commonly debated economic, social and environmental aspects.

Figure 1: The interlocking circles of sustainability
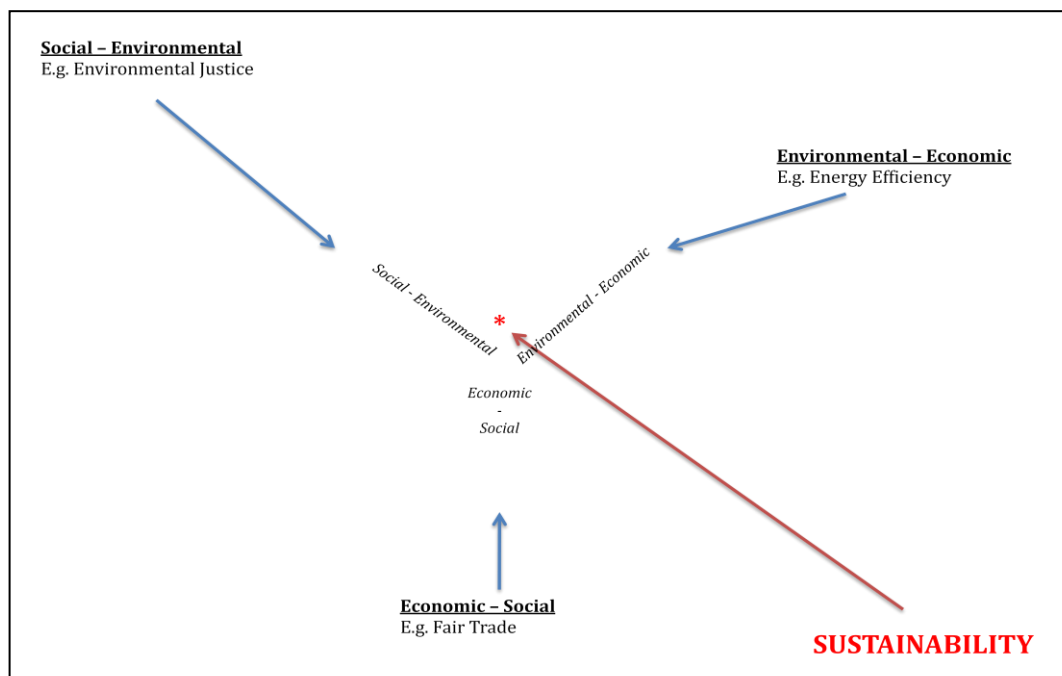
Source: Oldfield (2016)

The above illustrates how some place sustainability at the centre of combined social, environmental and economic thought. Such an illustration emphasises the balancing necessary between the conflicting needs and demands at play during displays and examples of sustainability. They also exemplify how and why sustainability can mean

and be interpreted differently by so many people. With shifts in understanding comes a differentiated emphasis on the three constituent parts.

While original definitions may have omitted the social element, the debate now lies in balancing economic, environmental and social needs. While such a debate is apparent in everyday political, economic, social, environmental and developmental discourse, it also exists heavily across the academic arena. Before exploring why levels of debate are particular relevant to this research and the practice of planning, it is necessary to explore the existing academic debate further.

The academic focus between the three elements varies according to the discipline as the sustainability notion challenges modern liberal neutrality and postmodern relativism. By dividing interpretations of sustainability into three constituent parts, it is possible to illustrate the complexity of the issues it covers.

Economic sustainability relates to the notion of securing future economic growth and development, often for private gain. Academic work in this area is based on an anthropocentric, human-centred framework, often assessing assets in a cost-benefit analysis. Under notions of economic-centred sustainability, parts of the environment are viewed as capital or critical capital, with monetary values assigned against a hierarchy of capital value and gain. While it appears to observe certain 'bounds' of nature, there is no discussion on where the bounds lie and why and how such limits are selected and enforced.

Environmental sustainability is associated with public protection and notions of a spiritual environment valued for its aesthetic and intrinsic qualities. It is based on a bio-centric framework, primarily valuing the non-human world with studies often focusing on assessing carrying capacity. Environmentally-centred notions focus on definitions that go beyond the nature that we can see, including culture. As Lancan (1996, as cited in Hajer, 1997, p.15) questions epistemologically: *'how can we really know what nature is?'* Environmental sustainability covers various aspects of academic thought, including notions of deep ecology, ecophilosphy, ecologism, the Gaia hypothesis, environmentalism and ecological modernisation.

Social sustainability incorporates theories of justice and judgement and views the environment as being of instrumental value to human material welfare (Owens 2001). It considers questions of morality and includes a deontological framework – against which actions can be considered as right or wrong. Light green political thought, environmentalism and ecologism all consider social theory and process in their notions of sustainability.

Such academic notions of sustainability, therefore, shift thought from standardised, often-ambiguous definitions to questions of interpretation. They highlight how understanding notions of sustainability should be centred on the details underpinning interpretations, rather than standardised definitions, thus, highlighting the need to question how our understanding of sustainability is open to interpretation and influenced by our exposure to the world around us.

Despite standardised definitions aspiring to sustainable futures, sustainable development truly relies on invested parties understanding and aspiring to a shared consensus. This research, therefore, questions the different interpretations of sustainability and the aspirations of the key stakeholders involved in the planning process and implementation of a new settlement. It attempts to understand the processes at play during examples of interpretation to observe and document how interpretations of sustainability are influencing planning practice and how planning practice influences sustainability.

Notions of sustainability have been actively debated in academia for decades. Many question the ambiguous clauses within generic definitions and understanding. As Rawls (1993) observes, while the concept of sustainability and sustainable development may have been accepted, its meaning and principles remain heavily disputed. Today, it remains a powerful idea that, after dominating policy discourse, it has become '*ubiquitous*' (Owens, 2002, p.4). With questions of sustainability dominating discourse and policy, it has also become significantly concentrated across many areas of academia. While formulating the concept may have been easy, the challenge lies in operationalising and implementing sustainable development initiatives (Campbell 2000). Doing justice to this is an immense task and something that this research seeks to review within planning practice.

Identifying gaps in existing academic thinking

This research takes the disputed meanings of sustainability and questions the effects of its ubiquitous and contested nature on planning practice. It explores the existing gaps in knowledge highlighted by Owens (2002), who questioned if planning for sustainability offered anything new or if its practice had informed the sustainability debate.

Examples of how planning practice has informed the sustainability debate will be explored by questioning how the performance of sustainability influences the development process and the resulting final settlement.

Owens' (2002) work provides the grounding for the research, as it seeks to expand on her previous focus on concepts of sustainable development in transport and mineral planning. The thesis' focus will be on how the concept's interpretation differs through the process of planning for a new low-carbon development. The research aligns well with Owens' work, which suggests that land use planning has been one of the most important **'***arenas in which conceptions of sustainable development are contested*' (Owens, 2002, p.28). The work also highlights the potential for exploring further the problems encountered when '*trying to turn broad principles into concrete policies, procedures and decisions*' (Owens, 2002, p.28).

While public policy may have pushed concrete definitions of sustainable development, academics emphasise the need to turn broad ideas into practice (Skolinovski, 1995). Notions that '*it is better to muddle through to salvation than go crisply to damnation*' (Skolinovski, 1995, in Owens, 2002) encapsulate the importance of transferring interpretations of sustainability into applied practice. Owens' work, by aligning sustainability to concepts of justice and liberty over concrete scientific theories, has pushed the academic appreciation and foundations of this research, highlighting how the acts of interpretation '*expose assumptions, beliefs and contradictions and thus become a basis for debate, reflection and further reinforcement of principles and policy*' (Owens, 2002, p.29).

This, therefore, confirms further that sustainability needs to be contested and deliberated in order for it to work in any given context. Whilst the need to interpret and deliberate is recognised, few have explored how such interpretation works in practice, and the effects this has on planning practice.

There is a defined need to explore further, as Owens & Cowell (2002) suggest, whether sustainability in practice is either:

a) interpreted via a range of techniques and procedures that provides a forum for learning and the exchange of new ideas, with the potential to mobilise radical conceptions of sustainable development
   or
b) viewed as a static and accepted notion because it is constrained by existing structures of power, promoting 'safe' conceptions of sustainability.

Owens and Cowell's work continues to explicitly cite and support the need for work, such as the research in this thesis, to explore further '*which of these dominates…must be a question for empirical enquiry*' (Owens, 2002, p.78). However, it is also important to recognise that such work is not be an '*exercise in consensus*' (Owens, 2002, p.29) as, although elements of sustainability and sustainable development are mutually interdependent, they are not harmonious (Dobson, 1998). We are not looking for, and there should never be, an algorithm for sustainability, as its application must always leave substantial scope for judgement (O'Neill, 1996). Judgement is the very element the research presented in this thesis explores in tracing the moments of interpretation and performance of sustainability.

Exploring the appreciation of sustainability

However, ideas concerning the act of interpretation in practice are not sufficient for providing the foundation for this research. The work of Hajer (1997) and his interpretation of ecological modernisation also provide a useful academic grounding, illustrating the complexities associated with interpreting environmental elements, just one of the three constituent parts of sustainability.

Ecological modernisation and social constructivism

Ecological modernisation became a new way of conceiving environmental problems. Hajer stressed that we should not see environmental issues as predefined, but that they should embrace the complex and continuous struggle over their very definition and meaning. Recognising the continuing struggle over meaning is something the research seeks to explore further, substituting Hajer's environmental discourse for notions of sustainability. The idea can be illustrated further using Hajer's example of nature and his assertion that it is wrong to assume that everything that is natural is also environmental, for we all have different perceptions of nature and, therefore, the environment. It is possible to stretch this idea further. As Hajer suggests, as we all have different perceptions of nature, surely we could all also have different interpretations of environmental sustainability? Through exploring how different interpretations influence planning practice, it will be possible to document, as Hajer did, the processes involved through the creation and reproduction of a sustainability discourse.

Hajer's ecological modernisation stems from a preoccupation with climate change as a resistance to the Club of Rome's report, *Limits to Growth* (1972), and its focus on targets, regulation, pollutions permits and end-of-pipe technology. Hajer pushed for further recognition of the character of environmental problems, combining monetary values with natural science and not simply reacting and curing but anticipating and preventing.

Hajer's understanding of social constructivism stresses the need to take apart the discursive practices guiding perceptions of reality in order to understand the foundational dynamics of sustainability practice. Hajer relies on the appreciation and recognition of the social structures and strategies through which regulatory achievements are made. In acknowledging this, the thesis, therefore, considers further what lies behind the generic image involved in the process of developing new settlements, questioning, as social constructivism questions, the different actors involved, providing different perceptions (interpretations) of what the problem really is.

While the work of Owens (2002), Hajer (1997) and Dobson (1995) provides the founding academic thoughts for this research, a vast amount of additional academic literature exists debating the sustainability concept. Such thinking, as discussed below, also contributes to the wider sustainability debate, supporting criticisms of the ambiguity of generic, standardised definitions.

Environmental capital is an example of one metaphor or interpretation, used predominantly by environmental economists, who see '*the environment as a stock of capital that should be maintained for future generations to inherit no less opportunity than presently enjoyed*' (Loche, 1988, as cited in Owens, 2002, p.30). Such definitions are debated further as it is possible to question the '*bounds of the natural environment to support the economy*' (Turner, 1990, as cited in Owens, 2002, p.30). Who defines 'bounds'? Are they unconstrained or are they protected in all but the most exceptional circumstances (Owens, 1994)? Additional scepticism also exists about who designates 'critical' environmental capital because of the question of how we determine what to protect to meet the basic needs of future generations. This utilitarian idea of determining an environmental asset against its usefulness contrasts with alternative deontological frameworks which promote reasoning and a moral obligation to protect the environment (O'Neill 1997). Deontological frameworks also sit alongside the biocentric environmental perspective that supports the position that the environment's existence is not merely for the consumption of man, as man is only one of many species it supports, and to adversely affect it would adversely affect us. Biocentric views are also polarised by anthropocentric environmental frameworks that view man as central and the most significant entity in the universe.

Green political thought

In addition to the work of Owens (2002) and Hajer (1997), Dobson's (1995) green political thought goes beyond set frameworks and capital definitions of sustainability to explore deeper social elements. With its more in-depth social exploration, Dobson's work fits with this study better. It goes beyond simply exploring calculable definitions of sustainability. Dobson explores how elements of ecologism compare with environmentalism, recognising that environmentalism cannot be considered a

'softer' version of ecologism as it does not provide an analytical description of society.

Ecologism versus environmentalism

Ecologism is a political ideology concerned with sustaining presupposed radical changes in our relationship with the non-human world and our modes of political and social life. It considers a more managed approach through fundamental changes to our present values, patterns of production and consumption. As an ideology, it differs from environmentalism as it provides an analytical description of society and a map of the political world, prescribing particular forms of society and suggested programmes for political action. Environmentalism supports a more managed approach, one concerned with intervention and not fundamentally challenging society's production methods, consumption levels or generic values. Whilst recognising the idealised aspects of any supporting ideology, there are elements of ecologism that fit well with the line of enquiry and direction this study takes. Aspects of ecologism that lend themselves well to this research include the belief that our social, political and economic problems are substantially caused by our intellectual relationship with the world and the practices that stem from it (Dobson 1995), suggesting again the complexities inherent in any interpretation of sustainability. Notions of less growth, less pollution and less waste are arguably idealised in today's consumerist, growth-driven society. However, it is such messages, originating in *The Gia Hypothesis* (1972), that support Dobson's thoughts addressing the need to modify our growth-orientated practices for our own interest: '*to protect the earth to protect ourselves*' (Lovelock, 1986, as cited in Dobson, 1995, p.44). Such thinking also supports how the green movement will always have anthropocentric tendencies due to humanity conceptualising the intrinsic value and objective value. The thesis, therefore, acknowledges humanity's vested interests and eco-philosophy's failure to address the issues of social practice, disqualifying them from ever formulating a satisfactory solution to the very problems they have given rise to (Dobson, 1995). It is important to recognise Dobson's understanding of ecologism and its inclusion of environmental thought as a part of social theory. Further support should also be given to more making profound changes in social thought and practice, to changing human values and ideas of morality so as to accommodate social practices that acknowledge the limits that surround them (Dobson 1995). Sustainability is framed here by an

appreciation and acknowledgment of the environment's limited capacity and resources. Whilst being mindful of the powerful position currently held by politically striving for sustained economic growth and consumerist attitudes measuring success against material possessions, this thesis acknowledges how deep-rooted social aspirations and expectations can be and wishes to consider further their potential influence on a professional's ability to interpret and apply the sustainability concept.

Like Dobson's work, the research within the thesis supports a less idealised, yet necessary need to begin radically questioning currently accepted and passive economic, social and political practices. If research cannot begin to explore what may be possible, how can such practices ever change? While the majority recognise and acknowledge the finitude of our planet's resources, questions of what social, political and economic practices are possible, rather than desirable, are now increasingly necessary (Dobson, 1995).

The need to think in line with our realistic capabilities forms part of what is questioned by this thesis: Are notions and interpretations of sustainability and sustainable development actually aspiring to attainable or unrealistic goals?

The framing of sustainability within the planning literature

Many acknowledge the challenge which understanding sustainability presents as a global problem with local implications (Eden et al., 2000). Town planning is one of the few areas charged with the burden and politically-charged role of juggling competing ideas. It goes beyond facilitating markets or providing a neutral forum for dialogue, to become an institution that promotes particular ends (Owens 2002). It is important to also be mindful that this process is encapsulated by the power which is exercised throughout (Foucault, 1990; Richardson, 1996). The thesis, therefore, acknowledges the existing academic base, exploring how planning is not just about implementing the sustainability agenda, but also about providing a forum where different interpretations can be contested and defended. With the increased generic interest in sustainability has come an increased attention in planning and ever-increasing expectations of its practice (Owens 2002).

Just as Hajer's (1997) work exposed existing problems within environmental politics, it is also possible to learn about sustainability by studying the planning process. Exploring the influence sustainability has on logic exposes the thought processes apparent in policymaking and the potential for institutional learning and policy change (Owens 2002). However, while many academics discuss sustainability and the sustainability process, little planning specific academic work has focused on the influence of interpretative practices in planning practice. With so little dedicated work questioning the planning profession, there is also a distinct lack of understanding, how interpretations work during the process of planning for new low carbon settlements, entities that are charged with the task of applying the sustainability concept.

The majority of academic work has concentrated on understanding initially how challenging it can be to interpret and implement such a multidimensional concept, resulting in constant a redefinition of and discussion on the classification of sustainability. Recent academic work has included exposing the merits of developing sustainable buildings with 'living' walls and green roofs, implementing alternate energy supplies and developing new energy efficient settlements and developments. However, little critical exploration has been dedicated to planning activity that

encapsulates the behind-the-scenes drivers of the development and implementation of low-carbon planning. Therefore, there is an evident need for further work, including this thesis, on the conceptualisation of sustainability over and above the existing knowledge that simply evaluates end results or aspirational alternatives.

It is important to state how such thinking influenced this research. Central to my own personal appreciation of sustainability is not standardised definitions but methods of individual interpretation, all bound with inherent interest, values and beliefs. Arguably, it is necessary to question what drives interpretations, of sustainability before exploring how such understanding can then be applied through planning practice.

Implementing interpretations of sustainability

Before exploring the concepts of situated ethical judgment and just sustainability, it is important to understand the work of planning for new settlements, sustainable urban form and the policymaking process.

Planning for new settlements

From the rise in industrialisation and the need to reduce poor sanitation and overcrowding in Britain's industrial slums to counter urbanisation and suburban migration, accommodating our ever-growing population has been a constant challenge since the early 20th century. The growth in new settlements since the late 1940s has included the development of early garden cities, new towns, millennium communities and, more recently, eco towns.

This chapter will explore the planning for new settlements debate and its relevance to grounding the thesis in its academic context. Planning for new settlements is a well-established topic and has received much work and attention, driven mainly by utopian visions for better places and communities (Harvey 2001). Recent academic thought, in line with current political and environmental positions, now focuses on developing increasingly sustainable settlements. The concept of building 'more sustainably' arose in response to thinking that stresses how increasingly problematic and resource intensive cities have become.

New settlements defined

Urban growth takes many forms, including urban infill, urban extensions, key village extensions, multiple village extensions and new settlements. The work by Breheny et al. (1993) provides a useful assessment of the credentials of alternative development patterns, summarising the merits of each type of development and ranking their overall success against a set of economic, environmental and social criteria. Whilst recognising the assessment's relatively dated nature, it is still important as it acknowledges the merits and sustainable credentials of planning of new settlements. It would be wrong to research in detail a development pattern that performed poorly economically, socially and environmentally.

Figure 2 below illustrates the assessment of alternative development types in further detail. It highlights how the implementation of new settlements allows for the potential inclusion of many sustainable features; however, their inclusion is associated with high investment costs, suggesting sustainability is highly implementable and achievable via the provision of new settlements, but that such levels of optimum sustainability are expensive.

Figure 2: Summary assessments of alternative development types

	Urban Infill – *the use of land within a built-up area for further construction*	New Settlements – *a new planned community with dedicated social, environmental and economic provision*	Urban Extensions – *a planned extension to an existing urban area*	Key Villages – *set villages marked for urban expansion*	Multiple Villages – *small-scale infill development across the built-up edge of existing villages*
Economic Criteria					
Total cost	High 1	Can be cheapest 4	Medium 3	Medium 3	High – premium on scarcity 1
Infrastructure cost	Low 4	High 1	Low 4	Lower provision and user costs 3	Can be high 2
Maintenance cost	High 1	Low – all new systems 1	May connect to old 4	Relatively low due to major upgrades 4	Low due to minimal infrastructure 3
Access to employment	Good 5	Moderate 3	Moderate – can be car dependent 3	Moderate 3	Poor 1
Social Criteria					
Access to social facilities	Good existing 5	Potentially good 4	Moderate – can be car dependent 3	Moderate – depends on size 3	Poor local provision 1
Sense of community	Good	Moderate if	Moderate 3	Moderate –	Good – existing

	existing 4	planned 3		tending to be good 3	community base 4
Social mix	Good 4	Moderate 3	Moderate 3	Moderate 3	Poor 1
Affordable housing	Moderate 2	Good through planning gain 5	Moderate – at large scale 3	Moderate 3	Poor 1
Local acceptability	Minimal disruption 5	Severe 2	Reasonable 3	Moderate – poor if over developed 3	Can be severe 1
Environmental Criteria					
Loss of land	Low 4	High 1	High 1	High unless infill 2	High unless infill 2
Loss of habitats	Moderate 4	High 2	Moderate 3	Moderate 3	Low to moderate 4
Energy for transport	Low 4	High 2	Moderate 3	High – car dependent 2	High – very car dependent 1
Energy for space heating	Poor 2	Good prospects 4	Moderate 3	Prospects poor - 2	Prospects poor 2
Pollution levels	Moderate 3	Potentially high 4	Relatively high 2	High because of car usage 2	High because of car usage 1
Greening contribution	Poor 1	Good 4	Good 4	Moderate 3	Moderate 3
Town cramming effects	Poor 1	Good 4	Low 4	Moderate – some village cramming 3	Moderate – some village cramming 3
Total	51	49	48	45	31

Source: Adapted from Breheny et al. (1993)

The inclusion of the above assessment within the reviewed literature is critical for highlighting the expense associated with the implementation of sustainability via new settlements, the interpretative qualities of sustainability and the general 'assessment' of qualifying sustainability against set defined criteria.

The assessment of alternative development methods by Breheny et al. (1993) focused heavily on the development of new settlements. A detailed appreciation of their interpretation of the sustainable elements inherent within planning for new settlements is explored further below as a means of illustrating one example of an academic interpretation of sustainability during the planning of a new settlement. It is also important to note how the interpretation represents a set of quantifiable, defined sustainability criteria against which an assessment can be made. This thesis also questions whether the quantifiable, defined list-like assessment, as illustrated by Breheny et al., is something that sustainability represents and should be truly about.

Economic considerations

Breheny at al. (1993) argued that all land for new settlements should be assembled before commencement, ensuring that '*implementation of the development is not obstructed*' (1993, p.45). They stated that a detailed financial assessment should be conducted to examine key financial considerations, including the cost of land acquisition, providing infrastructure, the source of development finance, the anticipated selling price, budgets for master planning and the costs of implementing good environmental practice. Such financial considerations, including the broader economic context of access to local jobs, may feature more favourably on some individual interpretations of sustainability than others.

Social considerations

With issues involving existing residents who may have fought a long protest against any new settlement, public involvement throughout the planning process is a key consideration. The settlement's urban form, population demographics and community profile, future house type and price, and the prospects of employment also form basic essential considerations.

> *The nature and extent of the public realm, its permeability, legibility and mix of land use and activities, will affect directly the success of the development and its attractiveness.*
>
> Breheny et al. (1993)

Here Breheny et al. (1993) support the importance of location, form, size and density as influential factors in any new proposed settlement.

Environmental considerations

The environmental aspect of the work by Breheny et al. (1993) emphasises the striking of a balance between compactness, increased energy efficiency, providing public space and recycling facilities and the promotion of strong environmental consciousness in the residents of new settlements. The work also recommends that new settlements should either be remote and self-contained or close to existing urban areas to minimise journeys to work and leisure activities. It explores how large new settlements of 10,000 plus dwellings are more effective at achieving sustainability if

they also provide a high level of local jobs and services, reducing the need to commute and increasing the success of self-containment. The work also favours a mixed-use scheme and prioritising pedestrians and cyclists in the design of future developments to promote sustained social and economic prospects. Such recommendations link well when considering the context of this thesis and illustrate again the range of interpretations of sustainability applicable to the concept across planning practice. In addition to the work of Breheny et al. (1993), studies such as the work of Williams et al. (2000) have explored in detail the range of development options available when considering how to create new sustainable settlements. A summary of the extensive debate is discussed below.

In line with increasing environmental concerns and notions of sustained economic prosperity and social theory underpinning the development of new settlements, studies have incorporated sustainability concepts. With previously unsustainable methods harming the environment and producing areas of social inequality, planners and academics approached the possibility of developing settlements that would minimise such negative environmental effects, reducing the need to travel and increasing fuel efficiency.

Compact cities

The existing debate questions the many variations of the sustainable urban form. Compact cities are one example of a potentially sustainable urban form, defined by a large central area of high-density, mixed-use development, with a strong provision of services and amenities (Frey, 1999).

Visions for the compact city range from interpretations of large concentrated centres to decentralised, compact, public transport-linked settlements and dispersed self-sufficient communities. However, a debate questioning the sustainability of compact cities also exists, highlighting how interpretations of sustainability continue to arouse continued controversy and negotiation during their framing. Compact cities may potentially allow for the reuse of existing infrastructure and development, housing high-density populations within their urban settings, potentially protecting rural areas and reducing the need for private transport, They thereby possibly reduce air pollution whilst maintaining social mobility and accessibility. Such optimism ignores the UK's

'*profound fondness*' (Frey, 1999, p.25) for suburban living, contradicting the requirements for open space and green city policies, potentially neglecting the attention given to rural communities and unintentionally creating centrally-based congestion and social segregation (Frey 1999).

While some, including Mclaren (1992), Owens and Rickby (1992) and Sherlock (1991), support the sustainability credentials of the merits of compact cities, others such as Hillman (1996) and Thomas and Cousins (1996) describe them as '*romantic and dangerous, not reflecting the reality of economic demands, environmental sustainability and social expectations*' (Thomas and Cousins, 1996, p.56).

When completing his work into compact cities, Frey (1999) devised common criteria for defining a sustainable urban form. The criteria detail the set sustainability credentials for an urban city against Maslow's (1943) hierarchy of (human) needs. The criteria illustrate a higher level of generic sustainable thinking, removing contextual considerations by creating a theorised ideal for development.

Figure 3 below, the criteria provide an alternative example of the idealised constituent elements of a sustainable urban form, introducing the optimum provisions measured against human needs and their deemed sustainability score. The criteria evidently frame the idealised image of sustainable urban form as an area that would provide a level of self-containment and have a reasonable high population density across a mixed use environment that is adaptable to changing socio-economic conditions. The development would also offer public transport provision, reduce traffic volumes and provide a hierarchy of services and facilities interspersed with areas of open green space. Environmentally, the urban form would be free of pollution, noise, congestion and crime, offering areas of private outdoor space and integrating well with existing areas of countryside. The resident population of such an exemplary settlement would contain a strong social mix, displaying a degree of local autonomy and self-sufficiency. Frey's presentation of a sustainable urban form represents the idealised framing of sustainability and suggests the practical implementation of such an urban form would be extremely testing and expensive.

Figure 3: Criteria for a sustainable urban form

Maslow's Hierarchy of Needs	What a 'good' city should provide	Sustainability Criteria for the Area
1. Provision for all physical need	• a place to live and work • a reasonable income • education and training • transport (mobility) and communication • access to services and facilities	*Physical properties* • some form of containment • a reasonably high population density • a mixed-use environment • adaptability to changing socio-economic conditions *Provisions* • public transport • reduced traffic volumes and dispersed vehicular transport • a hierarchy of services and facilities • access to green open spaces
2. Safety, security and protection	• a visually and functionally ordered environment • a place free of pollution and noise • a place free of accidents and crime	*Environmental and ecological conditions* • an environment free of pollution, noise, congestion, accidents and crime • personal private outdoor space • a symbolic relationship with the country
3. A conductive social environment	• a place where people have their roots and their children and friends • a sense of community and belonging to a place or territory	*Socio-economic conditions* • social mix • a degree of local autonomy • a degree of self-sufficiency
4. A good image, reputation and prestige	• a place that provides a sense of confidence and strength • a place that gives status and dignity • opportunity for individuals to shape their personal space	• social mix • a degree of local autonomy • a degree of self-sufficiency
5. A chance to be creative	• opportunities for communities to shape their own districts and neighbourhoods	• social mix • a degree of local autonomy • a degree of self-sufficiency
6. An aesthetically pleasing environment	• a place that is well designed (aesthetically pleasing) • a place that is physically imaginable • a city that is a place of culture and a work of art	*Visual – formal quality* • imageability • provision of a sense of centrality and place

Source: Adapted from Frey (1999, p.33)

However, the fragmented understanding and appreciation of compact cities illustrates the difference in interpretation and application of sustainability principles. It supports further the need for the research to critically assess the practice of interpretation and

its impact on the development of a new sustainable urban form. As Frey (1999) observed, achieving a sustainable urban form is not just about rethinking the area but also about '*rethinking current policies, approaches and professional responsibilities*' (Frey 1999, p.146).

> Academics and professionals alike accept that a settlement's form, location, size and density inevitably influences its sustainability performance; however, '*consensus is lacking about the exact nature of this relationship*'
>
> (Williams et al., 2000).

There continues to be a debate on the combination of factors that can truly achieve a sustainable urban form. A summary of the key aspects of the debate is included below in

Figure 4, highlighting the complexities of the urban form further and providing recognition that there is no universal solution but a need to access potential alternative urban forms within their respective contexts (Guy and Marvin, 1998; Scoffham and Marat-Mendes, 2000).

Figure 4: Variations in academic thought when implementing a sustainable urban form

Author	Academic Thought	Relevance to the thesis
Guy and Martin (1998)	The multiplicity of competing and conflicting pathways towards sustainable futures and how they can coexist within one city	Highlights further the complex issues open for interpretation and application by policymakers
Burton (2000)	There are certain merits of compactness for social equity, including how high-density housing can promote an increased focus in local services and facilities	Acts as a reminder to be mindful of the social elements of land use and form
Williams (2000)	The positive elements of urban intensification include sustainable land use and increased social vitality. However, it can also fail to meet set policy objectives, offering no reduction in traffic or additional social benefits. It can also be associated with issues of social tension and reduced environmental quality	Highlights the negative aspects of urban intensification
Masnavi (1998)	This work measures the impacts of density and mixed use against travel patterns, accessibility and social cohesion. It illustrates how high density and mixed land use is better for increasing accessibility to facilities whilst low density offers better environmental quality. Measurements here suggest the compact city has the potential to reduce car use by up to 70%	Also highlights the complexity and context-dependent aspects of sustainable settlement land use and form
Newton, Tucker and Ambrose (2000)	Recognises that the life cycle energy use of an apartment can be up to 30% less than a detached house, increasing to up to 40% for CO2 emissions	Provides energy-specific statistics although measuring specific energy life cycles may only occur in the proposed research as part of site-specific credentials or context
Alberti (2000)	Urban form has a significant effect on ecosystems;	Provides specific example of

	however, it is unclear which land use form provides optimum protection. In order to support ecosystems, natural patches should be as large and as interconnected as possible	potential environmental aspect to acknowledge
Scoffham and Marat Mendes (2000)	Leaving adequate space around settlements allows for change to occur incrementally and sustainably	Offer a possible aspect in urban form for new settlements
Simmonds and Coombe (2000)	The compact city does not reduce the number trips by car, with proximity to final destination only having a weak influence on car demand	Illustrates the contested merits of the compact city and highlights further the debated nature of planning for new settlements and their site dependency
Van and Senior (2000)	A mixed use encourages walking and cycling and deters car use for light but not bulk shopping trips	Offers further specific land use/travel comparisons
Hedicar (1998)	A settlement's location in relation to employment centre is important. New proposed settlements should be peripheral developments to the principal city or on a transport corridor linking with nearby free-standing towns. New settlements should not be in relatively isolated locations or create further urban concentrations	Highlight various issues to consider when questioning policymakers on their choice of settlement location, form and characteristics
Stead, Williams and Titheridge (1998)	A socioeconomic variable explains half of the variation in travel distances, with land use variations accountable for a third. Mixed use and density may account for up to 40% in the variation in car ownership, but the success of the compact city also relies on socioeconomic characteristics of the inhabitants as much as the land use form	Illustrates the need to be mindful of the additional factors affecting the success of sustainable settlement forms and low carbon developments. It also supports the need for the proposed research by highlighting the context dependency of such planning practices

Source: Adapted from Achieving Sustainable Urban Form (Williams et al., 2000, p.347)

Whilst recognising the complex and context-dependent nature of developing future urban form, it is also important to recognise that '*it is the job of urban managers and policy makers to decide the path any city should take*, and what the '*desired out comes should be*' (Williams et al., 2000). Such thinking emphasises that irrespective of existing academic debate and understandings of best practice, policymakers are charged with interpreting and applying their understandings as practically as possible within their given areas. This supports once again the idea of exploring further the details underpinning the processes of developing new sustainable settlements, as notions of sustainability and urban form are particularly open to interpretation throughout the conception and application of new settlements.

Exploring the academic thought of planning for new settlements has provided examples of the possible combination of urban forms and their advantages and disadvantages, stressing the interpretative nature of sustainability. Only through exploring previous academic notions of sustainability and appreciating the background of planning for new settlements is it possible to ground the research presented within this thesis in the existing academic context.

This chapter will now explore the academic appreciation of planning practice, introducing how the practice of planning is bound with assessments of judgement and influenced by values, notions of justice and interpretative practices. By exploring the academic appreciation of planning, it is possible to appreciate further the interpretative act, the performance of sustainability and the influence this may have on both sustainability and planning practice.

An academic appreciation of planning practice

Planning defined

Planning formally regulates the use of land, negotiating between the profit-driven development market and the provision of public facilities. The practice of planning goes beyond approving where buildings and settlements should be, to consider future need and aspiration. Projecting beyond the mere arrangement of buildings and infrastructure to consider the space within which society is created and interacts within. As a mediator between development and public protection, planning is inevitably part of the wider private versus public debate within which we aspire privately towards continued economic growth whilst also publically striving to maintain environmental protection.

Planning and sustainability choices

The planning profession is charged with decision-making. From granting planning permission to developing forward plans, decisions have to be made. Arguably, such decisions are based on set criteria and considered facts; however, it is inevitable that a degree of judgement and context is part of any decision made. As individuals, we can act professionally and practice setting aside our personal feelings from any set or given task. However hard we may try to be devoid of emotion and personal judgement, it is inevitable that an essence of judgement and contextual grounding will percolate through within interpretative practices. As humans, we all lead differing personal lives and shape our understandings by the experiences we have witnessed. All these shape who we are and how we see the world and, most interestingly, how we view situations and pass judgement or make decisions (Healey, 2006). While it is important to note that no single individual makes decisions or judgements in relation to any planning matter, collective groups work together to form rounded views and plans. However, even collectively, we shape our work by our opinions, contextual settings and experiences. The research presented in this thesis is needed given how sustainability is open to interpretation in addition to the wealth of context-dependent options open to planning for new sustainable settlements, and how interpretations, judgement and values influence the performance and application of sustainability.

The planner's triangle

There is nothing inherent within the planning system or profession that pushes planners towards developing primarily for economic growth or social equity or environmental protection. Instead, the planners work within the tensions of such competing demands on land and development. This is known as the 'planner's triangle'. Planners mediate between the three competing factors to push for sustainable development, which is situated at the very centre of the theoretical triangle (Campbell, 1996). Whilst mediating between conflicting demands, planners have to '*redefine sustainability*' (Campbell 1996, p.296). Once again, but here evident through Campbell's work, the academic appreciation of sustainability and planning practice explicitly supports the context of this thesis and the need to appreciate the practice of interpreting sustainability. However, the thesis goes beyond documenting the redefinition of sustainability to also measure the effect any refinement has on it.

Figure 5 below shows the planner's triangle and illustrates the complexity of the conflict planners regularly face. As Campbell's work suggests, this conflict is not just one of personal preference or conceptual difference or a temporal disparity but a '*conflict that goes to the historic core of planning*' (Campbell 1996, p.296).

Figure 5: The planner's triangle
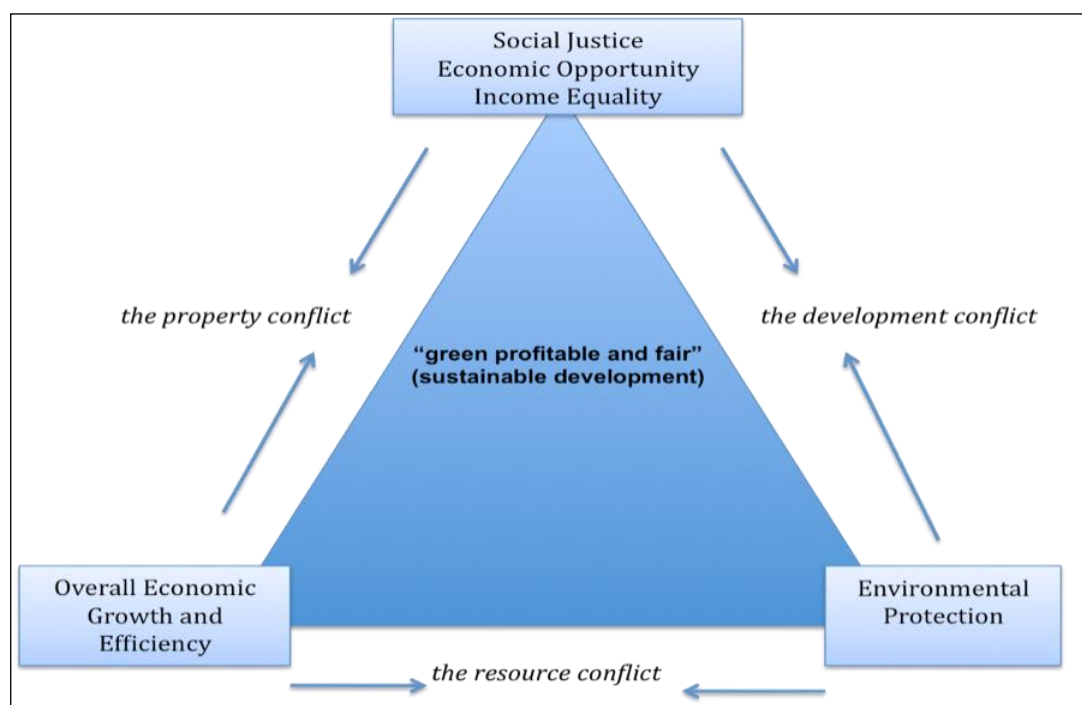
Source: Campbell (1996, p.298)

Campbell's (1996) understanding of the planner's triangle concludes by suggesting that planners will not always be able to balance the conflicting sets of demands required to achieve sustainable development. Instead, planners should '*identify their specific loyalties and orientate themselves within the triangle*'. He stresses that planners should decide to remain outside the triangle and act as mediators or choose their position and promote their own vision. Whilst the research presented within this thesis explores how planners are currently framing sustainability visions, it is important to recognise Campbell's (1993) concluding thought that in the profession, '*both planning behaviours of mediators and visionaries are needed*' (1996, p.309).

Taking such thinking and exploring how and if planners remain mediators or vision drivers through the interpretation of sustainability and implementation of sustainable development will further advance Campbell's (1993) thoughts whilst also exploring notions of justice, value, interpretation and decision making.

Planning and justice

As previously discussed, planning is charged with decision making, an inherent part of acts of judgement and notions of value. However, most '*planners and academic commentators believe that visionaries should not impose their views upon the public*' (Fainstein 2009, p.9). This contradicts Campbell's (1996) earlier statement that in order to avoid sustainability becoming meaningless, planners have to take a standpoint and promote their own views. Such opinions illustrate that in practice and academia alike, there is no consensus whether planners should pass situated ethical judgements or remain impartial mediators. Whilst it is possible to debate whether planners should pass judgement, it is inevitable that a degree of personal opinion and judgement will to some degree infiltrate decisions. Our personal experience and knowledge shape our understanding and influence our decisions. Acts of power or professional structure also add increasing levels of weight and credit to our knowledge and subsequent decision making.

Such ideas have been explored across the social sciences as our values and experiences can shape how we view landscapes, consume products, interpret theories, make friends, conduct transactions and practice professionally. Town planning is not

alone in having professionals who have to pass influential decisions; it just happens that the same decisions change the developed environment within which we conduct our lives.

While codes of practice and regulated training paths document the practice of planners, their daily decisions are made away from the physical context (RTPI Office or accredited university) of the institutions that enforce such conformity. Issues of place and contextual factors influence how planning professionals interpret and apply the theories and practices they have learned. A planner needs to have '*the ability to make choices between good and bad, right and wrong, in relation to the shaping of place*' (Campbell, 2006, p.92). As there is no set formula for calculating the correct way to shape places (Campbell 2006), the concept of justice has become central to planning theory and practice (Fainstein, 2000, 2005).

One aspect of recent academic thought concentrating on conceptualising notions of justice and planning is the work of Campbell (2006). For Campbell, justice in planning is seen as situated ethical judgement, where the relationship between justice and planning is:

> *based on a relational understanding of human existence that takes on board the interconnectedness and interdependence of individuals and communities, rather than concentrating on differences.*

Campbell (2006, p.101)

Situated ethical judgement incorporates questions of value whilst also recognising that there is no single path to achieving optimum development principles. It views judgement that is '*founded on good knowledge, understanding and experience*' (O'Neill, 1993, as cited in Campbell 2006, p.102). Here, achieving justice is seen through '*negotiating a path between the universal and particular, leading to action*' (Campbell, 2006, p.102), something that fits exceptionally well with the context of the thesis. As the study explores the universal concepts of sustainability, such academic thinking that achieving justice comes from '*practical reasoning*' (Campbell, 2006, p.103) with no set scientific or arithmetic formula also supports the empirical research. As sustainability is full of notions of interpretation and justice, it is important that academic thought aligns itself well in all aspects of the research context.

Agyeman (2004) and the concept of *'just sustainability'* also seek to provide a '*policy discourse, which brings together the key dimensions of both environmental justice and sustainable development*' (Agyeman, 2004, p.155). The concept questions the often overtly environmentally focused nature of sustainability and the need to '*equally embrace the social and economic dimensions*' (Agyeman, 2004, p.161). His work also highlights how '*democratic mechanisms for decision making*' are all linked by notions of '*human equity and environmental justice*' through increasingly efficient environmental governance and democracy (Agyeman, 2004, p.161). This work links well with the motivations of the thesis when it stresses that the '*commitment to sustainable development ...should recognise the importance of placing it within a context of social justice, equity and human rights*' (Agyeman, 2004, p.163), thus illustrating how notions of sustainability, justice and equity are commonly intertwined.

Figure 6 below illustrates the '*prism of sustainability*' by Eden el al. (2000), illustrating further how notions of sustainability, justice and equity are also intertwined within the institutional or planning context. It explores and encapsulates graphically how sustainability, justice, decision making, planning practice and competing economic, social and environmental principles are all at play within planning.

Figure 6: Prism of sustainability
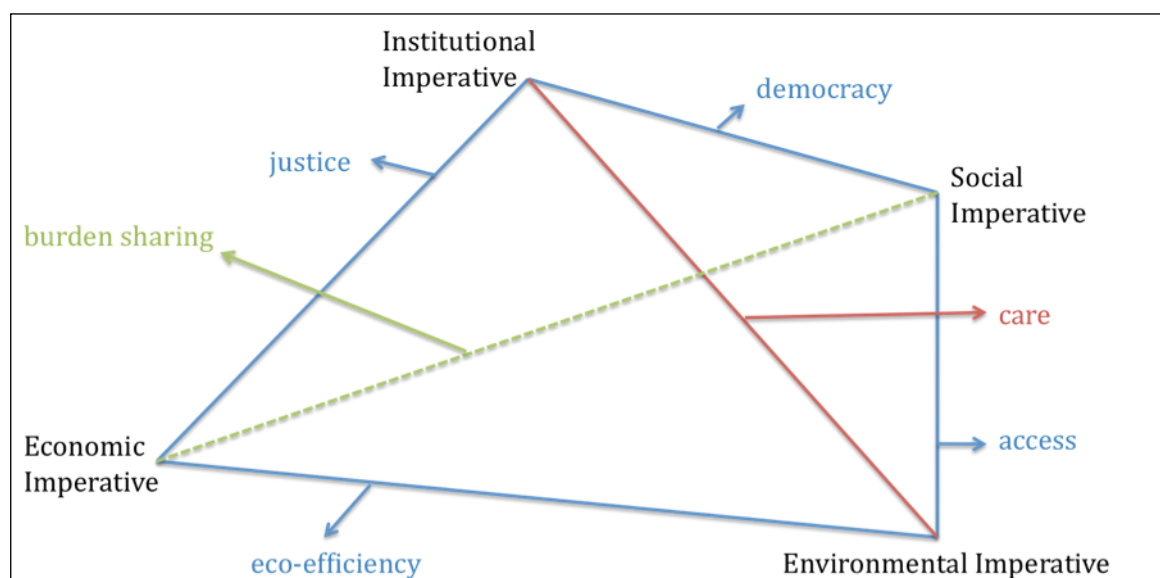
Source: Eden et al. (2000)

The wealth of conflicting and competing goals and objectives displayed support further how:

> *planning is about decision making, determining what is important and significant in any particular situation…the decisions made are unlikely to please everyone…but the task should be informed by relational understanding of justice and explicitly acknowledge the values involved in making such judgments…it does not presume objectivity nor that decisions will be correct for all of time.*

  Campbell (2006, p.103)

Following the above review of academic work appreciating the practice of planning, it becomes possible to confirm the complex nature of planning and the act of balancing conflicting concerns to achieve justified decisions. It supports why acknowledging notions of justice is important, as they are inherently part of sustainability and planning practice. Whilst we have covered the complexities of planning for new settlements and decision making, it is also necessary to briefly explore the academic thinking concerned with policymaking. As the thesis explores the interpretation of sustainability within planning policy, it is important to have a basic understanding of existing academic thinking regarding policy and the practice of authoring policy.

Policymaking

In society today, we live within a relatively economically stable and bureaucratic world. The organisation and hierarchy of the government, its policies and its laws mean nothing is ad hoc in nature. Our political environment, with its supporting stable and statutory policies, universally spans the government's remit and departments, addressing issues that include health, child welfare, economic reform and waste management. Whilst addressing such a wealth of issues, it is inevitable during the formulation of a policy that a variety of participants with individual specialised roles work towards an end document that is '*formed from a political compromise amongst policy makers*' (Lindbolm, 1980, p.5)

While many want policymaking to be a wholly democratic process, they also inherently want it to be informed and intelligent, something that often becomes a contradictory request (Lindbolm, 1980). As a result, it is hard to know '*how far facts,*

reason, rational discussion and analysis go into policymaking' (Lindbolm 1980, p.13).

Issues surrounding truth and power are also inherent in the policymaking process. Ideas exploring how policy authors represent reality in a selective manner, bound by issues of power, agenda setting, inclusion, exclusion, selective attention and neglect, are frequently aired (Fischer and Forester 1993). Planning policy and policy analysts can often be described as frequently making assumptions about an individual's needs, values, preferences and obligations. As Fischer and Forester (1993, p.3) explain: '*policy analysts and planners do more than they are given credit for as they scan the political environment to locate facts, construct a sense of value, identify costs and benefits, foreseeing streams of consequences whilst understanding how they matter ethically and politically'.*

Planning policy and policy analysts also construct working accounts of society's everyday problems and possible solutions. Both parties recognise that in so doing, they are politically constrained, having little time to complete their set tasks, and often using restricted data and resources. Planning documents therefore, become *'practical productions, that play many roles at once, including description, prediction, evaluation, agenda setting, reassurance and proposal testing'* (Fischer and Forester 1993, p.5). It is, therefore, also important that we appreciate the existing framing of sustainability within planning policy. Within a fluctuating political environment, it becomes inevitable that planning is the recipient of changing policy demands, as changes in political leadership inevitably bring changes to planning policy. Changes will occur throughout the course of planning for implementing a new settlement, given the sheer size and scale of the task and the timeframe in which the process occurs.

While the thesis engages in a reflective process, tracing the act of interpreting and the performance of sustainability that has occurred in the past, it is important that the literature review presented here acknowledges the significance of the existing framing and elevated significance given to sustainability and sustainable development in planning.

Policy context

As briefly referenced within the introduction to this thesis, due to the publication of the National Planning Policy Framework (the framework), sustainability and sustainable development have received ever-increasing publicity and precedence within planning practice. The framework represents a single national planning policy document, by which local policy is informed.

The framework, therefore, nationally presents and frames sustainability within planning. It charges planning with the implementation of sustainable development, framing sustainability as '*ensuring that better lives for ourselves don't mean worse lives for future generations as development means growth*'. Therefore, sustainable development, as framed nationally within the framework, pushes planning to ensure growth that ensures better lives for ourselves whilst negating negative impacts for those in the future, ensuring '*change for the better*' (NPPF 2013, p.i).

> *So sustainable development is about positive growth, making economic, environmental and social progress for this and future generations. The planning system is about helping to make this happen. Development that is sustainable should go ahead, without delay, a presumption in favour of sustainable development that is the basis for every plan, and every decision. In order to fulfil its purpose of helping achieve sustainable development, planning must not simply be about scrutiny. Planning must be a creative exercise in finding ways to enhance and improve the places in which we live our lives.*
>
> NPPF (2013, p.i)

Increasing the relevance of sustainability and sustainable development throughout planning practice also heightens the importance and applicability of the research presented in this thesis. It is critical to understand how the interpretative practice of sustainability influences both the concept of sustainability and planning practices. As the concept of sustainability becomes increasingly bound up within the practice of planning, academic research and thought needs to appreciate its significance and the processes that are continuing during its negotiation and implementation.

It is, therefore, important to state how such thought influences the research. The above academic literature reinforces the complexities at play during the planning of new settlements and the process of decision-making. It has explored

and highlighted how the research presented within the thesis needs to be mindful of existing contradictions, whilst reinforcing the importance of place and context dependency. The academic literature reviewed has also highlighted how connected the elements of sustainability, the notions of interpretation and the application of planning practice are.

Academic thinking on sustainability, urban form and the role of the planning professional

Rydin's (2011 and 2013) work provides an exceptionally relevant and useful synergy between academic thinking that addresses sustainability, alternative development forms and the role of the planning professional. Her work has explored why we plan, the different development forms implemented as a result of planning and how we can potentially move beyond planning for a growth-dependent economic system. As Rydin (2011, p.v) suggests: '*planning matters to everyone because we all live within the built and natural environments that are planned*'.

In relation to the context of this thesis, Rydin also questions whether planners should be solely charged with the implementation of sustainability and sustainable development when they work with restrictive profit-fuelled development markets?

> *The essence of growth dependent planning is the reliance on private sector development to generate benefits for the wider community and the use of the planning system to achieve this. Over the last 40 years the British planning system has become dominated by this paradigm and there are a number of reasons why this paradigm is no longer – if it has ever been – appropriate as the sole framework for guiding planning practice.*
>
> Rydin (2013, p.3)

As Rydin suggests:

> *planners are faced with negotiating existing relationships of power when they produce plans, projects and decisions. The resource imbalance between market actors and others creates an inequitable baseline with regard to such negotiations. Developers can always exercise an investment strike and withdraw from activity in a locality if they are not happy…as a planners' expertise and the adequacy of training they receive to redress these power imbalances through communicative action have also been questioned.*
>
> Rydin (2013, p.6)

Therefore, an exploration to understand further how interpretations of sustainability within planning practice, looking at how interpretative practices influence 'negotiated relations, plans and planning decisions', provides the foundation for this thesis. As Rydin stresses: '*planning on its own cannot deliver just sustainability…as a reliance on growth-dependent planning alone is insufficient, insufficient to meet the needs of*

all sectors of society, to ensure a quality of life for all and a more sustainable future' (Rydin 2013, p.188). The work presented within this thesis, therefore, aims to provide an additional understanding into the practices apparent today within the process of planning so as to potentially contribute towards planning reforms within a system that, if it chooses to push sustainability principles and implement sustainable development, acknowledges that '*we would be better off thinking about how we can enjoy a good life in conditions of low(er) growth*' (Keynes, in Rydin, 2013, p.202).

In addition to the initial literature review the edited collection of work published by Rydin and Tate in 2016 concentrates specifically on the actor-networks of planning by exploring how authors have used the theory to inform their own work. Whilst the publication came particularly late to this thesis, it has been an important addition to exploring how others particularly focus on the application of actor-network theory within planning practice. Through engaging with the edited work specific to both actor-network theory and planning practice, it is possible to appreciate how actor-network theory can be used to engage with the spatial discipline and the planning of new spaces. Interestingly, Rydin and Tate highlight the significance of Callon's four stages of translation and how the framework has been adapted by many to inform a plethora of studies, from architectural practice (Yaneva, 2012) to the implementation of spatial plans (Tate, 2013) and online teaching practices (Bigum, 2000). Such examples highlight further the rhizomatic nature of actor-network theory in its application (Rydin and Tate, 2016), with many planning orientated studies often applying '*the conceptual four stage base model of network action, with a particular interest in the process of enrolment*' (Rydin and Tate, 2016, p.12).

The works of Goulden, Ruming et al and Brownill and Karrholm (2016) whilst presenting a detailed examination of the relationships between a diverse collection of human and non-human entities, unified by the actor-networks explored through their empirical work all take three very different planning areas. Through which they then emphasise the work involved in creating new urban spaces by exploring the ways of plan development and implementation efforts can face resistance and or fail. Highlighting across the case studies the resistance throughout the actor-networks of planning explored often lacking critical artefacts and failing to enrol key actors to perpetuate the network.

They further highlight how:

across the case studies, we would point to the particular importance of artefacts of many kinds in enrolling actors and creating networks...regulations, standards, classification schemes and all sorts of other protocols are central to the work of planners. They are often key to the ability to effect change through generating new or stabilizing existing associations of actors. ANT is particularly effective in promoting our understanding of how these artefacts actually do work.

Rydin and Tate (2016, p.14)

Therefore, suggesting the potential for combining the framework of actor-network theory via the tracing of associations and concealed artefacts to explore in detail the practice of sustainability in planning.

As Rydin describes:

ANT seems ideally suited to understand a world in which techno-logical systems and environmental change are major preoccupations. With its emphasis on the lack of any boundary between society and technology or between the social and the natural worlds, it has the potential to deliver a theory appropriate for contemporary planning practice for sustainability. It can offer an analytic edge over existing planning theories that only engage with the material and natural world through the values and communicative action of social actors.

Rydin (2012, p.24)

Thus, begining to align the academic literature of planning with wider theoretical frameworks, a development that will, therefore, be explored in greater detail within the following chapter and in the conceptual framework.

Concluding thoughts

Academic notions of sustainability, therefore, shift thinking from standardised, often-ambiguous definitions to questions of interpretation. They highlight how understanding notions of sustainability should be centred on the details underpinning interpretations, rather than standardised definitions. Despite standardised definitions aspiring to sustainable futures, sustainable development truly relies on invested parties understanding and aspiring to a shared consensus. However, while many discuss sustainability and the sustainability process, little specific planning academic work has focused on the influence of interpretative practices in planning practice.

The academic review of existing thinking has revealed the complexities inherent within the practice of planning and the interpretation of sustainability, exploring how there is no consensus in academia of the optimum sustainable urban form or the correct ethical implementation of sustainability via planning practice. Whilst acknowledging that sustainability needs to remain interpretative and contextually dependent, it is important that we trace the processes at play to appreciate how sustainability is interpreted, framed and subsequently reframed within actual planning practice. After appreciating how sustainability is understood and applied, it is important to trace the resulting implications such interpretations have had on the final physicality of the development, its perceived overall sustainability and the planning practices charged with its implementation.

The research presented within this thesis will, therefore, apply existing academic thought and the identified need for additional work to the exploration of sustainability as either a forum for learning or accepted, static notions in order to appreciate how sustainability is conceptualised and implemented.

3. Conceptual Framework

Introduction and structure of the chapter

This chapter explores the conceptual framework this thesis employs. It begins by considering why we use theories to inform our work and the difficulties encountered by attempting to define planning theory. An outline is then provided of the qualities needed from conceptual tools for questioning the performance of sustainability, explaining why theories of dualistic structure and agency and structuration are discounted in this thesis in favour of notions of symmetry, controversially championed by actor-network theory. Whilst discussing this, it is important to introduce the basic thinking underpinning actor-network theory and outline how concepts of power, networks and relations, are used in the work of Latour, Callon and Law. The theory's origins are examined and notions of translation, social materiality and heterogeneous networks explored further. By doing this, it becomes possible to define why actor-network theory works for the conceptualisation of environmental issues, including notions of sustainability. The chapter concludes by considering the theory's limitations, future and overall suitability for use in this thesis.

The above academic review explored existing thinking about the performance of sustainability and planning practices, continually emphasising the dominance of several key themes. The key themes of sustainability, low carbon provision, the role of the planning professional and notions of value and judgement stem from the reviewed academic work and from the basis of this research. Gaps in knowledge exist, and there is a need for further empirical data exploring how interpretations influence planning practice, with specific reference to low carbon settlements. The context of this research is replete with the interpretations of sustainability through planning practice. It proposes to bridge elements of the current gap between theory and practice by taking the academic interpretations and appreciation of the sustainability concept and documenting how, through the planning process of developing new low carbon settlements, it is performed, reperformed and applied.

The research is set within a context that is conscious of current government targets, the ever-increasing threats posed by global warming, and existing academic thought stressing an increasing need to conduct empirical research into the influence of interpretation on planning practice.

It is also important to note how the term actant(s) has emerged to replace actor, whilst still acknowledging both Latour's and Callon's reference to 'actor(s)', especially throughout the sociology of translation (as used to inform the analysis presented here). This thesis, then, will refer to the emerging term of actant(s) and not actor(s).

Aim of the research

The study's overarching aim is to explore the processes involved in the performance of sustainability in planning practice. The work aims to take the vague and widely debated notion of sustainability to explore how different professional groups use such interpretations and knowledge to develop concrete policies, proposals and practices for new low carbon developments.

Research objectives

1. To explore the performance of sustainability during the planning for and implementation of Waverley.
2. To explore the implementation of the sustainability vision at Waverley and the resultant final settlement form.

Research questions

Each research objective also has a series of supporting research questions as outlined below.

Objective one – interpretation and application

To explore the performance of sustainability

1. How does sustainability perform during the planning process associated with the implementation of Waverley?

2. How do actant associations and assemblages influence the performance of sustainability?

Objective two – progression, amendments and impacts

To explore the implementation of the sustainability vision at Waverley and the resultant final settlement form.

1.   How does the (re)performance of actant assemblages and resulting associations:

    a.   change the final settlement?

    b.   change the nature and use of sustainability?

    c.   influence the planning and development process?

In essence exploring the multiple realities of sustainability and the appreciation of how it is recreated, enacted and evolves during the development of Waverley. This thesis therefore aims to expose the reality of sustainability, by exploring how it is performed via multiple performances and therefore arguably multiple realities.

Why we use theories and the difficulties of defining planning theory

Initially, it is important to appreciate why we use theories and the influence this has on the study of planning. It is then important to note why the thesis has chosen to articulate 'planning theory' as a lens and how this relates back to theories of sustainability, as discussed in the previous chapter.

Theories can be visualised as 'tools' that offer the opportunity to explore and make sense of the world around us. By taking their different concepts, notions and abstract ideas, it becomes possible to explore the relationships and patterns evident in our everyday lives. It is, therefore, within the sphere of theories that we can begin to align and question the conceptual elements of our world. As Allemendinger highlights, with increasing relevance to this research, the use of theory and the interpretation of sustainability, '*words are contentious and ambiguous, and interpretations of meaning*

will inevitably vary. This has important implications for the formations, interpretation and evaluation of theory in different places' (Allemendinger, 2002, p.2).

> *At the very least, the boundaries between different kinds of theory are not black and white. At worst, and this is what I argue, all theory is to greater and lesser degrees normative…If social science theory is a search for understanding rather than explanation and prediction then we must accept the normative element of the methodology.*
>
> Allemendinger (2002, p.12)

The study of social science is concerned with exploring activity within the social sphere, as theorists and scholars apply varying methods and interpretations to explore the social elements of our world. Across the various disciplines, a myriad of different theories compete with one another, with certain disciplines usually promoting particular theories. However, this is where the study of planning differs from many other areas of social science, as planning theory '*is an elusive subject of study. It draws on a variety of disciplines and has no widely accepted cannon*' (Fainstein and Campbell, 2012, p.1). Such variety and diversity is celebrated and necessary as many of the founding concepts concerning planning involve a host of different areas and specialisms. It is also important that '*different kinds of planners in different contexts should (and do) enact different models or theories of planning*' (Alexander, 2003, p.181).

Using theories to conceptualise the practice of planning offers the opportunity to explore and appreciate the context within which planners work. Using a theory to frame the conceptual understanding of sustainability practices at Waverley assists in validating the single case study's analytical generalisations (Yin, 2003). Theories, therefore, supply the framework on which to hang ideas, shape research studies and analyse data sets. The question here is which theory is suitable to assist this thesis in meeting its aims and answering its set research questions?

Considering the approach

Conceptualising structure and agency

The overarching aim of this study is to explore the processes involved in the performance of sustainability throughout planning practice. Therefore, any potentially suitable theoretical framework needs to offer the sophistication to conceptualise complex processes, relationships and actions occurring during the development of Waverley.

As part of the initial conceptualisation process, the classification of structure and agency became important as one of the most dominant theoretical ideas in social science (Giddens, 1984; Archer, 1995) and a potentially suitable approach for exploring the narrative of sustainability. The work, therefore, initially considered taking the dialectical position of treating structure and agency as a duality rather than a dualism, acknowledging the interactive and iterative relationship between the material and the ideational (Marsh, 2010).

As part of the above initial dialectical approach to structure and agency, three distinguished and conflicting aspects of academic thought were explored: Giddens' theory of structuration, Hay's (2002) structural-relational approach and Archer (1995) and McAnulla's (2002) morphogenetic approach. However, following further consideration the thesis chose to favour the merits actor-network theory offers with its broadly constructivist approach to tracing the process of strategic acceptance through exploring elements' connections. By thinking through how structure and agency could be explored, it became apparent that it was unhelpful to become further intertwined in defining and interpreting additional elements of academic theory in order to explore and expose the performance of sustainability.

It was at this point that the study realised the importance of exploring the holistic performance and application of sustainability. It also became apparent the complexities and restrictions tracing structures and agents would potentially place on the research, and that instead of assisting with meeting the research aim, theories of structure and agency were beginning to constrict the conceptualisation of tracing the sustainability process in practice.

Moving towards actor-network theory

In order to appreciate the already complex and competing nature of interpretations of sustainability, it was important that the conceptual framework did not over complicate the conceptualisation of sustainability further. The use of the theory of structuration would have allowed the research to explore the '*taken for granted assumptions behind actions*' and question the '*objective basis of society and the ways in which its members construct and the reproduce their everyday reality within this*' (Evans 2001, p.120). However, the overly complicated conceptualisation was beginning to overshadow the tracing of processes influencing the performance of sustainability. Finally, while exploring potential conceptual bases from which to ground the analysis, the research considered removing such complicated aspects and considered the merits of an alternative approach by embracing the controversial but non-dualistic approach of actor-network theory.

Finally, for its engagement with issues of structure and agency, the seminal article 'Unscrewing the Big Leviathan' (Latour and Callon, 1981) led the thesis to consider further the merits and applicability of an actor-network informed approach. Latour and Callon (1981, p.279) note:

> *how there is no difference between the actors, which is inherent in their nature. All differences in level, size and scope are the result of a battle or a negotiation. We cannot distinguish between macro-actors (institutions, organizations, social classes, parties, states) and micro-actors (individuals, groups, families) on the basis of their dimensions, since they are all, we might say, 'the same size', or rather since size is what is primarily at stake in their struggles it is also, therefore, their most important result. For Hobbes - and for us too - it is not a question of classifying macro- and micro-actors, or reconciling what we know of the former and what we know of the latter, but posing anew the old question: how does a micro-actor become a macro-actor? How can men act 'like one man'?*

Whilst exploring the debates conceptualising structure and agency, the thesis began to become concerned with the distinctions between the two, with the focus on the performance of sustainability at Waverley becoming equally complex. Embracing a conceptualisation that arguably allowed a full appreciation of the research topic (i.e. sustainability) by embracing the analysis with no prior conceptions and tracing the evolution and performance from its initial origin within a network became a possible

alternative. Following an initial exploration of the merits of actor-network theory, in addition to detailed discussion with the thesis supervisory team and debate with fellow peers, the research moved to favour an actor-network theory-informed approach.

Actor-network theory

Let us then return to the chosen approach: what is actor-network theory, what can we learn from its previous studies and why are we using it to inform this work's conceptual framework? Before answering these questions, it is important to appreciate how the thesis' conceptualisation moved from rejecting standardised definitions of structure and agency to selecting the use of actor-network theory. Why did the study choose to change its approach to theorising the performance of sustainability and how was actor-network theory initially considered appropriate?

As individuals, we are each present within the physical environment, are exposed to the elements of nature, and mix within the rules and regulations of our structured society. As we conduct our lives within this context, our subconscious is exposed to such experiences, which inevitably influences our actions. Taking this further, into our personal and professional lives, the physical and social environment we are exposed to and conduct our lives within therefore begins to influence everything, from the homes we choose to live into the cars we may drive to the clothes we decide to wear. Elements are buried deep within our everyday actions; tiny nuances are shaping such things, from the shoes we select to put on each morning to the type of property we choose to lock up behind us on our way to work. From the need to protect our feet from the elements to the wish to express our individual fashion preferences, our shoe selection is a myriad of externalities, shaped increasingly by the 'social' world. This illustrates something taken for granted, such as clothing, but can be multiplied to represent anything, including interpretations of sustainability.

If we first continue to think about the action of selecting shoes, before moving onto wider academic issues, it will be possible to explore the detailed elements intertwined in everyday actions and appreciate how these can also apply when thinking about

wider issues. So, shoes! What approach can be used to explore the multiple converging of 'things' within the physical, natural and social world that act to influence the things we choose to protect our feet? Where do we start to pick this event apart? What matters, what does not matter and what if we miss something that previous conceptions deemed incidental but actually proved to be vitally significant?

This work applies the above observation to the query at the heart of this study, regarding how planners apply judgements to their everyday work and the externalities that are influencing them. As our everyday choices are influenced by wider externalities, so too are issues of professional judgement. While this may seem an obvious statement, the motivation of this research stems deeper than accepted social structures, rules and regulations that are working to guide decision-making. This work seeks to unpick the details behind the process and performance of sustainability. Sustainability, I believe, is materially enacted. It is not just a word or a given assumed entity, but a continual performed, evolving practice. As the application of sustainability is an interpretative practice, using an approach that can incorporate such variability whilst not predefining any set parameters is necessary. The work is not seeking to measure or quantify the credentials of sustainability but to explore how sustainability is framed and what is occurring between actants when the process is undertaken. Allowing for this, the work favours an actor-network theory informed approach. It was important that any analysis moved away from the preconceived dualisms involved with many theoretical approaches, and using actor-network theory allows for the removal of these, including, for example, structure and agency, micro and macro, objectivity and subjectivity (Law, 1992; Murdoch, 1997).

Actor-network theory can be described as a collection of ideas that seek to trace the ways in which objects become built up into a set of relations. It is concerned primarily with tracing the connections between things, and, controversially, it chooses not to distinguish between the human/non-human when tracing such connections. The theory is process orientated and traces actants when exploring how networks develop and potentially evolve into more durable structures. Unlike many theories, actor-network theory does not take an accepted notion and pick it apart, choosing instead to begin with an event or action from which it can retrace all resulting connections and relationships to account for how processes are constituted. Through tracing the

relationships between actors, the theoretical approach seeks to determine how a network may become stable and accepted. This means that power is, therefore, an effect resulting from the relationships and not a pre-given resource or something pre-owned by an actant. As a methodological approach, it carries no prior assumptions concerning social hierarchy or position, tracing for itself how actors are aligned (Tait 2000). As Law (1997) describes it (1997, p.2): '*entities achieve their form as a consequence of the relations in which they are located'*. This is important as actor-network theory recognises and forgoes any presumptions and categorisation in favour of exploring elements that may previously have been taken for granted, as '*it is not about traced networks but about a network tracing activity'* (Latour, 1997, p.8). This is also why this theory aligns suitably to this work, as it aims to trace the connections, meaning and making of sustainability. Just as Latour (2007) approached the much wider task of reassembling the notion of '*the social'*, this work pushes to understand the processes behind the often taken for granted application of sustainability. Crucially '*the task of defining and ordering the social should be left to the actors themselves, not taken up by the analyst'* (Latour, 2007, p.23).

Introducing the main approaches of actor-network theory

The theory in essence aims to trace how actors, groups and networks become defined through (social) action, and in particular focuses attention on how structures and durabilities are performed and constructed by actors (Tait 2002). Actor-network theory utilises a series of tools or metaphors within on which to conceptualise the contstant process of making and reporoducing relations. Such metaphors include actors/actants, networks, intermediaries, radical symmatery (social/physical) and performativity. Actors are not in a conventional sense individual, intentional human actors but entities which are defined in relation to networks, and in turn describe these networks (Callon, 1991) An actor may be a piece of machinery, a human or a text if it manages to change a set of relations. Actants (the alternative term for actor(s)) is again used to address both human and non-human objects, which, as entities, speak for a wider network. The use of this alternative term assists in stressing non-human entities may also 'act' and be actors or actants.

The term network is a central metaphor within actor-network theory, too often confused with the traditional meaning of the word. The use of network here differs from the use in social and political science: it is not a fixed set of relations or connections but a set of mobile relations. Networks are also not stable systems of links and nodes (like a telephone system) but within actor-network theory are instead metaphors for associations and connections between entities which may be heterogeneous in character (Tait 2002). Networks also do not have scale in the traditional sense, but are 'simply longer or more intensely connected' (Latour, 1997, p.3). They are the associations and/or relationships between elements that require work to create and maintain.

Intermediaries are closely related to actors and networks, as they are '*put into circulation*' (Callon, 1991, p.135) by actors and serve to describe and compose networks. Intermediaries help to bring actants into association with one another and can take many different forms, including people, organisations and artefacts.

Radical symmetry represents the adoption of the unique 'actant' quality assigned to elements from both the material and social 'world', allowing for associations within networks between a plethora of elements from both the material and social worlds. Such a definition also enables one, through the tracing of an actant, to explore how 'such seemingly inanimate things can, through their relationships authorise, allow, encourage, permit, suggest, influence, block etc and so on' (Latour, 2005, p.72). This controversial foundation of actor-network theory is however, not without criticism. Caution is advised when considering an object's 'agency', as it may only exist under certain conditions through interactions with specific actants (Whittle and Spicer, 2008).

Finality the notion of performance and performativity is also cerntral to the appreciation of actor-network theory. Illustrating how entities constitute the realities they represent '*because that is how they are performed*' (Law and Singleton 2000, p.768). For example for something, anything to work takes work: a performance. Thus, actor-network theory says that humans and nonhumans perform together to produce effects, with the way in which they act consititng a performance (Law and Singleton 2000). However, it should be notes how '*performances don't exist in the*

abstract because, to state the obvious, they need to be enacted'. (Law and Singleton, 2000, p775)

Exploring the early origins of actor-network theory

Before exploring in further detail the definable elements of an actor-network theory informed approach, it is important to note that the theory is not truly considered to be so much a theory as a method. Theories traditionally try to explain why something happens, while actor-network theory is descriptive, tracing how relations assemble themselves (Law 2009). Both Latour and Law (1992 and 2009) have had issues with the categorisation and definition of actor-network theory, arguing that '*there are four things that do not work with actor-network theory; the word actor, the word network, the word theory and the hyphen!'* (Latour, 1999, in Law, 2007, p.15) While Law prefers to refer to the approach as '*material semiotics…this better catches the openness and diversity of the most interesting work'*, alluding to the theory's exploration of the creation of 'things' rather than pre-defined actants and networks. (Law 2009, p.141) Alternative names for the theory also include the sociology of translation and enrolment theory. Such alternatives suggest a continued uneasiness regarding the now established name. Despite issues concerning the often-misleading connotations associated with the words actor, network and theory, actor-network theory has continued to evolve and succeed in its continued application since its emergence through the study of science and technology in the early 1980s. By moving to discuss the work of the theory's founding scholars, it is also possible to explore the merits of an actor-network theory-informed approach, exploring the notion of networks, symmetry, power and translation.

Actor-network theory is most succinctly described as:

> *…a disparate family of material-semiotic tools, sensibilities, and methods of analysis that treat everything in the social and natural worlds as a continuously generated effect of webs of relations within which they are located. It assumes that nothing has reality or form outside the enactment of those relations. Its studies explore and characterize the whens and the practices that carry them.*

Law (2009, p.141)

Here Law (2009) outlines the actor-network theory approach of tracing relations to explore the processes and practices, outlining that while sociology is usually preoccupied by answering why, material semiotics explores the how. This approach '*forces us to look afresh at the categories, divisions and boundaries*' (Murdoch, 1996, p.735) as it traces '*how actors, groups and networks become defined through action…focusing attention on how structures and durabilities are performed and constructed by actors*' (Tait, 2002, p.70). The theory is process orientated, tracing the relations that constitute our everyday lives (Murdoch 1997). This fits very well with the core aim of this thesis of tracing the performance of sustainability, an ever-changing constituent element of our lives.

Let us, therefore, move on to discuss the founding studies of the theory. Arguably, the three most dominant academics associated with the construction of actor-network theory are Bruno Latour, Michel Callon and John Law. Through exploring their work, we will be able to consider the tools of translation, generalised symmetry and heterogeneous networks. Although well established and adopted by geographers, economists, sociologists and planners, actor-network theory has no one orthodox approach and is used in many subtly different ways.

Latour's study of Pasteur and Aramis

>   *It is not a sociology of the social, but a sociology of associations.*
>   Latour (2007, p.9)

Beginning with Latour, his work includes studies of Pasteur (1988), in which he traces the social relations of the famous French scientist, and *Aramis* (1996), the quasi-mystery styled autopsy of a failed personal rapid transport system. Through the study of Pasteur's work, Latour aimed to trace his reliance on many, often heterogeneous others. In tracing the scientist's relations, he observed how the 'social' and 'natural' are co-constructed within mutual exchanges that enhance one another (Murdoch. 2001). Most importantly Latour's study of Pasteur also explored the core elements of actor-network theory, including, '*the emphasis on co-construction, the pursuit of symmetry, the detailed study of how heterogeneous entities are enrolled into networks and the building up of these networks into stable 'actor-like' configurations…*' (Murdoch. 2001, p.119).

In *Aramis*, Latour traces the narrative of the processes involved during the failed implementation of a personal rapid transport system. Interestingly, Latour reports after following the story of that '*the answer is always to be found in the chains of translation that transform a global problem into a local problem through a series of intermediaries*' (Latour, 1996, p.33). This suggests that by tracing the chains of translation surrounding the performance of sustainability at Waverley, we should be able to appreciate and understand the sustainability process better. This is something that will be explored further when discussing Callon's sociology of translation. Later in the chapter, an outline will be provided of how this thesis will utilise and apply the four stages of translation to inform the conceptual framework and subsequent analysis.

The single most insightful quote below from the *Aramis* narrative illustrates further how the conceptualisation of objects, technologies and processes works in practice, aligning once again to the study of sustainability.

> *For the thing (object of study) we are looking for is not a human thing, nor is it an inhuman thing, it offers rather, a continuous passage, a commerce, an interchange, between what humans inscribe in it and what it prescribes to humans.*
>
> Latour (1996, p.213)

Therefore, the actor-network theory tools described in the study of Pasteur and the tracing of practices as narratives in the study of *Aramis* support the appropriate selection of an actor-network theory informed conceptual framework. As explored above, by using the work of Latour and the tools afforded by an actor-network informed approach, it will possible to trace the processes involved in the interpretation and performance of sustainability and the evolution of the co-constructed heterogeneous entities responsible for enrolling actors into stable actor-networks at Waverley.

By moving to explore the work of Callon and Law, it is possible to illustrate further how this study can exploit the merits of actor-network theory and the understanding of the stages of translation during the performance of sustainability at Waverley.

Callon and the sociology of translation

> *Translation is the mechanism by which the social and natural worlds progressively take form. The result is the situation in which certain entities control others.*

Callon (1986, p.210)

Callon bases his analysis on what he chooses to call the '*sociology of translation*', tracing '*the simultaneous production of knowledge and construction of a network of relationships in which social and natural entities mutually control who they are and what they want*' (Callon, 1986, p.197). His study follows the fishermen of St. Brieuc Bay, France, and the domestication of the scallops industry. By tracing the actors through the construction and destruction of nature and society, it became possible to identify four stages of a process Callon terms 'translation', '*during which the identity of actors, the possibility of interaction, and the margins of manoeuvre are negotiated and delimited*' (Callon 1986, p.197).

It is this process of translation, identifying the actors, their interactions, manoeuvres and negotiations that form the basis of the following analysis of the performance of sustainability at Waverley. However, it is important first to explore in detail the elements that constitute Callon's four stages of translation, also referred to as the '*sociology of translation*' (Callon, 1986, p.197).

The four stages of translation are described as problematization, interessement, enrolment and mobilization. The passage through translation begins with problematization, in which the nature of a specific problem is defined by an actor(s), resulting in the establishment of dependency. Following this, when other actor(s) become bound to roles that are assigned as part of the initial actor(s) planned action for resolving the initial problem, interessement occurs. Once such roles begin to evolve and become interrelated with other actor(s) becoming drawn in, the third stage of enrolment is observed. Finally, although not always, the process results in the mobilization of allies, where the once dispersed actor(s) reassemble at a particular place and time. This final stage of '*mobilization or concentration has a definite physical reality which is materialized through a series of displacements*' (Callon, 1986, p.207).

While the above narrative describes the process it is also important to think about what this means for this thesis and how Callon's four-stage analysis of translation applies to interpretations of sustainability. This will be explored during the following discussion of Callon's examination of translation, in which he observed how the evolution of a social group of fishermen formed and preserved their privileges.

Problematization

Callon's work explored the processes involved in the successful cultivation of scallops at St Brieuc Bay. He noted that a group of researchers after returning from a visit to the Far East started to consider the intricacies of scallop cultivation. As part of exploring the work associated with cultivation they '*determined a set of actors…and established them as obligatory passage points in the networks they were building...*' (Callon 1986, p.198), causing them to become indispensable in the network. By defining the actors and established passage points, highlighting what can arguably be called a critical path, Callon observed the first stage of translation, which he refers to as problematization. It is important also to note how Callon, within the initial stage of translation (problematization), defines obligatory passage points as points through which actors must pass if they are to continue through to engage in the actor-network during the stage of interessement. For the actors to maintain their presence within the network at St Brieuc Bay, they needed to engage in acknowledging that the answer to their problem lay in answering the question of 'how scallops anchored'. The very act of engaging with the question and seeking to attain an answer signifies the obligatory passage point (Callon, 1986).

All of the actors involved in the study upon which Callon based his theory were drawn into the network by the relatively simple question of: do the scallop species of St Brieuc Bay anchor themselves? Here, the connection between the actors establishes their identity within the group and the links between each other and can, therefore, theoretically be applied to the Waverley case study, with the question on the characteristics of scallops substituted by the following: do the proposed developments at Waverley constitute a sustainable settlement?

Problematization describes the system of associations between entities, defining their identity and ultimate goal. Within Callon's work an alliance, it is necessary to stimulate the prolonged cultivation of scallops, while at Waverley, an alliance is needed to secure a sustainable and deliverable development on the available brownfield site. However, when tracing the occurrence of problematization it is important to note, as Callon observes, that '*problematization possesses certain dynamic properties: it indicates the movements and detours that must be accepted as well as the alliances that must be forged*' (Callon 1986, p.199).

Interessement

In practice, the process so far may not be well defined or structured; however, following problematization, interessement may be observed. Interessement occurs when a collection of actions originating from a single entity attempt to stabilise other actors that were first defined during problematization. Whilst during problematization, identities are defined in competitive ways, interessement is the process of convincing other actors to accept the definition assigned by the focal actor (Callon 1986). As Callon explain: '*A* (the focal actor) *interests B by cutting or weakening all the links between B and…the group of other entities…who may want to link themselves to B*' (Callon, 1986, p.201). As a result of interessement, the identity of B (the stabilising actor) becomes consolidated and redefined as a result of its association with A (the focal actor). During interessement, B (the stabilising actor) becomes disassociated from all other entities, with the established elementary relationship between A and B being consolidated, where the stabilising social link is referred to as the '*triangle of interessment*'.

Using Callon's case study, interessement occurs when the researchers introduced towlines into scallop cultivation practices at St Brieuc Bay, in addition to a variety of written texts and verbal conversations, which began to draw in doubting actors to the merits of the modified cultivation methods. Interessement '*helps corner the entities to be enrolled…it attempts to interrupt all potential competing associations and to construct a system of alliances*' (Callon 1986, p.203). Arguably, it is most succinctly described as the second stage of the sociology of translation, during which '*social structures comprising both social and natural entities are shaped and consolidated*' (Callon, 1986, p.203).

However, regardless of the strength of the argument used to persuade actors who doubt the entity into which they are being persuaded to show an interest, the third stage of enrolment, during which alliances between actors occur, is also not guaranteed to follow the shaping and consolidation observed during interessement.

It is, therefore, possible that the process of interessement may potentially be observed through the case study of Waverley during the arrangement of thematic meeting groups when attendance at certain groups begins to overshadow and dominate less well-attended meetings, with the dominant topic (i.e. transport) enjoying more time, consideration and acceptance. This, however, is only what can initially be described as a 'hunch', something that can only be fully explored during the following analysis. It is included here to support the justification and applicability of Callon's stages of translation to this thesis and case study and to illustrate its potential synergy.

Enrolment

We move now to stage three of translation, enrolment. The occurrence of an alliance between actors, when interrelated roles are defined and assigned to an actor who accepts them, illustrates the act of enrolment. '*Interessement achieves enrollment if it is successful"* through *"multilateral negations, trials of strength, and tricks that accompany the interessements…*' (Callon 1986, p.203).

Callon observed the process of negotiation between three main parties, representing actors who had followed the previous stages of translation to acquire defined identities and assigned roles. He followed the scallops (which anchor themselves to the seabed), the fishermen (who were persuaded that the use of collectors could assist in restocking the scallop population of the bay), and scientific colleagues (who now believed in the concept of anchorage) and noted that the translation process only occurred due to the "*multilateral negotiations*" evident during enrolment.

Again, it is possible to suggest how at Waverley, the processes of enrolment may be observed at the engagement of additional actors during consideration of the outline planning application, when they are drawn into the network by the founding actors to assist with the complexities of assessing sustainability. However, again this is purely

a prediction of how the theory may potentially trace the narrative of sustainability Waverley.

Finally, we move to the fourth and final stage of the sociology of translation, the mobilization of allies.

Mobilization

As evident above, only a select number of actors are engaged in the process of interessement and enrolment, from which a dominant representative or '*spokesperson*' may or may not emerge. Callon witnessed the emergence of '*a few individuals…interested in the name of masses they represent*' (Callon 1986, p.205). As the number of intermediaries declined, the fishermen and scallops become represented by three specific researchers, who, during a final presentation of their work, spoke and acted for both the scallops and fishermen. As Callon observed, '*to mobilize is to render entities mobile which were not so beforehand*' (Callon, 1986, p.208). However, rather than the scallops species being presented, they are displaced by graphical representations and statistical models that act as intermediaries.

Actor-network theory is a method that views society as uncertain and fluid as nature, and by using the sociology and vocabulary of translation, it is possible to reveal hidden nuances and intricacies that explain many previously taken for granted social elements. While this is applicable to the cultivation of scallops, it also has the potential to be applied to the definition and application of sustainability. As a methodological approach, the sociology of translation allows for the exploration of processes to appreciate the displacements and transformations that occur, or as Callon puts it, it is '*the mechanism by which the social and natural worlds progressively take form*' (Callon 1986, p.210) and are revealed.

It questions the often taken for granted and assumed processes that have much to reveal. By not assuming anything and allowing the exploration of both human and non-human aspects' it is possible to appreciate and understand the undercurrents whilst recognising that processes and practices are fluid, and constantly redefined and ever evolving. It is as Murdoch observes that '*natural and social actors seen to come*

into the network as malleable beings, to be shaped in accordance with the designs of network builders' (Murdoch 1996, p.38).

While the above has described both Latour's and Callon's interpretation and application of actor-network theory, and has justified why Callon's sociology of translation forms the foundations of the following analysis, this chapter will now move to consider the work of Law and the application of actor-network theory to describe planning practice. It is important that a further and full appreciation of the theory's work is considered before engaging in the analysis.

Law's language of ANT

> *Thus analysis of ordering struggle is central to actor-network theory…this, then, is the core of the actor-network approach: a concern with how actors and organisations mobilise, juxtapose and hold together the bits and pieces out of which they are composed…*

> Law (1992, p.386)

John Law's work introduces and familiarises the reader with much of the actor-network theory terminology and language as he focuses on describing networks as '*materially heterogeneous',* in which neither organisations nor society would exist if they were simply social entities (Law, 1992, p.379). He outlines further how elements from agents to texts and buildings not only form part of a network but are constructed and co-constructed within them, with such fluid redevelopment being critical to a network's success and survival (Law, 1992, p.379). Law is keen to outline that to understand an institution or organisation, we need to approach it with no preconceptions or '*a priori'* assumptions as '*the stuff of the social isn't simply human…it is all these other materials too'* (Law 1992, p.380). For Law, social networks are not about the interactions between humans but human interactions between one another and a plethora of other materials. Without texts, queues, machines, clothes, etc., he questions how social order could survive (Law, 1992, p.382) and through his worked examples, actors are described as '*patterned networks of heterogeneous relations or an effect produced by such a network'* (Law 1992, p.384). Law's work stresses for individuals who think, walk, talk, write, etc., , '*an actor, is also, always, a network'* (Law 1992, p.384).

Arguably, the most significant detail from Law's work, which this thesis will use to inform the conceptual framework, is his suggestion that actor-network theory can be used to ask certain questions of any organisation. Such questions allow for further detailed exploration, appreciation and understanding of the often-assumed minutiae, which when using an actor-network theory informed approach, can expose previously accepted assumptions not as minutiae, but as vitally crucial elements, sustaining accepted social processes.

Examples of the questions that Law suggests can be asked of an organisation are illustrated in

Figure 7 below:

Figure 7: Potential questions that can be used to explore an organisation's relational effects

- What disparate entities create organisational effects?
- How are evident resistances overcome?
- How are relations made stable?
- What strategies are involved in stabilising relations?
- How far do networks spread/are widely performed and interact?

Source: Adapted from Law (1992)

By posing such questions of the way the council in Rotherham operates as an organisation and the networks involved in the performance and the application of sustainability at Waverley, it should be possible to understand the processes that sustain the activities observed. It is also by using such a method that it becomes possible to include the social, interpersonal and informal relations that add, order and reveal the functions being performed.

With the work of Latour, Callon and Law discussed above, this chapter will now consider how the theory has been used by others and applied to the practice of planning. It is necessary to appreciate further actor-network theory's applicability and suitability for use in this thesis before moving to consider any potential constraints and criticisms. Once a full understanding of the theory, its suitability and potential

restrictions have been presented, we will be in a position to move to apply this understanding to the analysis of results.

Actor-network theory and the tracing of planning practices

Planning theory has mainly focused on alternative theories in which to situate the practice and position of planning. While theorists such as Habermas and Foucault have been centrally used in positioning planning theoretically, actor-network theory has enjoys a very limited, but growing presence (Rydin 2010, 2012). As previously discussed, controversially, actor-network theory assumes there is no given social order, but rather, ongoing attempts at ordering (Law 1994) as those who choose to apply the theory enter into tracing the processes and activities that occur in the construction of social order. Arguably, few have chosen to trace the activities associated with planning practice by abandoning the traditional dualisms in favour of analysing the symmetry between human and non-human elements and accepting that entities are an effect of their relations with other entities, rather than their own inherent properties (Law, 1994).

Planning is often concerned with balancing certainty, such as the need for homes, with flexibility, for example, the changing popularity of city-based versus suburban living. Many have often associated the controversies underpinning actor-network theory as unsuitable for studying such processes. While criticism exists and is explored and acknowledged by Latour, Callon and Law, this thesis chooses to focus on the merits the theory offers to the research presented here; however, it remains aware of the criticisms that exist. This chapter will now explore the work associated with the application of actor-network theory to further the understanding of planning practices.

Three dominant discussions exploring actor-network theory within the context of planning/spatial/environmental practice have been identified during the course of exploring such existing work. However, it is still possible to discuss how the chosen theory is applicable to the analysis of this thesis' case study using the work of Rydin and Murdoch.

Conceptions of environmentalism and sustainability

As previously discussed, sustainability can be further divided into three constituent parts, the social, the environmental and the economic. However, let us also remember that for actor-network theory, '*the social isn't simply human…it is all these other materials too*' (Law 1992, p.381). Therefore, exploring sustainability using an actor-network theory approach requires an open mind. with no assumptions or preconceptions. Murdoch's early work explores and critiques the constituent part of the theory using the study and evolution of economic forms, detailing how '*we must explain by using the descriptions of network construction and not by recourse to some underlying historical logic*' (Murdoch 1994, p.731). His later work moves to apply such concepts to perceptions of nature, society and space, within which he explores how power is the result of relations established between actors. Interestingly, Murdoch cites how it is important to observe how '*the focus is upon neither nature nor society for these categories emerge from the relations established within the networks themselves*'(Murdoch 1997, p.743). Thus, in suggesting that to explore sustainability and understand the performance and application of it at Waverley, it would be wrong to approach the analysis with a set definition or categories against which to assess the Waverley case study This is because, within actor-network theory, nature and society are not viewed as explanatory categories or resources because they are perceived as outcomes and the result of complex evolving networks of relations. For nature and society, '*the two great "domains" are emergent effects and only stabilised once the network configurations have settled into place*' (Murdoch 1997, p.744).

> *Actor-networks are the chains which give rise to natural and social realities, realities which can only be understood as stabilised sets of relations which allow the construction of centres and peripheries, insides and outsides, humans and non humans, nature and society and so on. The networks are constructed in such a way as to allow certain actors to represent the enrolled entities: as the networks stabilise on terms set by strategically placed actors so the sets of complex, heterogeneous relations disappear behind the dualisms.*

Murdoch (1997, p743)

Murdoch concludes in his study of inhuman/non-human/human relations (1997) how actor-network theory can be described as '*a theoretical language, which would allow symmetrical description of the powerful networks which traverse our natural and social worlds*'. This aligns well with the concept of sustainability, something that can also be seen to cross the natural and social worlds, existing as a result of continually evolving networks. Actor-network theory allows for the exploration of network formations in order to appreciate how sustainability is brought into being across planning practice, by unpicking the performance of sustainability previously 'black-boxed' across planning literature. Sustainability is nothing unless it is performed and actor-network theory affords the tools to explore such performances.

What this thesis therefore needs to achieve is to unpick the networks, to appreciate the foundations underpinning the performance of sustainability. As Murdoch outlines above, actor-network theory offers a suitable theoretical language and methodological approach through which to achieve this. The crux of my argument lies within the belief that, as Murdoch argues, neither 'nature' nor 'society' are entities that simply exist, and for me neither is 'sustainability'. While many may argue that 'nature', 'society' and 'sustainability' are 'black-boxes' of untouchable stable, accepted concepts that simply exist, I also question this. Actor-network theory allows for an explicit critique of the fundamental categories of 'economy', 'society' and 'environment'; and whilst many academics examine how these three are balanced and how sustainability as a whole performs, few studies critically interrogate the fundamental ontology on which it (sustainability) is founded. Unfortunately, sustainability has become for some, untouchable, a given notion that exists without many appreciating or recognising what it actually constitutes.

Murdoch's work (1995, 1997), in addition to others (Bingham, 1996; Demerritt 1996; Hinchliffe, 1996; Thrift; 1996 and Whatmore 1997), also combines actor-network theory with spatiality, an additional vital element to the appreciation of sustainability especially within a planning context. Such work considers the ways in which actor-network theory conceptualises how spatial relations are also intertwined in complex networks. 'Space' is viewed as an entity that, like 'nature' or 'society', is constructed within networks. This is important for the analysis of this thesis, exploring both the performance of sustainability and the development within which it takes place. '*Thus,*

the action, in actor-networks configures space' (Murdoch' 1998, p.361), or here, the action in the actor-network of sustainability configures the development of Waverley.

Most notable for further exploration in the thesis is Murdoch's description of the applicability of Callon's concept of translation to network spaces. Murdoch (1997) discusses the two varying types of network observed using translation, one in which translations are accomplished and the network stabilised and the other in which '*links between actors and intermediaries are provisional and divergent, where norms are hard to establish and standards are frequently compromised'* (Murdoch, 1997, p.362). Murdoch's observation, suggesting how each of the networks described above create different spaces, is especially critical for this thesis, and the uncovering of the translation of sustainability at Waverley will result in either a '*space of prescription ...with spaces strongly prescribed by a centre as norms circulate, imposing rigid and predictable forms of behaviour*' or a '*space of negotiation ...where spaces will be fluid, interactional and instable'* (Murdoch 1997, p.362).

The work of Rydin is also critical to the thesis' understanding and appreciation of actor-network theory. Rydin (2012) explored the use of actor-network theory to planning practice, observing a recent growth in the application of actor-network informed studies within planning, whilst also recognising the theory's ability to deliver distinctive perspectives on planning practice. During such observations, her work embraced the framing of policy documents as intermediaries, the planning application process as an obligatory passage point and energy modelling exercises potentially 'black-boxing' low carbon development, suggesting further that:

> *actor-network theory seems ideally suited to understand a world in which technological systems and environmental change are major preoccupations. With its emphasis on the lack of any boundary between society and technology or between the social and the natural worlds, it has the potential to deliver a theory appropriate for contemporary planning practice for sustainability.*

> Rydin (2012, p.24)

Defining an actor-network theory informed 'toolkit'

Before exploring the complementary methodological framework this thesis adopts, this chapter will move to explore a glossary of actor-network theory terms. It is important to do this to qualify the correct use of often-misinterpreted terms and to provide a tool kit for use in the subsequent analysis chapters.

It is commonplace to read everyday meanings into the terms associated with actor-network theory, including the words 'translation', 'actor', 'artefact' and 'network'. Such words have meanings we think we are familiar with and, therefore, continuous effort is required to ensure the correct use of the terms to enable a distinctive actor-network theory analysis whilst also providing a structure to guide the research (Rydin and Tate, 2016, p.6).

It is well documented that the use of an actor-network theory approach will not provide a quick fix to perplexing issues (Rydin and Tate, 2016) as the complex application of actor-network theory alone requires great thought and consideration. The use of a defined glossary of terms or 'toolkit' explained ahead of the analysis is therefore necessary to clarify how actor-network theory has informed this thesis' approach and how the associated terms will be applied.

The way in which actor-network theory is used to construct a description of the practices of planning is particularly pertinent here. As Rydin and Tate (2016) highlight: '*thoughtful, complex and at times precarious processes and alliances…are involved when planners respond to challenging social, environmental and economic issues*'. This complexity is also associated with the performance and re-performance of sustainability and forms the focus of this thesis (Rydin and Tate, 2013 p.3).

Many also cite the origins of the diffuse and variously informed actor-network theory application evolving from Callon's study of scallop farming and the notion of translation. Such origins have indeed supported and formed the foundational structures of research in many different areas, from architectural practices (Yaneva 2012) to anaemia (Mol 1999) to the application of online teaching (Bigum 2002) and the implementation of spatial plans (Tate 2013). The single thread unifying such

disparate topics that adopted an actor-network theory informed approach is the terms associated with it.

As previously discussed within this thesis, Law and Hassard (1999) highlight the necessary caution needed against conceiving actor-network theory as a single theory with a single approved set of modes. Instead, they chose to favour and champion the osmosis of actor-network theory, emphasising how the fluidity offered by the approach can inform the analysis of an increasingly diverse range of practices. Rydin and Tate (2016) also discuss how actor-network theory can '*yield a fully developed theoretical framework to be applied in its entirety*' or '*offer ideas and concepts for researchers to develop in their own way*' (Rydin and Tate, 2016, p.4).

This thesis, therefore, applies the latter through developing the terms associated with actor-network theory and defined within the following glossary to inform the fluid performativity translation of sustainability in practice.

Glossary of actor-network theory informed terms – a 'toolkit' for analysis

Actant(s) – alternative term for actor(s) used to address both human and non-human objects, which, as entities, speak for a wider network. Alternative term assists in stressing non-human entities may also 'act' and be actors or actants.

Actor – alternative term to actant(s) used predominantly in earlier actor-network theory work.

Agencement – the diffuse analysis of causality within which society is considered a result of the assemblage of elements in which the relationships between elements and not the elements themselves are the key focus, such as the agencement of elements x and y.

Artefacts – embodied actions or the distribution of actions across heterogeneous materials.

Assemblage – a term to be used with caution when discussing actor-network theory, with preference given to agencement. The term is also associated with its own distinct analytical framework emphasising the relational dimensions of a collective (Rydin and Tate, 2016, p.5).

Black-box – a concept borrowed from early computer technicians. Once an inter-actor network is stabilised, a 'black-box' crystallises around the object. The object then resists further analysis and is then often taken for granted

Causality – the effects that emerge from relationships, where one element can be implicated in quite a different effect when it is related to another set of elements. This definition of causality is unlike other formulations, which deem an event to have a singular cause, but highlights that cause is an effect of analysis.

Enrolment – the third stage of translation during which the network of actants, both human and non-human, is built through new associations. It requires translations that provide highly context-specific equivalencies, thus combining human skill and objects that are both responsive and context sensitive. Enrolment is considered '*vital for a practitioner seeking support for an agenda*' (Rydin and Tate, 2016, p.16).

Intermediaries – help to bring actants into association with one another. Can take many different forms, including people, organisations and artefacts. Some, including Latour, prefer the term 'mediators' to illustrate that such entities perform more than just a connection between two actants, also transforming, distorting or modifying meanings the actants carry across the network (Latour, 2005, p.39).

Interessement – the third stage of Callon's sociology of translation and the process by which actants begin to be brought into association with one another and certain relationships become strengthened.

Mobilization – signifies the fourth and final stage of translation within which the mobilization of allies united for the common cause of the network occurs.

Network – a central metaphor within actor-network theory, often confused with the traditional meaning of the word. The use of network here differs from the use in social and political science: it is not a fixed set of relations or connections but a set of mobile relations.

The associations and/or relationships between elements that require work to create and maintain. More recent calls for the use of the work and its static associations to be replaced with increasingly fluid terms, including rhizome or agencement.

Obligatory Passage Point – represent moments within the network through which an actant(s) must pass to maintain their presence within and the continuation of the actor-network.

Problematization – the first stage of translation, the identification of the dilemma, controversy or problem and the starting point for actor-network theory analysis. Occurs when an actant or actants help one another to appreciate how their interests will be met by joining the network.

Radical symmetry – the adoption of the unique 'actant' quality assigned to elements from both the material and social 'world'. Allows for associations within networks between a plethora of elements from both the material and social worlds. Such a definition also enables one, through the tracing of an actant, to explore how '*such seemingly inanimate things can, through their relationships authorise, allow, encourage, permit, suggest, influence, block etc and so on*' (Latour, 2005, p.72). The controversial foundation of actor-network theory is not without criticism. Caution is advised when considering an object's 'agency', as it may only exist under certain conditions through interactions with specific actants (Whittle and Spicer, 2008).

Translation – Callon's (1986) four-stage analysis is frequently used to structure research analysis and was originally used by Callon for his study of scallop fishermen. The distinctive four stages comprise problematization, interessement, enrolment and mobilization.

Concluding remarks

This chapter has considered why an actor-network informed conceptual framework is suitable for the exploration of interpretations of sustainability. Actor-network theory boldly seeks to undermine the assumed divide between the human and non-human, treating them symmetrically in order to understand the complex relations that make up our world. While for many, this may prove too much of a leap of faith and a departure from the expected tools and traditions underpinning social science theory, it is important to recognise that such limits are also the theory's true value, forcing us to question and examine the often too overlooked, assumed and taken-for-granted elements that have constructed our world (Murdoch 1996). Sustainable developments do exist, but what do sustainability and to be sustainable really mean? What lies behind the 'black-box' assumption and what constitutes the achievement?

Actor-network theory allows this thesis not merely to describe the entities involved in the networks of achieving a new sustainable settlement at Waverley, but to fully question the networks that formed and survived to create the stability that then created the vision of Waverley that is evident today.

The thesis now moves to consider the chosen methodological framework that is compatible with the application of an actor-network informed conceptualisation.

4. Methodology

Introduction

This chapter introduces the methodological framework on which the research was based. It explores the methods used, justifying their selection and appropriate inclusion within the chosen methodology. The chapter discusses the use of case studies, documentary analysis and interviews, highlighting the existing academic appreciation and potential areas of weakness for each of the methods used. It also provides an acknowledgement of the necessary potential ethical and theoretical implications of the methods used, before concluding how the set methodological framework applied returned the necessary research material for use within the analysis and assisted in answering the set research objectives.

Qualitative methodological framework

In order to explore the detailed nuances bound up within the performance of sustainability whilst using an actor-network theory informed conceptual framework, the study chose to use a qualitative case study-based methodological framework. The framework included an initial extensive documentary analysis and supplementary semi-structured interviews with key actants identified within the actor-network at Waverley.

As the academic context has explored, with no set algorithm or calculation available for describing sustainability, sustainable development or the application of justified decisions, it would be wrong to approach the research with a purely quantitative methodology. As the research topic is bound up with notions of interpretation and the appreciation of individual and collective understanding and behaviours, it would almost be counter-productive to assume such activity can be defined and quantified statistically. The research presented within this thesis is not about grouping bodies of definitions together or testing optimum practice, but about appreciating and documenting the processes at play during the act of interpretation and application of sustainability principles. Only a heavily weighted qualitative methodology could offer

the opportunity to explore the practices at play in such necessary detail. Expecting or predefining set options through quantifiable measures would have lost the detail the study aimed to engage with.

As the research uses an actor-network informed conceptual framework, it is important that the thesis also uses a supporting qualitative framework suitable for critically analysing the practices underpinning the development of new low carbon settlements. Therefore, the selection of a case study-based, qualitative methodological approach allowed for the combination of the narrative tracing practices of actor-network theory with extensive chronological documentary analysis and supplementary semi-structure interviews.

The use of case studies as a research strategy

Allowing for the conceptual framework and its application of actor-network theory as the grounding foundation for the qualitative methodology, it was a natural step to take that the research should embrace the use of case studies. Case studies may exemplify a single method, but they are also the setting within which a series of complementing qualitative methods can be applied. As Yin (2003) states, the use of case studies allows the empirical data enquiry to investigate a '*contemporary phenomena within its real life context when the boundaries between the phenomena and context are not clearly evident*' (Yin, 2003, p.12).

Case studies also rely on multiple sources of evidence and benefit from the use of previously developed theories, which guide the data collection and analysis (Yin 2003, p.12). As case studies try to explore the contextual underpinnings of a set of decisions, they exemplify an all-encompassing method or research strategy (Schranm, 1971, in Yin, 2003, p.12). Such academic thought supports the justification of the use of case studies in the thesis, as it explores how interpretations of sustainability influence the development and process (or, as Yin describes it, series of decisions) underpinning the development of new settlements. Both the use of an actor-network informed conceptual framework and the strategic use of case studies allows the thesis to illustrate examples via critical evaluation whilst exploring the true detail of the contextual situation (Yin, 2002, p.15).

The thesis, therefore, uses a single case study to explore how the performance of sustainability influences the planning and development of a new low carbon settlement. As 'the process' was the key element for exploration, the selected case study primarily had to be an active example of a new settlement with low carbon credentials. Considering the set credentials, the study proposed to use Waverley (a recently approved new settlement) on the Rotherham/Sheffield border. Further consideration is given to the selection of a suitable case study area n the following chapter.

Gaining access to the research material and retaining confidentiality

With most chosen methodologies, a necessary consideration is gaining access to the research area. This thesis was fortunate to have existing professional relationships, which allowed contact with the chosen local authority. However, it was also important that the existing professional relationship remained sufficiently distant from the group with which the research chose to engage. Fortunately, a degree of separation remained as the previous contact with the local authority involved employment as a private social research consultant with a different service within the authority. Nevertheless, it provided the necessary contacts to gain an initial meeting with the authority's planning team.

Following the initial single engagement with the planning team and the highly fortunate circumstances of an impending office relocation, the local authority concerned passed the researcher a single disk containing all the relevant documents and data. The electronic copy was the result of all the case files been digitised before the hard copies were destroyed, as part of the authority's office relocation. A large percentage of the data passed from the local authority was highly relevant, but unfortunately it was not in any chronological order. Whilst it was highly fortunate to be passed such a wealth of detailed and largely commercially confidential material, this latter issue also raised concerns about disclosure and ethical appropriateness. The decision presented the choice to either anonymise and lose the rich detailed nuances apparent within the research or retain the contextually rich detail and risk fracturing an established and mutually respectful professional relationship between the researcher and local authority? Fortunately, this was resolved following discussion with the council, the removal of names or positions identifying individuals and the

acknowledgement that over 90% of the data presented within this thesis can be accessed via public planning access portals.

Initial extensive documentary research analysis

Texts serve three purposes in the process of qualitative research, they are not only the essential data on which findings are based, but also the basis of interpretations and the central medium for presenting and communicating findings.

Flick (2002, p.29)

Perhaps one of the initial key issues faced included the sheer volume of electronically encrypted secondary data. This data was very kindly supplied by the local authority and included a wealth of material. Encrypted within a single 10,000 page pdf were several drafts of the extensive planning application (each over 1,000 pages), planning policy documents, consultancy authored reports, copies of commercially sensitive email exchanges, meeting minutes, reports to local councillors and letters discussing areas of concern raised by central government.

Initially, the data required the extensive administrative task of cataloguing each document by description and supporting page reference (identifying the documents position within the password encrypted 10,000 page-long pdf, as illustrated below), further extensive reading was then required before it became possible to appreciate which portions of the single pdf would be printed for further analysis. With no text search facility available within the extensive pdf document (as the pdf was generated from scanned-in material), the electronic document was essentially an image, making the functionality of any search facility redundant.

Figure : Screenshot of database of secondary documents for analysis

Source: Oldfield, 2016

Eventually, following continued struggles to manage the data electronically the decision was made to print the relevant documents and manually organise the data chronologically to allow for further detailed reading informed by a content analysis approach (Bryman 2015). This would allow for the an appreciation the relevance of the data contained within the documents to the tracing of the Waverley narrative using Callon's stages of translation as the overarching analytical framework. This involved sending the pdf in its entirety to the printers, collecting over 10 boxes of printed material and sitting down over a period of a week to manually sort day after day through the jumble of papers to organise them first by the type of document (i.e. email, meeting note, planning application, consultant's report) before then each subsequent bundle of documents (i.e. emails or meeting notes) chronologically. The materiality of the data pushed as an actant to be printed in order to engage with the narrative contained within, as the data required printing, thus relying on the physicality of things – interestingly, also mirroring the very origins of actor-network theory.

Figure : Images of the process of analysis and the physicality of data
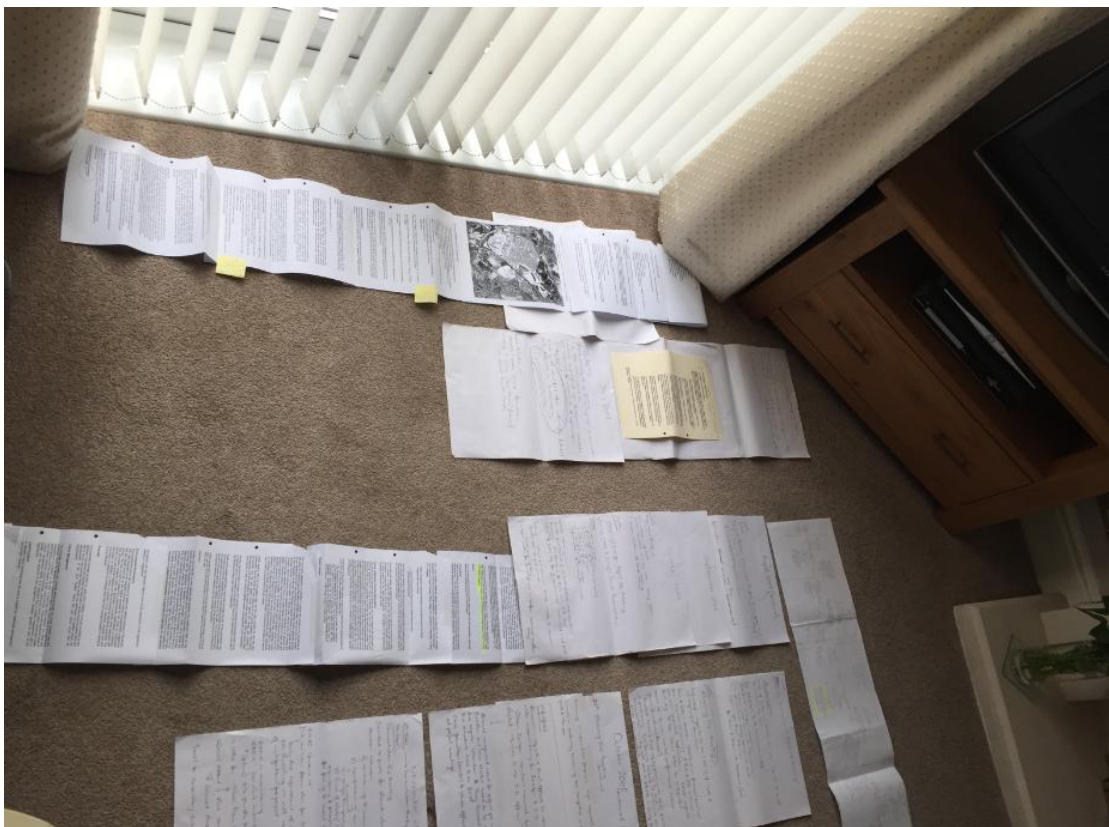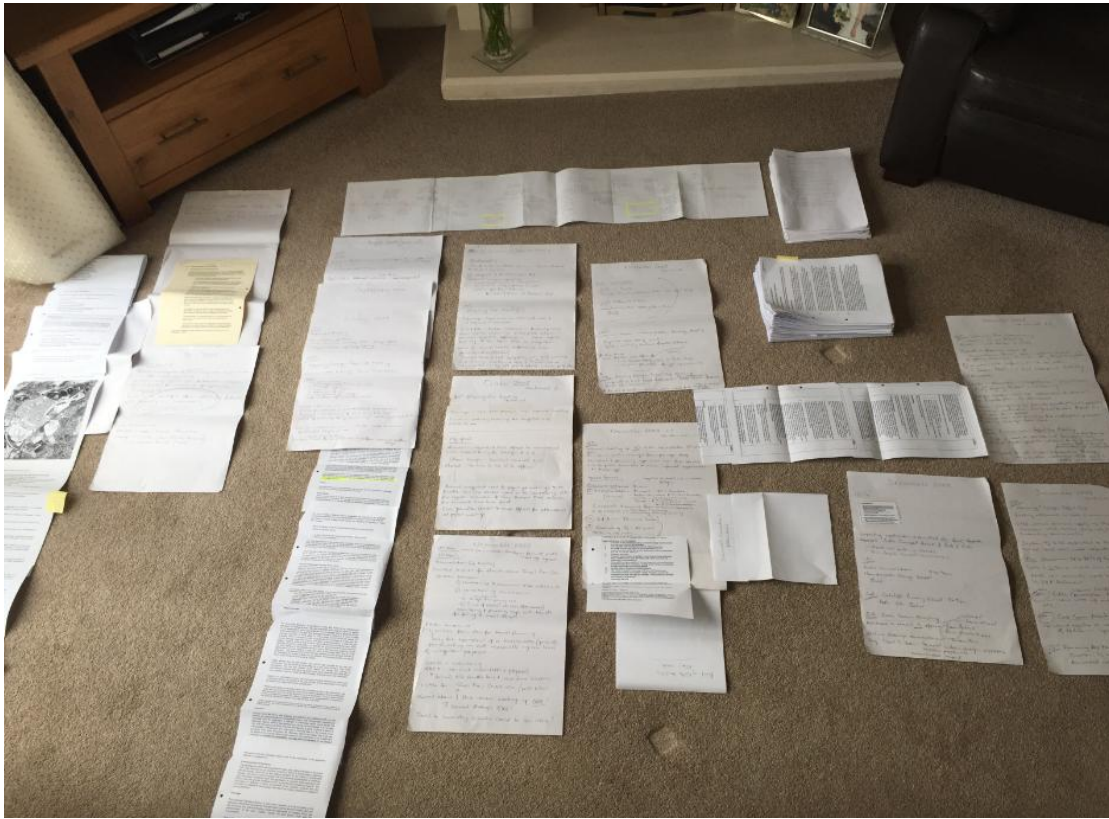
Analysis of the case study material then involved reading the documents initially to appreciate the sequence of events, constructing an initial account of what happened

during the conception and development of Waverley. The initial reading allowed for the description recited within the following case study chapter and began as a giant timeline constructed using wallpaper, highlighters and an extensive use of Post-it notes. Such an arguably old-fashioned approach to the organisation of the data allowed the data previously locked and concealed within an unusable pdf to be manipulated (albeit physically) and understood. In essence, the physicality of the secondary data was in itself an actant within the thesis. Its sheer size, volume and encrypted presence within the pdf software manipulated me as the researcher to engage with the data differently. It pushed a different approach that involved giant timelines, constructed by cutting data from various sources to create a giant chronological scrapbook detailing the sequence of events at Waverley, aligning well with the favoured conceptual framework and tracing of (arguably also chronologically aligned) Callon's actor-network theory informed four stages of translation.

However, only subsequent re-reading allowed for the appreciation and exploration of the events and processes apparent when applying the actor-network informed conceptualisation via the tracing of translation. Whilst writing up the case study allowed for an exploration of facts via detailed sequenced events, writing up the analysis using the actor-network informed conceptual framework revealed the nuances and intricate processes black boxed within the interpretive act of sustainability. A copy of the outline and subsequently revised planning application (the full suite of documents) are included on a CD attached to the inside back cover of this thesis. A list of all the documents reviewed as part of the documentary analysis is also included (and indicated separately) in the bibliography of this thesis.

Texts play a pivotal role in this research due to their associated role within the network analysis of defining and enrolling entities into networks. It is important to appreciate how within the thesis, texts are viewed as intermediaries and actors. However, texts '*should never be taken at face value, they must be regarded as information which is context specific and as data which must be contextualised with other forms of research*' (Forster, 1994, in May, 1997, p.187).

The flexibility the method purports is often regarded highly advantageous as it 'enables the researcher to consider not only the ways in which meaning is

constructed, but also the ways in which new meanings are developed and employed' (May 1997, p.193). Such academic appreciation of documentary analysis supports the use of texts within the methodological framework applicable for appreciating further the interpretation of sustainability as '*the content of analysis must engage in an act of qualitative synthesis to summarise the overall meaning of the text and its impact on the reader*' (Scott 1990, in May 1997, p.192).

Conceiving texts as artefacts, intermediaries and actants permitted by the actor-network informed conceptual framework employed by this thesis, allows us to '*consider how a document represents the events which it describes and closes off potential contrary interpretations by the reader, to consider the ways in which a text attempts to stamp its authority upon the social world it describes*' (May 1997, p.195).

Supplementary semi-structured interviews

Semi-structured interviews were used to supplement, confirm and interrogate the research material collected during the initial extensive documentary analysis in order to appreciate and confirm the key actors' involvement with the interpretations of sustainability at Waverley.

Through the use of the qualitative method of semi-structured interviews, it was possible to engage with a range of invested parties, keeping the interview themes the same, whilst also allowing the necessary time and space for the individual interviews to develop further in certain areas. As the set research critically explored the context underpinning the implementation of low carbon settlements through examining the rules, resources and settings that the variety of actors were engaged with, it was important that the research method reserved space for individual interpretation and justification. However, due to the nature of the interviews, it was also important to retain a generic thematic structure to ensure that everyone who was questioned was given an equal opportunity to engage with the same research themes.

The use of semi-structured interviews allowed a uniform element (via an aide memoire) to remain across all the interviews conducted, whilst also allowing the individual consultations to develop as appropriate, thereby gaining a greater level of detail and understanding. Valentine (1997, p.111) describes interviews as '*a dialogue*

rather than an interrogation'. The use of semi-structured interviews as a research method remains a well-documented and respected research tool. As Flick (2002) states: '*the consistent use of an interview guide increases the comparability of the data and that their structuration is increased as a result of the questions as a guide*' (Flick 2002, p.93). Interviews are, therefore, '*sensitive and people orientated, allowing interviewees to construct their own accounts of their experiences by describing and explaining their lives in their own words…engaging in a more wide ranging discussion than a questionnaire*' (Valentine, 1997, p.111).

As the research study presented by this thesis had a set timescale and set research questions, it was also important that the interviews contained set research themes, allowing the researcher the ability to cross reference key elements and answer the set objectives. However, the interviews did not include a set of pre-framed or predefined detailed questions, but a series of ordered research themes and issues. Using a set of themes rather than detailed questions was important and became necessary to remove as far as possible the researchers' interpretations and understanding of 'sustainability', whilst also recognising the inevitable elements of the '*subjectivness of the researcher and those being studies are part of the research process*' (Flick 2002, p.9). The research themes explored during the interviews included understanding the interviewees' wider interpretations of sustainability and sustainable development, exploring their detailed involvement with the application and development of Waverley, appreciating any issues they were involved during the network's translation and allowing time for interviewee-specific clarity to confirm my appreciation that the events that occurred during the tracing of the narrative of the case study represented an accurate portrayal of events.

With such a subjective nature bound within the narrative of Waverley, interviews unlike a questionnaire '*aim not to be representative, but to understand how individual people experience and make sense of their own worlds*' (Valentine 1997, p.11). This study was specifically concerned with making sense of the structures and actors evident within the network apparent during the interpretation and performance of sustainability at Waverley.

In total, three semi-structured detailed interviews were held with representatives from Rotherham Metropolitan Council ('the council'), Harworth Estates ('the landowner') and ATLAS ('the independent advisor'). A total of five individuals were interviewed, with each of the meetings lasting in excess of three hours. The interviews were conducted at a place convenient to the interviewee, typically their place of work or office and, whilst remaining mindful of the researchers safety, it was important to be as accommodating as possible given the professional and working commitments of many of the key consultees. Although neutral spaces often aid the collection of data, the majority of the interviews were held during the lunch breaks of key consultees and, therefore, workspace offices and staff workrooms offered the most 'suitable' spaces to conduct the interview. As Valentine (1997) notes, where an interview is held can make a difference, but you often have '*no choice but to interview them in their own offices*' (Valentine 1997, p.118).

With the express permission of all the consultees interviewed, the interviews were digitally recorded and later transcribed. Although this once again can arguably impact on the final data collected from the interviews, as not everyone likes to be recorded. The use of a digital recorder allowed the researcher to concentrate on the interview without having to rush to make accurate notes and also allowed the capturing of detailed nuances that might later add to the interpretation and analysis (Valentine 1997).

Analysis of interview material

Whilst the use of semi-structured interviews allowed the interviewee to shape elements of the interview, as part of a wider qualitative study and a process of constructing views of reality it is also the '*researcher who interprets the interview and presents it as part of the findings, who produces a new vision of the whole*' (Flick 2002, p.9). Whilst acknowledging that elements of research-led interpretation are inevitable, the interviews were transcribed and analysed solely by the author of this thesis, using open coding for the initial stage of interview analysis. Although the overall conceptual framework for the research uses an actor-network informed approach, open coding of the interview data explored the widest open analysis possible, taking themes and coding structures from the interview data, thereby

providing a synergy with the overarching conceptual framing of tracing the processes of interpretation from solely appreciating the actions within the network.

It is important to highlight that whilst the study recognises the skill required in conducting detailed semi-structured interviews and their importance as one of the study's primary research methods, the researcher has previously conducted (in professional employment) many face-to-face interviews and completed their subsequent transcription, coding and analysis. Such experience has developed the enthusiasm and respect for an equally challenging yet engaging research technique.

The study was mindful of the time and resources needed to engage and secure the necessary level of participants; however, it remained aware of the rewards such detailed interviews can give in the wealth of data returned. It is because of the level of detail interviews can return and the need to engage with interviewees to attain understanding of such a complex issue that semi-structured interviews were selected as a necessary supplementary method.

Interviews were relatively easily obtained due to existing professional relationships with the local planning authority and, once access was gained to arguably the 'gatekeeper', subsequent supporting interviews followed relatively smoothly with the assistance and knowledge of Rotherham Council. Whilst the local planning authority, the landowner, the consultancy team and ATLAS were happy to assist and be interviewed as part of the research, unfortunately despite several attempts to contact an engage the local ward members and MP, no acknowledgement or return message was every received.

However, a wealth of data was gained during the detailed and extensive interviews held with Rotherham Council, Harworth Estates and ATLAS. during which over 12 hours of interview material was recorded, transcribed and subsequently analysed. For further reference, examples of the transcribed and coded interview material are contained below, illustrating how the interview material was coded using the themes contained within the interviews themselves.

Figure : Examples of Coding Analysis

1

2

1. Sustainability

So the nub of the question there is...is sustainability...is it a case of having a target and just meeting it or is it a case of evolving the ideas, actually in terms of doing this then I need to do that

I suppose what I will end up saying to you is that...erm...things have changed a lot given the circumstances and context and that the scale has certainly reduced and that probably sustainability has been effected by that and taken more of a erm...lets say watered down in a way and that's considering that I have worked on Waverley since 2002

Sustainable Development is probably not the priority; well they (HE) are all about regeneration and reinvestment into the area and we have to think now that after Labour and now from the recession it is all about making things viable, getting them off the ground, so I suppose from a sustainability point of view it has been forgotten given the market conditions such as here up at Waverley.

From our point of view we are not just a property developer because we don't just come from that we have a regeneration coal mining background and there is a bit of taking an old mine that used to employ people within that community and actually through housing or employment creating jobs for those. So there is also that element to the work that we do

We are keen to stick to the ethos.

Its kind of using the resources we have and got to the maximum. (Contradiction)

So we moved to where we are now so that we could create Waverley and its still as sustainable as planned its just in a different order.

we have the same master planning ideal and want to keep the same principles but look at it in a way that we can deliver in terms of getting planning permission and in terms of our project we had to do something and think a lot harder to get things started otherwise it would have never started as it was.

What is interesting is that each house builder has met the sustainable code level in different ways, so Harron are less reliant on the photovoltaics and more on the building standards and insulation, where Barrats are more reliant on solar heating.

The other element of our work which is more kind of financial sustainability than environmental sustainability is that we had to do here is we had to question how can we reduce the engineering costs

I would like to think that the sustainable development is still there in principle from a sustainability view and as an exemplar it is (Waverley) still hopefully trying to offer the best practice on how to develop at this scale in the current market and hopefully we can be successful.

3

In terms of sustainability we are building to level 4, we are putting a lot of social sustainability ie making an effort to put that social structure in from the environmental sustainability side obviously we have the green space, we have the lake and the little bit around the parkland area but we aren't at the level that we envisaged ie with the green roofs they tend to have been lost to actually make the development happen weather we will actually get to that level again is more a question for you I suppose. The market has to improve to allow developers to actually pay for these things and at the moment im not sure mainly because of the house builders if they see value in building houses above code level 3 and until they see that it just wont be done.

This development as an exemplar started as the fact that everyone who worked on it was excited about creating something from scratch it was a really big thing in that it was stand alone, something they could be proud of and something that could be used as a model so there were various motivations.

Yeah it was the buzz word wasn't it and I think everyone got caught up in it and in the market as it was in 2006/7 it was great in that we were able to do that, having gone through one of the worst recessions this country has ever had we have had to well say actually what can we do just to get this going although we cant deliver all the underlying sustainable development principles as its more important just to get the development going but we can still make it very much an exemplar project. This in a way is more sustainable than a green roof in that we are keeping thinks going, keeping investment, jobs and people paying their mortgages.

resilience is equally as vague

I think it would be wrong to think that it (sustainability) is done and dusted and its something that should be left you know and moved on and I think that the very fact that even the government struggled so much with the definition of Sustainable Development in the NPPF is testament to the fact that it is contested and I think that there isn't really a satisfactory definition, national definition of what we mean even in the planning context by sustainable development.

About thinking what can we achieve? (re – what is realistic and practical – pragmatic)

on a number of ATLAS projects we have spent some time facilitating a framework for discussing sustainability you can head it as sustainable development...you can call it master planning, place making creating something which is meaningful and we do use one or two other kind of tools but like most of the other stuff the kind of thinking the basis of it is there and im not sure we have developed anything kind of new

but we have certainly spent some time facilitating those discussions with others on projects weather it be councils, other kind of public sector organisations.

4

95

As the above coded extracts and themed data illustrates, following the transcription of the interview material collected, the data was coded using themes taken specifically from the data itself. The initial themes of sustainability and Waverely emerged from which a wealth of data was coded, however as the themes grew they also self divided into subsequent sub-themes. For example from the initial theme of sustainability came the economy, regeneration, planning, the environement, energy issues, examples of best practice, the vision and policy. Whilst the initial code of Waverley sub divided to include: time, development, involvement, Harworth Estates, changes, land values, design issues, location, scale, phasing and densities. The coded material then assisted during the analysis when tracing the process of translation and the emergent actor-network the coded data provided additional evidence and narrative to support the relaties evident and performance of sustainability evident at Waverley.

Challenges and conclusions

The application of documentary analysis and semi-structured interviews within the wider appreciation of a case study-based framework inevitably displays elements of subjectiveness, as is the nature of all qualitative research. Arguably qualitative-based research always contains elements of the '*subjectiveness of the researcher and those being studied as part of the research process*' as it is the researcher *'who interprets the interview and presents it as part of the findings, who produces a new vision of the whole*' (Flick, 2002, p.9). However, it is necessary to embrace such restrictions to overcome the inevitable elements of subjectiveness to conduct the research necessary to appreciate further if sustainability has become a static and accepted notice or continues to operate as a forum for learning (Owens, 2002).

Inevitably, the physicality and volume of data presented challenges as the pdf document constituted an actant within the understanding of Waverley. As the researcher, I became forced in finding resourceful ways of engaging with the data to draw into the network of Waverley. However, by deconstructing the pdf via printing the document in its entirety and painstakingly piecing the narrative together as a researcher, I was able to insert myself into the Pandora's box of Waverley and reconstruct the network using actor-network theory to understand the performance of sustainability.

Without these things in the meeting room, the discussion that took place would not have occurred. Another discussion, with a likely different outcome, would have taken its place. And a different relationship would have been established between the planners and the developer's team. Among other consequences, things focus deliberations.

Beauregard (2012, p.183)

Without wishing to micro analyse the criticisms of embracing an actor-network theory informed approach and duplicating discussion considered within the following conceptual framework, the thesis qualitative case study based actor-network informed approach champions the work of Beauregard (2012) and his exploration of the micro politics of planning and the way in which people interact with objects to establish understanding. According to Beauregad (2012, p.188), '*non-human things matter … things matter how we relate to others...when they change our relationships are altered … consequently a theory that leaves out non human things misrepresents planning practice while severely limiting the ability of planners to act effectively and with influence*'.

This chapter has outlined the research strategy implemented by the research conducted and presented by this thesis, explaining the overarching qualitative case study based methodological framework with the addition of archival documentary review and semi-structured interviews. Following the exploration of the chosen conceptual and methodological approach, the thesis will now explore the chosen case study area.

5. Case Study

Introduction

This chapter explores the single case study around which the research is focused. It looks at why the particular case study area was chosen, explaining the site's history, ownership and management. The chapter's focus is then on documenting the site's relevant planning context, outlining the applications, their organisational management and the continuous revisions. By tracing the area's evolving aspirations and defining the development's vision, it is possible to trace the site's narrative back over twenty years. By the end of this chapter, it will be possible to understand how the site's history and subsequent management have influenced the development of the new settlement and the progress made to date. It will also be possible to appreciate why the selection of Waverley as a single case study area was appropriate for exploring the performance and application of sustainable development in practice.

Selecting an appropriate study area

The selection of any case study area is guided by the overarching aim of the research whilst also providing an appropriate context within which to explore the chosen social processes. The aim of this study was to conduct an actor-network theory analysis of development practices in the English planning system, with a particular emphasis on the interpretative practice of sustainability and the subsequent implementation of sustainable development. By development practices, the thesis refers to the forward and development control planning process bound up in the implementation of new development across England.

This meant that any selected case study had to provide the context within which it was possible to:
   a) focus on development practices;
   b) explore the interpretative practices of sustainability; and
   c) examine the implementation of a sustainable settlement.

In addition to the contextual and academic considerations, practical implications also influenced the selection of an appropriate area for study. Such considerations included the set timeframe of three years, a restricted budget and the physical availability of only two appropriate settlements within which the study could be conducted. The sheer size and scale of the case study areas each bound up with the level of intricate detail needed to explore interpretative practices also prescribed the use of a single case study. Therefore, one of the earliest considerations of the study was identifying which case study area to engage with. From its initial conception, the research was mindful that it was necessary to select a development of significant size, impact and local importance. A large development demands more of everyone, testing the skills, knowledge and finances available, as the pressure and expectations of the invested parties increase with the size of their initial investment. The selection of a large development means more people will be involved, all with significant time and money invested in the ultimate success of the project. With such high investment and expectations to take forward, the malleable sustainability agenda at the heart of the vision is also arguably more prone to change as each party pushes or pulls towards achieving their end gains.

Essentially, selecting a large significant development project offered a greater level of potential data and an increasingly detailed narrative to explore. If the study had chosen to concentrate on a small-scale development with less invested and dependent locally on its success, the performance and practice of moulding sustainability to fit may not have occurred as predominantly as in the large-scale development. With larger developments come greater political and professional scrutiny, and, therefore, an important societal issue such as sustainability is likely to have an increasingly higher profile. In addition, with reference to the literature review and the academic thinking surrounding how the physical form of a settlement influences the overall sustainability, it is possible to suggest that a larger settlement should display more characteristics than are expected of sustainable settlements. For example, the larger settlement should theoretically offer increased examples to explore the opportunities for connected design.

South Yorkshire or East Devon?

With only two representative examples in the UK, the study considered using either of the two proposed new settlements. Both *Waverley* in South Yorkshire and *Cranbrook* in Devon promised to be exemplars of new low carbon communities and were viable as study areas in their own right. The selection of Waverley over Cranbrook was made due to the site's pre-existing industrial history, rich planning narrative, the researcher's pre-existing understanding of the area/local authority and the development's close proximity to Sheffield. Those involved in the development at Waverley were open to initiating discussion and reflecting on the processes they had experienced. The willingness of participants in addition to the rich data available and our close proximity to the site made Waverley the more favourable case study area.

Of the two potential areas, Waverley also promised to be the larger settlement, being over 33% larger than Cranbrook, with an additional 990 proposed new dwellings on a 230-hectare site (**Figure 8**). Cranbrook on paper appears to have explicitly presented the development's performance and proposed application of sustainability, while, in comparison, Waverley appears to be more discrete in its communication of sustainable development. This suggested potential areas of tension or difficulty in their expression, documentation or articulation defining and marketing the settlement's sustainability. Such a suggestion of potential difficulties supported further the selection of Waverley as a case study that would offer increased detail and examples of uncertainty.

Figure 8: Comparison of the proposed development areas

Waverley (South Yorkshire)	Cranbrook (Devon)
3,890 proposed dwellings	**2,900** proposed dwellings
230 hectares / 568 acres	**164** hectares / 405 acres
The interpretation and intended application of sustainability can be found by cross referencing various application documents including the: • Design and Access Statement, • Planning Support Statement, • Energy Strategy, and • Sustainability Appraisal.	An extensive sustainability strategy (146 pages) was submitted as part of the planning application. The sustainability strategy clearly defines and outlines the applicant's definition and intended application of sustainability at Cranbrook.
There is no inclusion of a clearly defined sustainability strategy for the Waverley development.	
Commitment that all dwellings will be built to a minimum of Code Level 3 of the Code for Sustainable Homes.[1]	Commitment that all dwellings will be built to a minimum of Code Level 3 of the Code for Sustainable Homes.[2]
Post Code: **S60 5TR**[3] **12 miles** from research base[4]	Post Code: **EX5 2DY**[5] **258 miles** from research base[6]

Source: Oldfield, 2016

While comparing the suitability of studying each of the proposed developments, the area's marketing material and outline planning applications were explored, and, as part of this, the development's vision statements (Figure 9) were compared. Although exploring each vision was only a brief task, it illustrated that it would be possible to begin to explore how the outcomes of large development projects are significantly influenced by the nature and timing of debates about sustainability.

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[1] roam.rotherham.gov.uk/PDF/planningPDF/RB2008-1372.pdf

[2] www.exeterandeastdevon.gov.uk/cranbrook

[3] http://www.barratthomes.co.uk/new-homes/south-yorkshire/H595301-The-Edge,-Waverley/

[4] maps.google.co.uk

[5] https://www.taylorwimpey.co.uk/find-your-home/england/devon/exeter/cranbrook

[6] maps.google.co.uk

Figure 9: Comparison of the proposed development' marketing visions

<u>**Waverley (South Yorkshire)**</u>

'*Waverley is designed to be an **exemplary sustainable community**. It has been carefully planned to ensure that **the size, scale and density** of the development will support **efficient use of resources** and **allow the town to be self-sustaining**.*

*An **integrated approach to energy use, transport systems, water conservation, environmental enrichment, waste management and sustainable land use** will deliver a truly sustainable community for the twenty first century.*'[7]

<u>**Cranbrook (Devon)**</u>

'*To create **a self-sufficient, low carbon new community** in **close proximity to skilled employment opportunities**, encouraging people to **use sustainable modes of transport** and to **reduce the need for them to travel** between work and home by car.*

The vision and challenge for Cranbrook is to create an attractive and vibrant town which combines the rich urban fabric of a historic Devon market town with the needs of a twenty first century lifestyle.'[8]

Both marketing statements illustrate differences in interpretative practice when creating a new sustainable settlement. Whilst both cite meeting the needs for of the 21st century (an all-encompassing, unquantifiable, vague and sweeping statement), they differ in their emphasis on how they will approach achieving this. The applicant for the development of Waverley interpreted that creating an exemplar new sustainable settlement would involve concentrating on issues of density, the efficient use of energy, transport, waste, water and land. Those working on the Cranbrook development invested their understanding of implementing a sustainable development by focusing on the development's location, ensuring it was within close proximity to skilled employment opportunities, thereby reducing the need to commute. Such differences highlight the necessary interpretative and contextual nature of developing geographically different spaces whilst also supporting how interpretive sustainability is.

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[7] www.waverleycommunity.org/the-development/sustainability
[8] www.exeterandeastdevon.gov.uk/cranbrook

Observing the above differences in developmental and interpretative practice confirmed the viability of this research and supported the suitability of Waverley as the chosen case study. It is an area where it is possible to conduct an ANT analysis of the development practices evident in the English planning system, whilst also providing the opportunity to focus on the interpretative practices inherent with the application of sustainable development.

Waverley – a single case study

Waverley New Community (WNC) is a significant new development for the local area, and indeed the Sheffield City region. It is the largest single planning application that Rotherham Metropolitan Borough Council (RMBC) has ever managed (RMBC Planning Officer, January 2014). As the single most significant settlement of recent years, Waverley has commanded the inevitable attention and expectation assigned to a development of its size.

This section begins by exploring the detail behind WNC, explaining the settlement's location, history, ownership and vision. Exploring such detail is necessary to ground the case study area in its appropriate geographical and social context. This context will also provide the initial foundation for the subsequent analytical chapters.

Location

WNC is located within the metropolitan borough of Rotherham, sitting upon the Rotherham/Sheffield administrative boundary, within the existing village of Catcliffe, in close proximity to Treeton and referred to colloquially as the 'former Orgreave pit site'. The development site is accessed via the existing Sheffield Parkway (A630), situated between Rotherham and Sheffield, some three miles from the centre of Rotherham/Sheffield and two miles from Junction 33 of the M1. (Planning Support Statement, October 2009)

Figure 10: Location plan

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Source: RB2008/1372 Design & Access Statement 2009

Waverley is also surrounded by the existing settlements of Catcliffe to the north-east of the site, Treeton to the east, Orgreave and Woodhouse Mill to the south and Handsworth to the west. As illustrated in Figure 10, Highfield Commercial abuts the site to the north, on the eastern side is the River Rother and the Rotherham-Chesterfield freight line, while the site's southern boundary abuts the existing Coalbrook Housing Estate, with the Sheffield-Lincoln railway line to the site's south-western edge (Planning Support Statement, October 2009).

Site history and ownership

The development site is the former home of Orgreave Colliery, witness to the Battle of Orgreave during which Orgreave Colliery rose to national prominence during the 1984 miners' strike as the scene of a famous stand-off between police and miners and is perceived as '*one of the largest brownfield sites in Europe*' (interview with Harworth Estates employee, January 2014). The site spans an area of 230 hectares (568 acres), of which 115 hectares (284 acres) are outlined for development, with the remaining land utilised as undeveloped green space. Included within this development footprint is Waverley Advanced Manufacturing Park (AMP). This study focuses solely on the planning and development of Waverley New Community (WNC) and does not consider or discuss the separate planning applications or development of Waverley AMP. Together, both the Advanced Manufacturing Park and Waverley New Community constitute the development of Waverley in its entirety (as illustrated below in

Figure 11).

Figure 11: Site boundary

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Source: RB2008/1372 Design & Access Statement 2009

By putting the site's area into a comparable context and illustrating that it could house over 320 football pitches, of which over half of those will be developed, it should be

possible to appreciate the scale of the site, the potential development area and the scale of any remediation work necessary to accommodate development here.

As s site of the former Orgreave Colliery, the land pocket has an extensive and complex mining history, with industrial activity dating back over 200 years. Coal mining dominated the industrial activity, with an active coke/bio-production plant working there from 1919 to 1990 and open cast mining between 1977 and 2006. During the final years of open casting (2004 to 2006), the Orgreave Reclamation Scheme operated with the primary purpose of clearing the contaminated and derelict areas whilst also recovering any remaining shallow coal reserves, thereby providing the initial foundations for future restoration work (Planning Support Statement, 2009).

Mining activity ceased in January 2006, marking the end of the initial phase of the reclamation scheme. During the on-site restoration work, UK Coal invested in excess of £20 million in removing 18 million tonnes of waste, decontaminating and rerouting the River Rother, constructing a new road at Highfield Spring, making a financial contribution towards the construction of a new bridge over the existing Sheffield to Lincoln railway line, compacting the route proposed for the new Waverley Link Road and compacting surface land across the entire Waverley site.

Figure 12: Restored brownfield site, July 2008

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Source: RB2008/1372 Design & Access Statement, 2009

As a former operational colliery, UK Coal owned the entire site, managing the reclamation, remediation and development of the land under the company's subsidiary, Harworth Estates (HE). However, since UK Coal went into administration and the company was restructured, HE has become an independent property development company. The ownership, management and subsequent development of the site continue to be the responsibility of HE, with UK Coal retaining a 25% share of the land holding company.[9]

Heavy industry has had a distinct and significant influence on the landscape and industrial activity across the UK throughout the 20th century. After the decline in mining activity, vast areas of land became derelict colliery sites, with large expanses of heavily contaminated land. UK Coal and, subsequently HE worked on restoring these extensive areas, releasing their development potential and subsequent land value. HE is currently managing 200 sites across the UK, encompassing in excess of 13,355 hectares (33,000 acres) of land, which, subject to planning across 44 active sites, could provide imminently over 12,000 new housing units and over 550 acres of employment land.[10] Due to the ownership of such former colliery sites, HE is one of the largest regeneration and property management companies in the north of England.[11] Waverley is also Harworth Estates' flagship development. As Yorkshire's largest brownfield mixed-use regeneration site, the company promotes this site as having,

> *...national economic significance that is at the forefront of the regeneration of the UK.[12]*

Harworth Estates Online (2014)

The quote, from the site online marketing material, is a bold statement to make, with highly charged commercial expectations placed upon the Waverley development.

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[9] http://www.rothbiz.co.uk/2012/12/news-3139-changes-at-harworth-estats-as.html
[10] http://harworthestates.co.uk/sector/strategic-land/
[11] http://harworthestates.co.uk/about-us/
[12] http://harworthestates.co.uk/about-us/

However, it illustrates, in addition to the site's existing industrial history, complex remediation work, scale and commercial significance, the rich contextual narrative this case study offers. The outline context and details of this have only briefly been explored above, with further detailed analysis provided later.

Management of the site and planning application

A development the size of Waverley requires intricate organisation and management. During the initial scoping, pre-application and application phase of the development, three main organisations were involved: Harworth Estates (the land owner) Atisreal Consultants, (the planning consultant and applicant acting on behalf of Harworth Estates) and Rotherham Metropolitan Borough Council (the local authority from whom planning permission was sought).

Harworth Estates – Waverley Prince Limited as the company was known is now simply called Harworth Estates (HE). During the time period this research focuses upon HE remained the property division of UK Coal, which owned the site in its entirety.

Atisreal is a subsidiary of BNP Paribas Real Estate. It acted as the planning consultant for HE and co-ordinated the application and all supplementary consultancy expertise.

Rotherham Metropolitan Borough Council (RMBC) is the local authority from which HE sought planning permission. The council's planning officers worked closely with both HE and Atisreal during the pre and post application submission.

RMBC's organisational management of the planning application

The planning application is the largest single application RMBC has ever received and processed and remains highly significant for the borough. The application to develop Waverley (3,890 units) heavily supports Rotherham's 15-year housing plan to provide an additional 850 new homes per annum (2013 to 2028). Rotherham's Local Plan Core Strategy Housing Paper 2012 discusses the need to provide in total 17,000 new homes over the 15-year plan period. The development at Waverley,

therefore, solely accommodates the borough's five-year 'deliverable' housing provision, identifying, as required by the National Planning Policy Framework (the Framework), sites that are available, suitable and achievable within the first five years of the current housing plan.

The planning team at RMBC are organised like any typical metropolitan borough council. They represent a relatively small but experienced team which have witnessed restructuring and enforced redundancies across the wider council administration as part of cost-saving measures.

The core project team incorporated 26 individuals across 10 organisations, including 13 RMBC employees representing nine different departments. The core team comprised representatives from RMBC, Atisreal (lead consultant), Harworth Estates (land owner and applicant), Sheffield City Council (also on the boundary of the development), ATLAS (Advisory Team for Large Applications), the NHS, the Highways Agency, the Environment Agency, LDA Design and White Young Green (consultants).

Internally within RMBC, nine different departments contributed to the core project team, including representatives from planning, urban design, transport, housing, drainage and community services. Within the Local Planning Authority (LPA), the application was (and continues to be) processed by three main individuals, comprising the Planning Manager, a Development Control Senior Planning Officer and a Development Control Planning Assistant.

Wider organisational structures inevitably existed above the basic core team. Central to the applications' organisation was the Project Steering Group, charged with the overall progress of the planning application and Waverley project. Above the Steering Group lay the Stakeholder Group, RMBC's Corporate Management Team and the Waverley Project Board. These groups reviewed the main decisions and the work conducted by the Steering Group, providing advice as and when was necessary.

Lying structurally beneath the Steering Group were the five Project Theme Groups that comprised Housing/Design, Transport, Environmental, Local Community

Infrastructure, and the Management Company. Finally, the Waverley Liaison Group sat to the side of the Steering Group, organising public consultation events and feeding back the results to the Steering Group and Project Board.

Figure 13 below illustrates the organisational structure of the key individuals involved with the preparation and subsequent implementation of the planning application for Waverley New Community.

Figure 13: Organisational structure of the project team
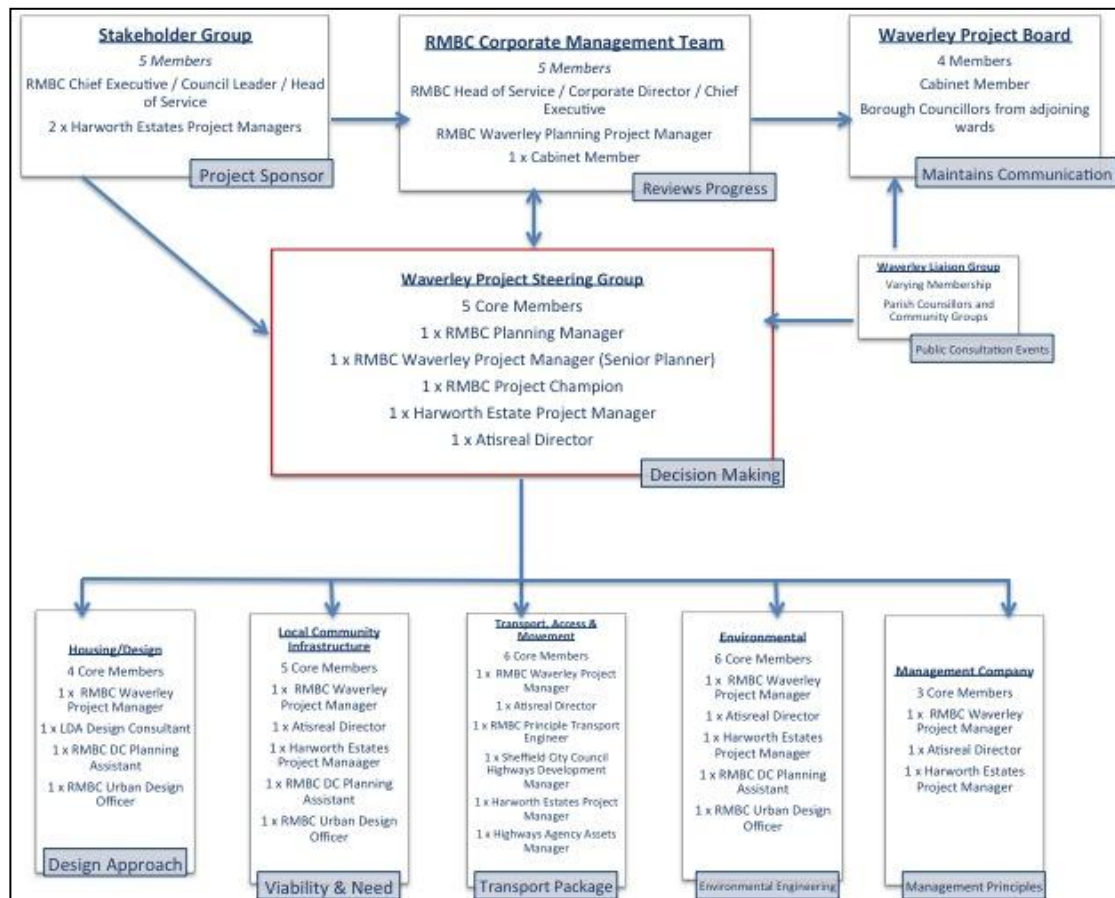
Planning policy

At the time the application was submitted and examined in 2008, under a Labour Government administration, three tiers of planning policy remained and included national, regional and local derived policy.

In determining the application, much policy was relevant, and whilst this is discussed briefly below, it will be explored more fully in the analysis chapters. As Section 38(6) of the Planning and Compulsory Purchase Act 2004 states:

> *If regard is to be had to the development plan for the purpose of any determination to be made under the planning acts the determination must be made in accordance with the plan unless material considerations indicate otherwise.*

Acknowledging the above and for the purpose of determining the application, the development plan comprised the Yorkshire and Humber Plan – Regional Spatial Strategy to 2026 (2008) and policies carried over by the Secretary of State (2007)

from the Rotherham Unitary Development Plan (1999). In addition to the Development Plan, several material considerations were also relevant. They included the emerging Rotherham Local Development Framework, National Planning Policies and Statements and Local Supplementary Planning Guidance.

It is important to acknowledge the extensive nature of the planning policy involved in the applications for Waverly, and whilst it is not possible to describe here the detail listed in each one, they will be explored in greater detail in the analysis chapter. Considering the wealth of policy documents that were consulted in the scoping, development and determination of the proposal, it is possible to begin to appreciate the volume of material the development was inherently bound by.

Planning history – the applications

Inevitably, due to the size of the development site and scale of the proposals, Waverley in its entirety was and continues to be the subject of many complex planning applications. From the detailed outline application for the new community to the erection of new supporting energy and transport infrastructure to the smaller individual phased land pockets submitted by the individual house builders, RMBC has received to date in excess of 23 planning applications (not including applications for the discharge of conditions).

For the purpose of this research, the study is concerned only with the original and later revised outline planning application (ref: RB2008/1372), submitted on 26 August 2008 and later revised and resubmitted on 13 October 2009. This application, and its supplementary documents, organisation, development and revisions, form the foundation of the research and the following analysis. It is important to note that the thesis is concentrating only on the above application as the most significant applications that outline the core development proposed; this is to allow the development practices connected with Waverley New Community to be focused on, and not the associated application for the adjacent development at the Helical Governetz (Office and Industrial Park).

Planning Application – RB2008/1372 – Waverley New Community

The following narrative describes the chronological events that occurred throughout the planning and development of Waverley. In addition, the background details to the significant events that occurred are given. It is necessary to set the context of Waverley, detailing the events, issues and actors involved, before exploring why the events occurred through the subsequent analysis chapters.

Arguably, the regeneration of Orgreave and the redevelopment of the site into a new settlement can be traced back over 20 years when restoration of the site began. However, for the purpose of this thesis, the case study, whilst being mindful of the preceding and subsequent years, concentrates on the period between November 2007 and March 2010.

The following narrative, therefore, describes the chronological events that occurred from 2007 to 2011 that contributed to the development of the new settlement. By documenting what happened and when, and outlining who was involved, it is possible to trace the 'story' of Waverley and to provide a basic understanding of the events that occurred. It is then possible to appreciate why such events occurred and the influence they had on the planning of Waverley, the final settlement and the perfroamnce/reperformance of sustainability.

Preparing the site

As previously stated, it is possible to trace the restoration of the site back over 20 years to 1995, when there was the intention for the landform to be reinstated to accommodate future development. Throughout the period of restoration, a number of master plans were devised and evolved. British Coal commissioned the first master plan in 1990, authored by Llewelyn-Davies Planning. This proposed large-scale employment uses surrounding a central area of retail outlets, offices and housing. In 1996, consultants David Lyons were appointed to improve upon the original plan, and whilst the proportion of employment land across the site was increased, the proposal was later refused at the appeal stage by the Secretary of State. Over seven years later, in 2003, Bruce Gilberth Architects applied a new design concept and their master plan introduced many features that are evident in the more recent revisions. Such features

included the containment facility, lakes, a grid-like development pattern and the Waverley link road. When LDA was commissioned in 2006 to review the 2003 plan and increase sustainable development across the scheme, it was understood that the 2003 plan would provide the foundations for any future design (Design and Access Statement, 2008).

For the purpose of this case study and as previously mentioned, the thesis will, therefore, concentrate on the period between 2007 and 2011. It will follow the Waverley narrative and planning application through its preparation, submission, review, resubmission and final approval in 2011.

A graphical timeline is also included in Appendix 1, documenting the significant events applicable to the narrative of Waverley. The timeline is also plotted against the following analysis using the framework of Callon's sociology of translation for cross reference purposes.

Preparation of the initial application – Spring 2007 to Summer 2008

Following the commissioning of LDA Design in 2006, an application to extend the restoration and landscaping of the site was submitted in November 2007 (ref: RB2007/2205), extending the restoration period to May 2009 and ensuring the site would be suitable for the emerging proposed development.

While the restoration on site continued, a series of initial concept meetings between the local authority, consultancy team and landowner began to increase in frequency throughout 2007. In February, Harworth Estates, RMBC and SCC acknowledged the existing level of understanding and commitment to exploring the principle of developing a sustainable mixed-use community at Waverley by issuing a joint position statement. However, it was not until November of the same year that the local press began to publicise the potential redevelopment of the former Orgreave site and public attention was drawn to the impending application. A copy of the 2007 Joint Position Statement is included for reference in the application documents CD (attached as previously discussed to the thesis back cover) and discussed in further detail in the subsequent analysis chapter.

While the plans developed momentum and the consultancy team began to prepare the application through the spring of 2008, Orgreave was publically shortlisted as one of six potential Yorkshire ecotown sites. Despite later losing eco-town status to Rossington in Doncaster, the Waverley Masterplan was presented to the public in April 2008. The following month saw the launch of the Yorkshire and Humber Plan - Regional Spatial Strategy. Public concern also grew with increasing public knowledge of the impending planning application. In June, the local community website was launched (hosted and managed by Harworth Estates), with site restoration also nearing completion, after 13 years and a £20 million investment. With an outline application imminent, monthly progress reports to the authority's councillors began to focus on WNC as RMBC raised increasing concern regarding the lack of resources available to progress an application of the magnitude anticipated.

In recognition of such concerns, the following month, shortly ahead of the application submission, an independent planning consultant funded by Harworth Estates was recruited on a temporary contract to assist in the management of the application process. The individual's contract would run for one year from the summer of 2008 to the summer of 2009, covering the period of negotiation between the initial and revised application submission. In the same month of July, the original Planning Performance Agreement (PPA) was signed by Harworth Estates and RMBC, who agreed in principle the project management of the impending application.

On 26 August 2008, the first outline application for WNC was submitted to RMBC for:

> *...a new community comprising 3,890 residential units, including 973 affordable units, two primary schools, offices/financial services (400 sq.m), food store (1500 sq.m), pubs, bars, restaurants & cafes, small shops, health centre, community centre, gym, sailing club, hotel, public open space and associated infrastructure including combined heat and power generation plant and construction of roads, cycleways, footpaths and bridleway.*

Following the submission of the application the five Project Theme Groups (Housing/Design, Transport, Environmental, Local Community Infrastructure, and the Management Company) begin monthly meetings, culminating in the last week of each month with a Steering Group Meeting to summarise the general issues and plan for

the following month's tasks. While this case study will make reference to such meetings when a significant issue or event occurs, it is not concerned with the minutiae that could mask significant events. It is only important here to note that the outline application provided the stimulus to initiate the standard monthly meetings associated with an application of this size.

Processing the first application – Autumn 2008 to Winter 2009

By the autumn of 2008, RMBC had begun to implement the organisational and meeting structures agreed in the Planning Performance Agreement for progressing the application as CABE raised concerns with the application's content and ATLAS (an independent advisory service available to local authorities to support them in dealing with complex large scale housing led projects) offered additional advice on processing the application. However, only two months later, in October, concerns were raised by Atisreal, which questioned the consistency of attendance at project group meetings. In November, after receiving comments from Sheffield City Council, the Public Consultation Strategy was agreed and the lengthy potential section 106 financial contributions debate began. It was also now that the first and only meeting of RMBC's Sustainable Development Officers Group met, and it concluded by stressing there was a lack of expertise available even though this was highly necessary for an application of this complexity.

Towards the end of November and the beginning of December, RMBC and Atisreal made a series of four public consultation presentations, with two events held in both the Sheffield and Rotherham area. As the public consultation responses were collated throughout December, ATLAS also returned comments stressing the need for an increasingly refined vision and development objectives. The December internal team meeting also raised concerns over the significant gaps in the consideration given to waste, energy performance and overall sustainability. As 2008 drew to a close, only four months from the date of submission, it was already becoming apparent there were significant issues concerning the lack of resources, the expertise available and the clarity of information submitted, especially when defining the settlement's vision and overall sustainability.

Assessing the application and preparing the revised submission – Winter 2009 to Spring 2009

Following the return of staff after the Christmas and New Year break in January 2009, Atisreal presented a revised masterplan, which, with a subsequent preparation, culminated in a revised submission being made at the end of the summer.

Following the presentation and intention of working towards a further revised application, the various project groups continued throughout the New Year to raise detailed issues and concerns. Such concerns included the inability to secure a Bus Rapid Transit Scheme and the development's reliance on using this to ground the transport sustainability element of the development. The central RMBC team meanwhile pushed for detailed design codes to shape the form of the development, stressing they should not become so flexible as to be meaningless. Debates continued to be complex and time consuming, and included narrowing the list of section 106 contributions as RMBC and SCC disagreed further over the level of affordable housing provision across the site, with Sheffield suggesting the proposed figures were too low.

On 27 January, a presentation briefing was given to the ward councillors. The presentation was significant in reporting progress to date and introducing ATLAS, their involvement and the emerging revised (due to its impending expiration) Planning Performance Agreement. As ward members requested to be updated on the application's progress every six weeks to maintain accurate knowledge of the emerging revisions, it is important to remind ourselves where the councillors/ward members sit within the overall organisational structure and their relevance to the process and planning application.

The organisational structure within RMBC in relation to the members, project groups and key staff involved with the application of Waverley illustrates how the members or the CMT (Corporate Management Team) sits at the top of the hierarchy overseeing the activity conducted by the relevant groups and council officers.

As the month drew to a close, activity across the project groups picked up momentum and remained intense until the revised submission in October. Pressure continued to

mount across the organisation as officers were pressed to attend an increasing number of project meetings and resolve the previous applications' errors and omissions.

At January's closing steering group meeting, the revised masterplan was presented by Atisreal. However, with many key RMBC representatives absent, no decisions were reached. It was highlighted again that sustainability was becoming a major concern, with a continued lack of expertise, ATLAS offered to become further involved, pledging increased amounts of time, input and attendance at meetings.

To resolve issues regarding a lack of senior (officers) authority attendance at project meetings, a one-off project meeting was held to discuss potential solutions. Discussion at the meeting highlighted that a greater focus was required to define the development's vision, with a lack of decision-making and senior direction hindering progress. It was also acknowledged that the specialist independent consultant, recruited solely for the project management of the Waverley application, was also not able to attend the number of meetings held throughout the spring of 2009.

As a result of the meeting, it was agreed that there needed to be a better understanding of the work required to resolve the key outstanding areas ahead of what was now acknowledged would be a resubmission of the application. RMBC acknowledged that they needed to understand what work still remained in assessing the application and its suitability. The assessment of the sustainability of the development remained an issue, as RMBC recognised the urgency in clarifying their expectations and position to allow the scheme's sustainability assessment to take place. With an increasing number of revisions being made to the proposed development and inevitable financial pressure, the applicant also began to shift their position away from having an exemplar scheme.

In need of further assessment, but with a lack of in-house expertise apparent, on 9 February a review of the application's Energy Strategy and Sustainability Statement was put out to public tender. By March, WSP were appointed as the consultancy team, and returned their report only four weeks later in April, acknowledging that their appointment and work was a matter of urgency.

While the assessment of sustainability began to increase in importance, the longstanding, legally complex and inevitably time-consuming debate in narrowing the list of potential section 106 financial contributions continued in parallel with additional project commitments. Throughout the spring of 2009, such debate impacted heavily on the project management capacity of the application, overshadowing the resolution of significant key decisions in refining the overall development vision and master plan revisions.

As the year progressed and with less than a quarter of the PPA time remaining, provision began in March to extend the deadline for considering the application. As part of the revision, significant amendments were made to the application, masterplan and supporting vision, and a copy of the summary of revisions document was included in the planning application documents' CD. This is analysed further in the subsequent analysis chapter.

Final push to resubmission – Summer 2009 to Autumn 2009

Throughout the spring and into the early summer, standard project group meetings occurred in line with the anticipated timetable and standard expectations. However, once again at the May steering group, a lack of RMBC senior personnel representation meant no decision on revisions to the PPA could be approved, with the resulting impact on subsequent project meetings being that there was no agreed vision to work from.

Despite a lack of senior authority at the project meetings, an exchange of letters between the consultancy team and local authority confirmed on 11 May that the revised masterplan now contained most of what was considered necessary to achieve a sustainable community at Waverley. With the approval of the revised masterplan, the emphasis and discussion began to shift to securing the finer details of the settlement's management company WMCCo, which was charged with the overall governance of the settlement's 25-year development.

As the senior project team's attention began to become drawn into the debate and legalities over the structure of a management company, the draft section 106

agreements became finally conclusive enough to be formally presented to council members for comments. Issues about the management company replaced the time consuming and complex discussions regarding financial obligations. Once again, now moving into the summer of 2009, the need to assess sustainability and secure a revised vision was overshadowed by competing issues and complexities.

At the June steering group meeting, ATLAS presented a revised vision for inclusion in the emerging Design and Access Statement. However, both Atisreal and RMBC objected to the inclusion of the word 'exemplar' when describing the exemplar sustainable settlement. This is significant as the point in the narrative is 10 months from the original submission when the applicant formally began to move away from defining the settlement by its exemplary sustainable status. The applicant justified the change in direction by acknowledging how an exemplar scheme would incur exceptionally high costs and, therefore, be financially unviable.

Email correspondence received in early July from WSP notified RMBC that the revised Energy Strategy was now a considerable improvement, addressing many of the previous questions, and while it indicated a scheme of high performance, it no longer demonstrated an exemplar standard.

In acknowledgment of the discussion in the previous June steering group meeting and for continuity between the Design and Access 'vision' and revised PPA 'vision', the July steering group meeting, therefore, agreed that the word 'exemplar' would be removed from the vision.

Nearly a year on from the original application, the revised application final details were steadily being resolved. Sustainability was finally addressed (following various rearranged and postponed meetings) at the August steering group meeting, where it was agreed that phase one of the development should meet a minimum of code level 4 of the Code for Sustainable Homes, with subsequent phases assessed under obligatory design codes and energy appraisals during the subsequent submission of reserved matters applications. It was also agreed at the same meeting in August 2009 that RMBC wanted a clause written into the heads of terms of the emerging section 106 agreement that a minimum of level 4 of the Code for Sustainable Homes should be

achieved throughout the phasing strategy and all subsequently submitted reserved matters applications would be obligated to include a detailed sustainability/energy strategy.

With sustainability assessed and its subsequent implementation arranged through a clause in the developer's legal financial obligations, by the autumn revisions and amendments had been made to the necessary section 106 agreements.

Resubmission and evident changes – Autumn 2009 to Winter 2009

After 14 months of assessment, debate, revision and amendments, the revised application was submitted and received by RMBC on 13 October 2009.
The amended development summary was changed to:

> *Outline application for a new community comprising residential (3890 units), commercial development (including office, live/work units, retail, financial and professional services, restaurants, snack bars and cafes, drinking establishments, hot food takeaways, entertainment and leisure uses and a hotel) and open space (including parkland and public realm, sport and recreation facilities), together with 2 no. 2 form entry primary schools, health, cultural and community facilities, public transport routes, footpaths, cycleways and bridleways, landscaping, waste facilities and all related infrastructure (including roads, car and cycle parking, gas or biofuel combined heat and power generation plant and equipment, gas facilities, water supply, electricity, district heating, telecommunications, foul and surface water drainage system and lighting).*

Revised Outline Planning Application, October 2009

The above summary reveals an increasingly detailed explanation, with the addition of considered, structured and practical examples of how Waverley proposed to deliver the development. Such additional details and re-organised examples are also evident when comparing the original and revised list of documents included as part of each of the planning applications.

The documents submitted as part of the original application for outline planning permission illustrate how the original submission was relatively simplistic in its organisation compared to the later revised application. The original submission included the expected and standard application documents: the application form, site plans, environmental statement, parameter plans, the design and access statement, the

statement of community involvement and the planning support statement. In addition, assessments regarding housing, retail, waste, energy, leisure, tourism and sustainability were also included and relevant strategies proposed.

The revised submission submitted in 2009 was reorganised and exemplified a much more detailed, logically ordered and persuasively progressive application for development of the site. The resubmission was heavily revised, with all the major constituent documents including revisions in addition to the inclusion of several new reports. A full list of the revised documents is included for reference (in the summary of changes) in the planning application documents' CD. When comparing the original submission against the revised application, one can see the scale of the revisions and additions made. Such revisions form part of the following analysis chapter and are, therefore, not discussed in further detail here.

Considerations at the planning board – Winter 2009 to Spring 2010

With the planning board arranged for the end of January 2010, members were re-briefed in December 2009 ahead of the Christmas break. During the briefing, members were informed of the pertinent revisions, including changes to the Framework Plan and Design and Access Statement. Such revisions resulted in changes to the Sustainability and Energy Strategy and revised Air Quality, Transport, Flood Risk, Noise, Soil and Contamination Assessments. Members were also informed that the revised application included the additional submission of information addressing issues concerning the green infrastructure strategy, community management scheme and ecological management strategy.

After the Christmas break, the application was considered at the Planning Board meeting on 25 January 2010. Ahead of the Rotherham Planning Board, SCC Planning Department commented that whilst they supported most of the scheme, they had reservations and concerns regarding the adjacent office and hotel development (not considered as part of this thesis). Sheffield Council's Planning Board, however, rejected the SCC planners' recommendations and backed the entire Waverley scheme, subject to financial contributions from the developers towards Sheffield's education and transport needs.

Following full consideration by Rotherham's councillors on 25 January, the board recommended that the application be referred to the Secretary of State as a departure under the Town and Country Planning (Development Plans and Consultation) (Departures) Directions 1999 because the application now represented a departure from the adopted Unitary Development Plan. Following consideration by the Secretary of State, the application was finally approved with conditions on 16 March 2011.

A copy of the application's decision notice and full conditions is included for reference in Appendix 2 and discussed in further detail in the following analysis chapter. It is, however, important to acknowledge here the following reserve matters applications made by various developers to conclude the development process and narrative of Waverley.

Following outline approval of (RB2008/1372) in March 2011, a Section 73 application was made in September 2011 to vary the conditions imposed by the outline application. A variation to the conditions was granted (RB2011/1296) in November that reduced the density of housing required on site. Following the approved reduction in density, a series of three house builders (Taylor Wimpey, Barratt and Harron Homes) submitted a reserved matters application for the erection of 251 homes. The applications (RB2011/1521, RB2011/1536 and RB2011/1538) were approved with conditions in January 2012 and resulted in the first residents moving into Waverley New Community in December 2012.

Concluding comments

This chapter has explored the case study of Waverley, explaining why the area was chosen and exploring the series of events significant to the research presented here. This thesis will now move to consider the actor-network informed analysis of the conception and development of the new settlement of Waverley.

6. Analysis

Introduction and structure of the chapter

This chapter will explore the analysis of the Waverley development using Callon's sociology of translation as its theoretical and structural foundation. It will begin by outlining the overall structure of the chapter, discussing how the analysis will evolve using Callon's four stages of translation to trace the processes involved in the planning and development of Rotherham's new sustainable settlement and, therefore, the evolution of the actants, artefacts and intermediaries creating the actor-networks at Waverley. As Callon's theory was outlined in detail in the thesis's conceptual framework, it is not necessary to repeat it here.

Tracing practices and revealing wider implications

By using Callon's sociology of translation to inform the analysis, it is possible to trace the performance of sustainability and the processes involved during the implementation of the settlement, against the theoretical appreciation afforded by the tools of actor-network theory. The use of an actor-network theory informed approach aligns well with how sustainability is brought into being across planning practice and literature, within which sustainability is 'black-boxed'. Using an actor-network theory informed approach allows the research to unpick the network relations that constitute sustainability. Sustainability is nothing unless it is performed. However, the tools afforded by actor-network theory allows the research to expose the nuances concealed within the performance of sustainability within the planning practice evident at Waverley.

Using the proposed theoretical framework to hang the thesis' analysis on will allow not only the tracing of the processes involved at Waverley but also enables the describing of the events in terms of their wider significance and implications for planning practice. What the analysis may reveal to have been problematic at Waverley may also represent potential problems across local planning authorities and the organisation of institutional practices in general. However, whilst the laws and

national policies of England mean that the network may spread further (and outside the possibility of this analysis), ultimately actor-network theory resists the idea of both 'the specific' and 'the general' in place of connections.

Exploring the fluidity of the networks, the constant remaking of relations between actants and questioning the solidity of resulting institutions should expose the work involved and tensions apparent during the performance of sustainability. Using the descriptive and analytical language associated with actor-network theory and informed by Callon's appreciation of translation, it is possible to explore the construction of the complex networks underpinning the realisation of Waverley, explaining how the networks became threatened, survived or were disbanded. That is, it describes the performance and re-performance of sustainability at Waverley by tracing the performance of actants, artefacts and intermediaries interwoven into the emerging and stabilising actor-networks, therefore, exposing the intricacies within the 'black-box' of sustainability to allow further appreciation of how sustainability performs within planning practice.

Affiliations to existing literature

Such a detailed exploration of the events should also heighten our understanding of the extent to which the final development conformed to the original aspirations, thereby exposing the processes that suppressed the performance of sustainability at Waverley and the evolution of network relations that threatened the development of the site. Linking the actor-networks at Waverley with the final settlement's overall physical form is important when exploring the evolution of translation that occurred. As Murdoch suggests, there are often two varying types of network observed when using translation, where translations are accomplished and the network stabilises or where the links are provisional and norms are hard to establish (Murdoch 1997).

Murdoch's observations also suggests how each of the networks described above create different spaces and will result in either a space that is strongly prescribed, imposing rigid and predictable forms of behaviour, or open up a space of negotiation, of fluidity, interactions and instability (Murdoch 1997). Following the analysis, this chapter will, therefore, conclude by assessing the wider implications applicable to planning practice revealed using the tools of actor-network theory to appreciate the

nuances concealed within the performance of sustainability at Waverley and the resulting settlement.

Outlining the actor-networks explored

Before moving through the analysis, it is important to briefly consider the actor-networks that are operating and recognise how different approaches may trace the apparent connections. It is also important to recognise that this thesis traces the actor-network establishing the development of the new settlement. Alternatively, we can describe this as exploring the performance of sustainability at Waverley.

The analysis had to start somewhere in tracing the network and the selection of the starting point is one of the frequent criticisms of engaging with an actor-network theory informed approach (Lockie and Kitto (2000).

With the motivation to appreciate the connections that constituted sustainability and whilst acknowledging that sustainability does not just simply exist, the analysis could and arguably should only begin by exposing the performance of sustainability from its initial emergent presence within the network. However, this thesis could have chosen to trace the alternative actor-networks that are also evident and emerged during the analysis, for example, the actor-network of 'the site' or 'the masterplan'.

The following analysis is, therefore, a description of the connections evident during the performance of sustainability, using the case study of Waverley to appreciate the detail contained within the 'black-box' presentation of sustainability across planning practice. Whilst recognising there are alternative constructions and various actor-networks evident, this analysis will describe how artefacts, actants and intermediaries worked to stabilise and destabilise the performance of sustainability at Waverley.

It is also important to stress here whilst sustainability is typically regarded within planning practice by many as a concept with some ontological coherence, sustainability when considered by an actor-network theory informed approach can never merely just exist. Sustainability is nothing unless it is performed. It is, however, important that through tracing the performance of sustainability and the emergent

actor-network, we are continually mindful of the implications this will have had on the settlement's physical form and planning practices in general.

Structure of the chapter

This chapter now concentrates on analysing the case study of Waverley using Callon's sociology of translation by taking each of the four stages in turn to inform the analytical narrative and trace the performance of sustainability that emerged and evolved. As previously discussed within the conceptual framework chapter, the four stages of translation are described as problematization, interessement, enrolment and mobilization.

The analysis now moves through the framework of translation, to trace the processes of planning for the settlement between 2007 and 2011. The starting point for the analysis of translation begins with the neighbouring councils of Sheffield and Rotherham signing a Joint Position Statement, dated February 2007, identified as the point at which the initial performance of sustainability became evident.

It is important to note that the analysis uses the toolbox of actor-network informed terms previously defined and explored within the conceptual framework. That is, the actant is appreciated as an entity that speaks for a wider network, an intermediary as helping to bring associations together, and artefacts, as embodied actions or the distribution of actions. Crucially, it is important to understand how the performance of sustainability within the actor-network evident at Waverley depends on the contextual network relations surrounding it.

Problematization

As previously discussed, Callon's four stages of translation provides a structured framework for analysing the evolution, performance and reperformance of sustainability.

The passage through translation begins with problematization, in which the nature of a specific problem is defined by actants, resulting in the establishment of dependency. It is necessary to appreciate, who/what became involved in defining the problem at Waverley, which actants emerged, defined by their presence within the actor-network, and became dependent on providing a sustainable settlement on the vacant brownfield site. Answering these questions will involve tracing the processes leading up to the publication of the Joint Position Statement in February 2007, the point at which problematization occurred.

The narrative will, therefore, trace the period leading to February 2007, during which the first stage of translation, problematization, became evident. Preceding this were a series of minor obligatory passage points that were necessary to fulfil but did not signify the passage from one stage of translation to another as dominant obligatory passage points do.

> *Problematization describes the process of framing the problem, a key aspect of which can be the definition of obligatory passage points (i.e. planning applications). In obligatory passage points, actants are required to come together around the dominant framing and then engage in specific negotiations within the context of such framing.*
>
> Rydin (2012 p.25)

Problematization or '*how to become indispensible*', as Callon (1986) also describes the process, is concerned with the definition of actants and their connection to the problem, qualities which in turn make the actants indispensible to the network. For the case study at Waverley, the actants we will now move to discuss in detail where evident, all with specific interests that drew them into the emerging actor-network, which began to intertwine them to seeking to achieve the common goal of delivering a sustainable settlement.

Exploring the initialising actants

Prior to the publication of the Joint Position Statement (February 2007), issued on behalf of the two neighbouring councils, Rotherham Metropolitan Borough Council and Sheffield City Council, the site had been subject to a series of development proposals and masterplans. Even prior to any physical restoration of the site, the preparation of plans and concepts began in 1996, with ideas forming, addressing what would become possible to implement across the site following the anticipated cessation of mining activity. The analysis explores both Rotherham and Sheffield Council later; however, it is necessary to recognise here that they are complex actants, involved in many activities, and that they have persisted as entities largely through being prescribed by law. For example laws that define both Rotherham and Sheffield outline the presence of a council and councillors.

Over the ten years prior to the arguable moment of problematization, various consultants were employed by the landowner (in 1996 and 2003) to consider future development options, with such options revised and refused at planning appeal in 2003. However, it was the 2003 refused scheme that formed the foundations for the 2006 masterplan, evolving into the 2008 outline planning application proposing the new settlement of Waverley.

It is from the above narrative and historical context that we can begin to explore the actants involved in shaping and defining the problem. It is also of note that throughout the following analysis, the narrative when referring to an actant (but not an artefact or intermediary) will do so by the use of single quotation marks. For example, the site of Waverly when discussed as an actant will be 'the site'. As previously outlined within the conceptual framework, for the purpose of this actor-network informed analysis, an actant is defined as an alternative term to actor(s) and is used to address both human and non-human objects.

The process of problematization began when Harworth Estates 'the landowner', used a consultancy design team to explore potential, future development options for 'the site' at Waverley, engaging the following five additional actants:

Harworth Estates – the initialising actant 'the landowner' engaged the following entities in the emerging actor-network, establishing a shared dependency to erect a sustainable settlement at Waverley:

1. LDA Design – 'the design consultant';
2. The Waverley Masterplan – the masterplan;
3. Rotherham Metropolitan Borough Council – 'the council';
4. Sheffield City Council – 'the neighbouring council' – and
5. The brownfield site at Waverley – 'the site'.

Defining the actants within the network

Harworth Estates owned the land and 'the site' on which development was planned. As the initiating actant within the establishing actor-network, it approached 'the design consultant' to author a development plan for 'the site', engaging both as additional actants into the network.

> *So for Waverley we are the developers, certainly we are custodians…the ultimate master planner, the ultimate master developer.*
>
> Source: Interview with Harworth Estate's employee (December 2013)

As described above, LDA Design, 'the design consultant', became drawn into the establishing actor-network by 'the landowner', who commissioned it to author a masterplan detailing potential development options for 'the site'. Here it is possible to appreciate how the initiating actant ('the landowner'), via the commissioning of 'the design consultant' (an additional actant), began to draw in both 'the site' (as an actant) and the masterplan (initially only as an intermediary) within the establishing network.

Acknowledging 'the site' and all its physical characteristics as an actant, also introduced Rotherham Metropolitan Borough Council ('the council') and Sheffield City Council ('the neighbouring council') as actants into the network. Both 'the council' and 'the neighbouring council' became involved during pre-application meetings with 'the landowner' and 'the design consultant'. 'The council' became

aware of both the desire to secure development on site and the potential such development could achieve for the surrounding local authority. Whilst both 'the council' and 'the neighbouring council' perform actor-networks within their own right, constituting complex relations and intricate networks, for the purpose of this analysis, they are defined solely by their presence within the actor-network of Waverley. Neither 'the council' nor 'the neighbouring council' is assumed to just purely exist: they each become defined by their presence within the network and are subject to continued evolution and restabilising.

'The council' became engaged with the establishing network as the regulatory authority, charged with assessing any potential applications to develop the site, and due to 'the site's' sheer size and close proximity to Sheffield 'the neighbouring council' became drawn into the network as additional participants within the process and regulatory authority. Through tracing the evolution of the network, it is possible to witness how, towards the latter stages of translation, 'the neighbouring council' was pushed out of the network.

The moment problematization occurred

Whilst the authors of the masterplans in 1996 and 2003 made two previous attempts to establish a network and development at Waverley, neither of the plans prompted the publication of a joint mission statement, acknowledging the councils' belief that delivering a sustainable site at Waverley was possible and something they would both be working towards securing. The two previous masterplans, therefore, represent failed attempts at problematization, when each of the elected consultant architecture teams, appointed by Harworth Estates ('the landowner') to develop a future plan for development, failed to engage the local authority's ('the council's') interest.

However, in 2006 Harworth Estates, 'the landowner', instructed LDA Design, 'the design consultant', to create a masterplan outlining revised development options for 'the site'. It is interesting to note how the masterplan performs as an intermediary (later an actant) within the context of the network here, which was initially formed by Harworth Estates and LDA Design, to enrol others into the network. The masterplan, therefore, also provides an example of how actants and intermediaries are defined by

their context within which they perform and not by their essential nature (i.e. as a 'masterplan').

The point that signifies the act of defining the problem is the Joint Position Statement (February 2007), representing the point at which Sheffield City Council ('the neighbouring council'), and most importantly Rotherham Council ('the council'), committed to securing development on site.

Previous iterations of the masterplan may have introduced the concept of potential future development; however, the position statement confirms that both councils formally agreed such development would be achievable and desirable. It signifies the point at which 'the landowner', 'the consultant' and 'the council' agreed that implementing a sustainable new settlement at Waverley was possible.

Before this point was reached, a series of three public consultation events throughout the summer of 2003 held in Darnall and Handsworth had failed due to the lack of continued market interest to establish the emergence of an actor-network; however, the initial masterplan, circulating as a brochure published by UK Coal and surviving from 2003 as an artefact, transported and established the design principles of the physicality of Waverley through to 2005 to inform the 2006 masterplan revision. Such early public consultation events, considered as performances using artefacts and transposing the foundations for problematization (via design principles), could arguably have been lost or overlooked without the tools of actor-network theory, revealing the complex associations within both the social and material worlds that aligned to establish Waverley.

Without the surviving 2003 masterplan, embedded with previous work, research and aspirations, the starting point of Waverley may never have re-emerged or may have evolved devoid of any original informed aspirations and research. The public consultation events and initial 2003 masterplan should, therefore, not merely be dismissed but be valued as helping to form the 2006 masterplan, thereby initialising and informing the emergence of the network. The two together form the solid foundation for the associations between the actants present during problematization and the transferring of the design principles, including the aspiration to develop '*a*

high density-mixed use development, creating an estimated 7000 jobs and 3700 dwellings, with the concentration of employment to the north of the site at the Advanced Manufacturing Park adjacent to residential development to the south' (Waverley Masterplan Statement 2003).

Context of aspiring to sustainable settlements

It is also important to note here the wider context underpinning the desire to create a sustainable new settlement, and not just a new settlement. In the years preceding the publication of the Joint Position Statement (February 2007), which clearly states the aspiration to deliver a sustainable new settlement, the profile of sustainability and sustainable development had increased significantly. It was a response to the government's Sustainable Communities initiative (2003) and publication of the Egan Review (2004), which contained an exploration of what sustainable communities meant and who should be responsible for their implementation. Barker's (2005) Review of Housing Supply pushed the 'New Labour' government to champion the concept of eco-towns as a solution capable of providing much needed additional housing within sustainable communities. With such government force and published reviews pushing sustainability issues, actants ('the landowner', 'the council' and 'the design consultant') inevitably became motivated to chase the kudos associated with the application of sustainability (operating across the UK at the time) and associated with the delivery of a successful sustainable community. 'The landowner' and 'the council' both became drawn into the performance of seeking to set themselves apart and to be recognised for their methods of engaging with and applying successfully the then government objectives.

Representing the national context within which sustainability was performed as sustainability and sustainable development rose to become a key political issues and agenda of the time. It is from such background noise playing nationally within the wider actor-network of sustainability (far too vast to consider in great detail here) that at the local level the sustainability performance evident at Waverley was influenced by. The wider meta-narratives including PPS1: Sustainable Development and Eco-Town initatives were all performting and interwoven into the complex wider performance and actor-network of sustainability across the national policy arena.

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As previously explored within the literature, planning for new sustainable settlements had become a well-established academic topic, receiving much attention and driven mainly by utopian visions to create better places and communities (Harvey 2001). Building more 'sustainably' came in response to the thinking stressing how increasingly problematic and resource-intensive cities were becoming in addition to concerns over unsustainable development sprawl patterns.

Constituting actants during problematization and the defining of the problem

In acknowledging that future development was achievable, three of the four actants involved in the process of problematization survived and become indispensable, with only 'the design consultant' dismissed from the network following their completion of the masterplan. Such dismissal from the network was, however, due to pre-existing ways of working and contractual obligations that steered them away from the network. The three surviving actants all remained due to their critical position within the network. The brownfield 'site' was necessary as the physical entity whose characteristics and qualities dictate what is possible *in situ,* 'the council's' and the neighbouring council's approval and regulatory framework was necessary to permit any proposed development and Harworth Estates ('the landowner') owned the land on which development was required to return a profit to their shareholders. This is not to omit the masterplan as an intermediary. It is necessary for transferring between actants the exploration of what can possibly be implemented on site

Publishing the Joint Position Statement raises the defining problem on which the remaining actants ('the landowner' as the original initiating actor and three additional actants) are engaged: how do we deliver a sustainable settlement at Waverley?

At Waverley, the defining problem is evident from the council's commitment to '*exploring the principle of developing a sustainable mixed use community at Waverley*', as highlighted further in an extract (below) taken from the Joint Position Statement, 2007.

The purpose of this position statement is to set out the present level of understanding and commitment of both Sheffield City Council and Rotherham Metropolitan Borough Council in exploring the principle of developing a sustainable mixed use community at Waverley following the imminent restoration of the former opencast mining site. This could have significant potential cross boundary benefits to regeneration in the Sheffield City Region including; economic development, housing, transportation, sustainable development, local community infrastructure and school places.

…There is considerable scope for Waverley to become and exemplar low carbon mixed-use community. Development providing a mix of employment, housing choice, service and community facilities served by quality public transport, within an attractive setting of bio diverse green spaces and water features, would help reduce the need to travel and create a sustainable, cohesive and distinctive new community, innovative layout, design and construction with integrated sustainable drainage, water recycling, waste management, energy conservation and renewable energy features would help combat climate change.

…Both Councils are committed to working with stakeholders, adjacent local communities and the landowner UK Coal to optimise the above potential benefits…Both Councils also undertake to collaborate in the commissioning of studies and masterplanning, as necessary to establish the appropriate scale, mix and timing of future development at Waverley.

Source: Joint Position Statement (February 2007)

Here, the actants both human and non-human were defined by their presence within the network, and identified by their connection to the problem: **how to implement a sustainable development on the former Orgreave mining site?** The Joint Position Statement, included above, signifies the moment of problematization during which it is possible to witness the evolving performance of sustainability, and performing at this point as an intermediary and transporting the concept of elements that constituted (within this emerging actor-network) a sustainable settlement between the actants established within the network. However, it is also important to recognise the wider actor-network of sustainability evident across the UK promoting both sustainability and planning for sustainable settlements, and thus, recognising that there are also broader actor-networks here influencing the formation of the emergent networks performing locally at Waverley. Within such networks the aforementioned wider policy documents circulating at the time were performing, including the Sustainable Communities Initiative (2003), the Egan Review (2004) and Barker's (2005) Review of Housing Supply.

From the defining problem (the question), it is possible to draw similarities to the question recognised by Callon's observations of the scallops and fishermen. Whilst the question of anchorage to the seabed became the defining problem for the domestication of Scallops, behind that question, and which lies behind the question at Waverley, is a plethora of additional questions and issues. Similarities can also be drawn between the representation of both the social and natural worlds, in both Callon's chosen case study and here at Waverley, where the physical 'brownfield site' is as critically and inherently bound by the defined problem as 'the landowner' or 'the council'. Such similarities and additional questions will now be explored in further detail as we move through the process of translation to the second stage of interessement.

It is possible to conclude, therefore, that through problematization, the initialising actants, 'the landowner' and 'the site', engaged the masterplan via 'the design consultant' to present the potential of developing a new settlement at Waverley. Thus, engaging 'the council' and 'the neighbouring council' into the moment of problematization, via the publication of 'the joint position statement' (an actant and obligatory passage point), signifies the defining of the problem (how to develop a sustainable settlement on the land available) and moment of problematization.

Details of 'the joint position statement' included below provide written evidence of the actant as it drew 'the landowner', 'the site, 'the council' and 'the neighbouring council' around it to unify the defined problem of how to implement any form of development at Waverley. It became published as a joint statement of how both Rotherham and Sheffield Council envisaged the future development of the site.

> *The purpose of this position statement is to set out the present level of understanding and commitment of both Sheffield City and Rotherham Metropolitan Borough Councils in exploring the principle of developing a sustainable mixed-use community at Waverley.*
>
> *There is considerable scope for Waverley to become an exemplar low carbon mixed use community and…both councils are committed to working with stakeholders, adjacent local communities and the landowner to optimise the potential benefits.*

Joint Position Statement RMBC (February 2007)

Whilst the signing of the statement signified the passage through from problematization to interessement and the obligatory passage point through which the assembled actants passed, the statement itself represents an actant directing the performance of the other actants present within the evolving network and their resultant connections. Each actant present within the network at this point, therefore, became unified and connected by 'the joint position statement'.

Interessement

Following the identification of a defined problem, interessement occurs when other actant(s) become bound to roles that were assigned as part of the initial actants' planned action for resolving the problem.

Defining the initial actants and their planned resolution of the problem

Within the establishing network at Waverley, the initial actants included 'the landowner', 'the council' and 'the neighbouring council', who stated within 'the joint position statement' how they aimed to secure via the masterplan a sustainable settlement on 'the site' at Waverley.

Before exploring the occurrence of interessement, it is important to note that of the five actants (outlined above) entering the second stage of translation, whilst they shared the common goal of answering the defined problem (how to secure a sustainable settlement at Waverley) they all had different network positions that shaped their responses to events and how they reacted. Harworth Estates, as 'landowners' were keen to secure development on site to return a profit for their shareholders and release valuable assets locked in the land value. Rotherham Council ('the council') needed to deliver the authority's five-year housing land supply targets and ensure appropriate development across the borough. Sheffield City Council ('the neighbouring council') was also keen to enjoy the benefits brought by the proposed new settlement and associated community facilities, delivered largely by privately funded section 106 financial agreements. 'The masterplan', if delivered, would illustrate success and achieve deliverability and redevelopment at Orgreave ensuring future security for 'the site' going forwards. Finally 'the Joint Position Statement' represents the commitment and obligatory passage point, through which all the aforementioned actants needed to pass through, to tie them together into the future, enabling the actor-network some stability, in order to cement their shared aim to solve the problem of how to secure and implement a sustainable settlement on the vacant and available brownfield site at Waverley.

With the problem defined and an appreciation of the differing network positions driving the founding actants, artefacts and intermediaries this chapter will now move to consider the progression through interessement. This will involve tracing the narrative through from the period of problematization and the publication of 'the Joint Position Statement' in early 2007 to the submission of the first application for outline planning permission in August 2008. By tracing the actants through a period of 18 months, it is possible to explore the performance of interessement, during which a variety of additional actants became drawn into the delivery of 'the masterplan' established initially as an intermediary and subsequently evolving into an indispensible or focal actant following the act of problematization.

Defining 'the masterplan' as a focal actant

As Rydin describes: '*a specific actant may be implicated in the definition of the obligatory passage point, and as part of interessement, become accepted as a focal actant*" (Rydin 2012, p.25). Within the establishing actor-network of Waverley, 'the masterplan' represents the focal actant, which is indispensible within the network. During the moment of problematization and passage through the obligatory passage point, signified by the signing of 'the Joint Position Statement', 'the masterplan' was needed to secure the engagement of 'the council', 'the neighbouring council', 'the landowner', 'the design consultant' and 'the site'. Without 'the masterplan' and a vision for potential future development, the other actants would have become redundant, with no joint position statement to sign or commitment from 'the council' to work with 'the landowner' to invest in the future delivery of development at Waverley. The actor-network in effect could have fallen away without the constant performative actions of 'the masterplan' engaging the additional actants.

The 'masterplan' as focal actant represents the main actant directing and enrolling others into the establishing actor-network, it represents a potential solution to the defining problem (a design for development at Waverley), is implicated within the definition as an obligatory passage point (all other actants have to engage with the 'masterplan' for the new settlement) and therefore, as part of the network's passage through interessement and enrolment of additional actants by 'the masterplan' it becomes to dominate as the focal actant.

However, the establishment of 'the masterplan' as the focal actant within the actor-network, was, as expected, a complex process contested at different points throughout 2007 to 2008 by both 'the council', 'the neighbouring council' and 'the landowner'. Throughout a series of design team meetings 'the masterplan' established itself as the focal point around which the associations between the actants, 'the council', 'the neighbouring council' and 'the landowner' had to align.

This occurred throughout the design team meetings of 2008 where 'the masterplan' formed the single unifying actant around which all the additional actants present were enrolled into the evolving actor-network. Together they worked to manipulate and mould the settlement of Waverley via the focal actant 'the masterplan'. Episodes of contention during which the stability of 'the masterplan' became questioned include the meetings of December 2008 and January 2009 during which 'the council' began to undermine and threaten the stabilising 'masterplan' by questioning its content, methodology and deliverability.

Defining additional actants through the actor-network's progression through interessement

This chapter will therefore, now concentrate on tracing the process and association between actants during the evolution of interessement to the next significant obligatory passage point, signified by the signing of the Planning Performance Agreement in July 2008. With the signing of this document 'the agreement' represents the passage from interessement to enrolment, as will be explained below.

However, let us first return to the tracing of the actor-network through the occurrence of interessement. Following problematization, signified by the publication of the Joint Position Statement in February 2007, various additional actants became drawn into the establishing actor-network. This chapter will now trace the addition of such actants by defining their presence within the establishing actor-network and the progression of associations and performance of sustainability through 2007 to 2008.

Following the changing nature of actants

Following the publication of 'the Joint Position Statement', securing formal evidence of both the neighbouring council's commitment to securing a new sustainable settlement at Waverley, restoration works continued on site to return the land into a state suitable for future development. 'The site' became subject to increasing physical restoration throughout 2007, in order to address a series of physical restrictions and mass contamination that restricted any future development. While restoration on site was ongoing until permission to excavate expired in May 2009, the bulk of the restoration work was carried out, and most evident, throughout 2007 and 2008. Such a physical presence of restoration on site mirrored the initial flourish of work completed by Atisreal 'the consultant' (also defined subsequently within this chapter) in preparing the outline application for the development of a new community.

During the restoration on site;

> *approximately 5 million tonnes of coal had been recovered from the site…the void filled, screening bunds removed and…compaction works for formation of the potential relief road and restoration to approved final landform and the approved contours well advanced.*

RMBC Report to Planning Board (January 2008)

While the above illustrates the commitment and shared investment to return 'the site' to a state suitable to accommodate future redevelopment, it also introduces a series of additional artefacts and actants in to the actor-network at Waverley and therefore, also represents the emerging act of interessement. It is important to consider at this point within the progression through interessment if the additional entities can therefore, be described as artefacts, actants or intermediaries.

Whilst 'the Joint Position Statement' (2007) signified the act of problematization and defined the problem bringing together actants charged with providing a solution to deliver a sustainable settlement on the vacant site at Waverley, the emerging actor-network stagnates without continually performative action. Restoration works on site enrolled 'the site' into the performance as 'the consultant's' work on the evolving masterplan ensured 'the site, 'the consultant' and 'the masterplan' became intertwined in the evolution of the network. In turn, each of them became critical and

interdependent on one another in ensuring their position within the network. Restoration work on site would not have been necessary without an evolving 'masterplan' and vision. Without 'a site', 'a masterplan' would not have been needed and 'the consultant', whilst providing solutions for the site via the evolution of the network, would have been redundant without a site to develop a plan for.

The additional actants also included the physicality of 'the site' (and all its associated restrictions, different from previous detailed discussion of 'the site' as a location in geographical space), the Atisreal consultancy team ('the consultant') working to prepare the outline application on behalf of Harworth Estates and 'the outline planning application' (inherent to all the necessary additional reports, application documents and supporting planning policy). With the addition of multiple new actants introduced and drawn into the network by the establishing actants, this chapter now moves to consider the influence each of these had in turn.

Physical characteristics of 'the site'

Prior to the restoration scheme, 'the site' contained a number of derelict areas relating to the previous coal mining, steel making and coke and chemical production works. Following an extensive restoration programme, 'the site' aimed to support a wide range of landscape facilities, including a new lake, realigned watercourse, wildflower grassland and a woodland amenity (Waverley Amended Restorations Proposals, 2008 Atisreal). Transforming the site from its former industrial heritage to an area upon which to erect a new exemplar sustainable settlement inevitably posed complex challenges and drew the natural and physical elements of 'the site's' features into the network of actants.

> *The Orgreave site was the most contaminated and derelict piece of land in the Borough, which was sterilised from re-development because of its despoiled nature. Open casting was considered the only effective means of enabling the restoration of this site to a beneficial after use.*

Report to Planning Board (March 2004)

Introducing 'the physical entities' evident across the brownfield site as actants into the actor-network at Waverley led to a range of additional issues that the natural landscape and industrial activity drew into the process of delivering a new settlement

on site. These issues are considered in further detail below and include the ground, the ground's contours, stability and contamination issues, surface water drainage and public rights of way.

Removing material contaminated with by-products from activity associated with works on the site involved the remediation of over 4 million tonnes of waste from the former coke works and 14 million tonnes of spoil contained within the Orgreave pit heap. Whilst compaction of the site in its entirety ensured the appropriate environment for future development, the site's undulating contours and previous industrial heritage cost UK Coal over £20 million in returning the land to a developable site (Planning Support Statement, 2009).

> *It was a major project obviously restoring the land back to certain use…normally sites are compacted by putting layers of land on top of one another, with this (site) we could do that but it would be horrendously expensive and a massive thing. So here is a fairly simple explanation of what we did, you dig a hole out and put in it a pile and the land the pile is sat on compacts and then you move around and repeat and that is how it was done. It (the site) is one of the most compacted sites around because of all the weight we had on it, it's now got such foundations it's almost as if building on a greenfield site.*

Extract from interview with Harworth Estates (December 2013)

However, 'the site', regardless of the significant financial investment, remained subject to physical constraints (causing additional delay and expense within the actor-network), including the completed landfill site, a high wall (following open-cast operations), fluctuating ground conditions, poor surface water drainage, flood risk and a reinstated public right of way (considered a planning constraint).

Constraints that indicated the physical and natural elements of the network, which individually constituted actants and collectively represented the natural site characteristics, were drawn into the network by the initial actants' identification and introduction of plans to implement a new settlement on site. By introducing and defining the problem (during problematization), Harworth Estates – 'the landowner' – encouraged by Rotherham Council ('the council'), established an actor-network engaged with implementing a sustainable settlement across the former Orgreave mining site.

The actor-network of implementing Waverley was conceived, and through the process of interessement, 'the physical characteristics' of the site were drawn into the network, each adding to the evolving issues and divergent actants pushing towards and pulling away from implementing a settlement on the chosen site. Such 'physical characteristics' of the site, in turn, threatened the slowly emergent performance of sustainability by endangering the stabilising network and contributing additional complex issues to 'the masterplan'.

The site's natural characteristics, at this stage in a state of transformation, therefore, represent issues and entities that require additional mitigation and consideration to provide against future potential issues. However, later, during the process of enrolment, it will be important to observe potentially how the same actants (that is, site characteristics) could have been be responsible for further attempts to destabilise the establishing actor-network, influencing other actants (such as sustainability) and threatening the progression through to enrolment.

'The press', news reports and 'the public'

With activity evident on site, restoration drew the attention of those neighbouring the area and beyond. 'The landowner' and 'the council', keen to satisfy necessary public participation and public relations criteria, began to release details of the restoration work to the press for wider circulation to the public, effectively drawing both the press and the public into the network via the publication of news articles. A site of such scale and dominance gained increasing local, regional and national press when details regarding the forthcoming planning application were released to the media, introducing 'the press' and 'the public' as actants and news articles as both intermediaries and artefacts into the evolving actor-network.

In November 2007, nine months after the occurrence of problematization, within the establishing and evolving actor-network of Waverley a press release informing the public of the planned new settlement introduced 'the press' and 'the public' into the network. It also signified the start of the introduction of press articles as intermediaries and artefacts within the actor-network. National news websites, including the Times Online, the Guardian Online and the BBC News, reported the

anticipated application to erect a new business park and settlement on the former mining site in South Yorkshire. Copies of all the news articles analysed are provided in Appendix 3 for further reference.

The BBC reported:

> *A multi-million pound scheme to build thousands of homes, a business park and country estate have been unveiled for a former mining site in South Yorkshire. A joint venture between development firm Helical Bar and UK Coal will see the site at Waverley, near Rotherham, housing new government buildings. The deal to develop the 300-hectare plot of land is expected to take five years to complete and cost £140m. A planning application is expected to show designs for about 4,000 homes, a business park, a range of community facilities, a park-and-ride site and country park. John Lloyd, chief executive of UK Coal, said: 'The site is an exemplar project where people can work, live and play in a new creative environment development on a site with a long industrial past'.*

> BBC News (November 2007)
> http://news.bbc.co.uk/go/pr/fr/-/1/hi/england/south_yorkshire/7116454.stm

Such articles, including the one referenced above, illustrate the introduction of the concept of the new settlement at Waverley, to 'the public' and signify the drawing of 'the public' and 'the press' as actants into the actor-network at Waverley, both of which were intended to provide tacit support and not present articles to incite criticism and risk destabilising the actor-network at Waverley.

The introduction of the planning consultancy team at Atisreal ('the consultant') into the network

In addition to national and regional press coverage, locally orientated articles also reveal necessary detail, as explored in the example below taken from *The Star* (January 2008), a Sheffield newspaper. The article provides details of the 'the consultant' also known as the planning consultancy team, which was contracted to prepare the planning application on behalf of 'the landowner'.

> *The Planning Department at Atisreal's Sheffield Office continues to advise UK Coal on the redevelopment of the former opencast site at Waverley. John Dunshea, Head of the Planning Department, advises that another important step in the redevelopment of the opencast site at Waverley, as a sustainable high density mixed use community, took place at the end of last year. In the last Planning Board of the year, Rotherham MBC approved*

details of the restoration, landscaping and maintenance of the site to a condition suitable for built development and amenity open space purposes.

The approved details included a wide range of landscape features and habitats including woodland, amenity, wildflower grassland and improved public access. In addition a diverse range of ecologically enhanced habitats are proposed. Importantly the details also include a comprehensive surface water drainage scheme to control run off from the site. The surface water drainage scheme comprises a system of swales and drains which drain into three lakes across approximately 50 acres. The lakes have been designed to attenuate the flow of surface water in the River Rother.

The earthwork involved in re-contouring and restoring the site and completion of the lakes has now almost been completed. Over the next twelve months the drainage works will be undertaken together with preparation of the site for landscape planting which will take place over winter 2008/9. By May 2009 therefore, the restoration proposals will have been implemented and public rights of way across the site will be restored.

At the same time as the restoration proposals are being implemented, progress is also being made on the provision of a park and ride facility for a thousand cars at the Waverley site. Initially a high quality, bus based operation will serve the facility but it is intended that this will be upgraded to a Bus Rapid Transit system in future. Work on the park and ride scheme will commence later in 2008.

Significant development has also been made on the residential development at Waverley. This will comprise a modern mixed-use sustainable community incorporating up to 4,000 homes, community facilities and open space/recreation areas. This housing development will provide a range of housing and is intended to incorporate latest government thinking on sustainable development. This scheme has the support of Rotherham MBC and an Outline Planning Application will be submitted towards the middle of 2008.

Extract taken from an article in *The Star* (21 January 2008)

While the above extract introduces and secures the presence of 'the consultant' as part of the emerging actor-network, the article in itself also acts as an intermediary, communicating embedded knowledge between actants, notably from 'the consultant' to 'the public', via 'the press'. It is a significant article in how it provides a succinct summary of the progress made to date and anticipated future milestones. The article also confirms, as previously explored, the importance and potential future significance of certain actants, including 'the site' and the site's intrinsic 'physical characteristics'.

Sustainability at Waverley at the start of 2008

As previously outlined in the introduction to this chapter, it is possible to follow several actor-networks that became evident through the Waverley narrative. Through tracing the overarching actor-network at Waverley it is also important to trace the performance of sustainability as a potential actant. It is important to do this by tracing how sustainability was performed and how this performance evolved throughout the process of translation.

Using the article referenced above, it is possible to appreciate how sustainability was articulated: '*Waverley, a sustainable high density mixed use community…intended to incorporate latest government thinking on sustainable development*' (*The Star*, January 2008). The performance of sustainability articulated by 'the press' in January 2008 illustrates how sustainability here is present within the network simply as a term and an entity which settlements could (or could not) attain. This mirrors the articulation of sustainability presented less than 12 months earlier in 'the Joint Position Statement', when sustainability was invoked in a key document, which set out '*a sustainable mixed-use community at Waverley…with considerable scope for Waverley to become an exemplar low carbon mixed-use community…creating a sustainable, cohesive and distinctive new community*' (Joint Position Statement, RMBC 2007). Sustainability here performs as a set, attainable, tangible entity, presented as an adjective and as one (descriptive) aspect of the new development, arguably constructed as more of a presence than performance. A full exploration of the performance of sustainability is conducted in detail later within this chapter.

'The public'

By tracing the course of events and reporting them, as explored above, 'the press' introduced 'the public' into the actor-network at Waverley, initially via the intermediaries and artefacts of various news articles, so that 'the public' actant continued to evolve during the interessement.

In April 2008, as details of the application were revealed, 'the public', 'the consultant', 'the landowner' and 'the council' were all brought together by the consultation events and plans. Both the events and plans acted as artefacts and, most

significantly, as intermediaries drawing the actants together to present the current 'masterplan'. The ongoing public consultation events can also be described as obligatory passage points through which the actants were required to pass, a requirement of planning practice and of the actor-network, points that were necessary to converge at to allow progression beyond (until the next stage of consultation). It was necessary that the actants engaged in the actor-network also engaged with the events and public consultation, agreeing to the current 'masterplan' and presenting themselves as a united actant.

> *John Dunshea, head of the planning department at Atisreal's Sheffield office, said: Public Consultation is an integral part of the process of communicating plans and informing and involving local people in the proposals ahead of the outline planning application submission.*

Extract from Rotherham Business News Online (April 2008)

It was at this point within the process, the stage of interessement and presentation of 'the masterplan' to 'the public', that the dominant actants were perceived to have 'the site' and sustainability managed, something that as enrolment evolves evidently changes.

The quote below, taken from an extract from an article published in *The Advertiser*, Rotherham's local news publication, illustrates how 'the consultant' views characteristics of 'the site' (including flooding) as controlled. This is important in representing the performance of 'the site' as an actant. This is something that will become evident further through the process of enrolment and will be explored in detail later.

> *Two of the biggest issues facing the massive Waverley scheme are flooding and traffic – but those masterminding the project believe they have both potential obstacles under control…UK Coal bosses said that they had designed special drainage to stop the huge development causing any future problems. Three man made lakes, dubbed flood retention reservoirs, are being dug out to store water and discharge it into the River Rother, intended to prevent any issues further upstream at Catcliffe. A network of swales – manmade, above ground channels – will also be built to combine with underground pipes and divert surface water towards the lakes…Traffic concerns have centred on the site's closeness to the Sheffield Parkway…the Waverley scheme's designers are aiming to head off such complaints by persuading people to use public transport.*

Extract taken from *The Advertiser* (8 June 2008)

Evolution of 'the public' as an actant across the actor-network is also evident. 'The public' was introduced following the act of problematization via the publication of news articles informing 'the public' of the emerging proposals, then evolved to their representation at the obligatory passage point of public consultation, to, finally, taking in May 2008 the formation of a residents' action group.

> *Around 40 residents packed into a Sheffield church last night for a public meeting held to discuss a proposed new township on the border of Sheffield and Rotherham. Maurice Littlewood, chairman of the Handsworth Community Forum, raised concerns about how it would impact on residents in surrounding areas…He organised a public meeting at Handsworth Methodist Church and invited residents and representatives from Rotherham and Sheffield Councils and proposed developers UK Coal…Residents are now planning to launch an action group.*

Extract taken from *The Star* (May 2008)

Moving through the second stage of translation (interessement), it has been possible to define a series of additional actants who became drawn into the actor-network at Waverley following on from the moment of problematization.

As outlined above, it has been possible to consider the additional actants of 'the physicality of the site', 'the press' and 'the public' throughout the winter of 2007 into the late spring of 2008. Ahead of exploring 'the outline planning application', it is important that 'the consultant' (the planning consultancy team at Atisreal) is now defined within the functioning actor-network of Waverley. Exploring how it was drawn into the network by the actants, comprising 'the site', 'the physicality of the site' and 'the masterplan'.

Atisreal – 'the consultant'

Atisreal – 'the consultant' – constituted a small team of individuals organising and leading the application process, engaging with additional consultants with specialist skills where necessary to author the complete suite of application documents required by an outline application of the scale of Waverley. In analysing the documents made available for the purpose of this research, it was possible to identify three individuals involved in preparing the application documents and present within the wider team meeting structure. However, inevitably for an application of this size, additional

individuals will have been involved who were both employed by Atisreal or recruited by them as consultants to provide the necessary wider skills base.

Atisreal represents arguably what many naive of actor-network theory may assume to be an actor within a network. As 'the consultant' actant, it was instructed following problematization to develop 'the masterplan' and supplementary outline application on behalf of Harworth Estates 'the landowner'. Throughout the period of interessement, 'the consultant' became bound by its complex involvement across the developing actor-network at Waverley, preparing the necessary suite of application documents ahead of the outline submission in August 2008. Whilst during the transition through the period of interessement, 'the consultant' performs to ensure the progression of the application documents ahead of submission for consideration by 'the council', it operates via a relatively simple structure of connections in comparison to the network performance that inevitably grows increasingly complex during enrolment.

As part of preparing the application, 'the consultant' also played a significant role as an actant responsible for drawing in other actants into the actor-network at Waverley. This included various actants, artefacts and intermediaries contained within the application documents and additional actants drawn in during the application's preparation. Actants performing within the application process will be discussed in further detail below, whilst here we move to consider the addition of Waverley Online, a community website, artefact and intermediary within the network.

Waverley Online and the Waverley Liaison Group

Prior to 'the council' and 'the consultant' coming together during the preparation of the Planning Performance Agreement, 'the consultant' joined with the Waverley Liaison Group (defined in full later) to publish Waverley Online (www.waverleycommunity.org.uk), a community website detailing the emerging proposals. The website supplemented existing press articles and provided additional detailed information regarding the proposed new settlement to 'the public', acting as an additional intermediary, communicating factual (constructed within the actor-network) updates to the wider public.

The Waverley Liaison Group, described within the outline application documents as the '*formation of the Waverley Liaison Group: a 12-member group representing the local communities, which is intended to act in a co-ordinating role*' (Environmental Statement: Main Report October 2009), could arguably also be described as an intermediary within the actor-network, primarily passing information between 'the council' and 'the public'. Although potential existed for the group to be formed as an actant within the network, its role remained throughout interessement as an intermediary, as illustrated below, outlining the group's role in facilitating the transferring of information between actants within the actor-network.

> *A Waverley Liaison Group spokesperson said: The consultation forum lets the local residents download a feedback form. We are encouraging that people in the surrounding areas visit the website to fill one in, but also to find out everything there is to now about the project. The website is an excellent part of the consultation exercise. It is an excellent way for the public to find the information they need instantly and complements the printed material, on going consultation drop-in sessions and presentations extremely well.*

Extract from Rotherham Business News Online (June 2008)

http://www.rothbiz.co.uk/2008_06_01_archive.html

> *As Mr X (name removed to protect identity) is on the Waverley Liaison Committee maybe he can tell us all how this group was formed. Nobody I have asked was invited to join, nobody is informed of its meetings or conclusions. Is it truly representative of the local population? It seems to be a group chosen to smooth things along. Are there any people on the group who have major doubts about the proposed development?*

Extract from public letters published in *The Advertiser* (Rotherham's local news publication) (August 2008)

Planning policy

As observed above, via the introduction of 'the consultant' actant during interessement, planning policy was also introduced at this point during the progression through translation. It is evident that both 'the consultant' and 'planning policy' existed within the network on a relative simplistic and ordered stance when initially introduced. Although both are evidently actants, they are not yet involved in the complexities that we will witness later as we move through enrolment.

During the later stages of preparing the outline planning application, in May 2008 the Yorkshire and Humber Plan – Regional Spatial Strategy was published, representing the introduction of regional level planning policy into the actor-network. The inclusion of such a regional level of policy was in addition to existing national and local planning policy. While national and regional policy can be described as intermediaries, directing actants through the actor-network, local policy can be explored further as a potential emerging actant.

The performance of sustainability within planning policy during interessement

As previously explored within the literature chapter of this thesis, sustainability was described and performed nationally (subsequently now replaced by the National Planning Policy Framework or NPPF) within Planning Policy Statement 1: Delivering Sustainable Development (PPS1), as ' *the core principle underpinning planning…at the heart of sustainable development is the simple idea of ensuring a better quality of life for everyone, now and for future generations*' (PPS1, 2005). It is also important to note there were (and are) complex actor-networks that operate nationally, and that 'national policy' became part of the Waverley actor network, therefore also highlighting the broader construction of 'sustainability'.

National planning policy in addition to adopted regional and local policy formed a material consideration that was used during the determination of all planning applications. PPS1 outlined the overarching national planning policy on the delivery of sustainable development. Within national planning policy, sustainable development was defined as a core principle, underpinning planning, the protection and enhancement of the environment, prudent use of natural resources and sustainable economic development (PPS1, 2005).

Arguably sustainability performs as an intermediary within national policy, elicited within the network presence at Waverley as a definable and tangible entity that should be aspired to and implemented in future development.

PPS1 presented the mechanisms for achieving sustainable development by describing the elements that local authorities should look for and ensure were included in development proposals. The quote below, taken from PPS1, highlights how sustainability performed as an intermediary within national policy, as a transferring and informative element, passed between actants within the actor-network at Waverley and subsequently informed 'the masterplan'.

> *Sustainable development is the core principle underpinning planning. At the heart of sustainable development is the simple idea of ensuring a better quality of life for everyone, now and for future generations…Planning should facilitate and promote sustainable and inclusive patterns of urban and rural development by: making suitable land available for development in line with economic, social and environmental objectives to improve people's quality of life; contributing to sustainable economic development; protecting and enhancing the natural and historic environment, the quality and character of the countryside, and existing communities; ensuring high quality development through good and inclusive design, and the efficient use of resources; and ensuring that development supports existing communities and contributes to the creation of safe, sustainable, liveable and mixed communities with good access to jobs and key services for all members of the community.*

Extract from PPS1 – Office of Deputy Prime Minister (2005)

Regionally, sustainability was also performing as an intermediary and defined as an implementable and deliverable status. Regional policy contained in the Yorkshire and Humber Regional and Spatial Strategy (RSS) 2008 describes sustainability by referencing an earlier national report, 'Securing the Future' (2005). The report presented 'the government's' updated sustainable development strategy and outlined sustainability and sustainable development as the means '*to enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life, without compromising the quality of life of future generations*'.

Acknowledging that such presentations illustrate examples of the performance of sustainability within policy, as national, regional and local policy was (and arguably still is) littered with references to sustainable development, is important. However, it is important here that examples are included to illustrate the continued performance of sustainability as an intermediary within the actor-network of Waverley throughout interessement, providing evidence of how sustainability as an intermediary within the

actor-network at Waverley transferred, measured and deliverable elements between the constituent actants continually performing and reforming to establish Waverley.

Whilst national and regional policy played an intermediary role within the actor-network at Waverley, communicating material considerations to 'the council' and important regulatory restrictions to 'the consultant', it is important to understand how within local planning policy sustainability was performed and emerged within the network as an actant.

The Local Development Plan for Rotherham during the application's consideration contained saved policies from the Unitary Development Plan 1999 (UDP) only. Whilst additional guidance was available from the then emerging Local Development Framework (LDF), 'the council' had a lack of relevant adopted local planning policy during the evolution of the actor-network at Waverley.

Sustainability was performed within the outdated Unitary Development Plan, as arguably would be expected given its time of publication. The Unitary Development Plan referenced the Brundtland Report and failed to add any additional understanding to the concept other than that presented within the original report. This illustrates once again how sustainability performed as an intermediary within planning policy across the geographical scales.

In the Plan, equal importance is given to the improvement of the local economy and the health and the quality of life enjoyed by the Borough's residents and workforce. The Plan seeks to meet present day needs without compromising the ability of future generations to meet theirs, i.e. a sustainable future.

Conservation and development are not alternatives but must be reconciled and integrated within the concepts of sustainable development. In the Government's White Paper 'This Common Inheritance: Britain's Environmental Strategy', this is defined as: 'sustainable development means living on the earth's income rather than eroding its capital'.

Rotherham Unitary Development Plan (1999, p.6 and p.84)

Despite a lack of recent 'local planning policy', local planning policy was still able to emerge during interessement as an actant within the evolving network. Due to the policy's regulatory content and enforceable application, it rose as an actant within the

network, an actant around which 'the council' and 'the consultant' negotiated. To achieve actant status, 'local planning policy' pulled 'the council' towards its set objectives and increasingly pushed 'the consultant' to deliver the set agenda. Such negotiations and the relevance of local policy will be considered in further detail below, during the exploration of 'the outline planning application' as an obligatory passage point and actant. However, it is possible to briefly note here how 'local planning policy' became an actant due to the lack of relevant local policy, provoking increased activity, negotiation and engagement from 'the independent advisor', 'the management consultant' and 'the supplementary sustainability assessment' to compensate for the lack of prescriptive detailed policy.

Cabinet members and their monthly meeting notes

Ahead of the anticipated outline planning application, from July 2008 'the council's' Cabinet Members Team (CMT) monthly meeting notes became dominated by the Waverley planning application. Separate notes were published to update the elected members of 'the council' of the application's progress.

The meeting notes represent both artefacts and intermediaries passing information and knowledge to the elected figures within the authority. Information contained in the CMT meeting notes contained important details on the application's development and consideration. The notes are referenced throughout the following analysis; treated as either artefacts or intermediaries, they also represent the introduction of the Cabinet Members Team ('the councillors') as an actant into the actor-network. It is critical to note their presence from July 2008 to appreciate the significance of their actions during the later stage of enrolment. It is also possible to describe the councillors as intermediaries between 'the council' and 'the public', as highlighted in the following press release.

> *Rotherham councillors have formed a new group (the CMT) to monitor community feedback and proposals for the former coke works and mining site at Waverley. Around nine ward councillors from Rotherham Metropolitan Borough Council have responded to calls from the local community to become more involved in the proposals for the Waverley Community.*

 Press release from UK Coal (July 2008)

The purposes of the meeting notes are '*to update CMT on the progress towards submission of a planning application by UK Coal for a new community at Waverley*' (CMT meeting note, July 2008). As expected, the meeting note from July 2008, introduces the councillors to the anticipated outline planning application. However, interestingly, it also discloses concerns regarding 'the council's' capacity to process and consider an application of the scale expected, with additional issues raised questioning 'the council's' knowledge and expertise around sustainability assessments.

> *The application is due to be submitted in Summer 2008 and is likely to be the largest and most complex that the Authority has dealt with and therefore consideration has been given to the implications of dealing with the application.*
>
> *In respect of dealing with applications of this scale and complexity the Government has introduced a new method of dealing with major complex planning applications – Planning Performance Agreements (PPA), to provide a project management framework for a large scale application and it is proposed that this method would be the most appropriate way of dealing with the Waverley application.*
>
> *The principle of PPA and its introduction were reported to Cabinet Member on 27 July 2007 setting out that processing a major application should be dealt with as a single process from inception…to issuing a decision notice…through the PPA project management approach.*
>
> *ATLAS (the Advisory Team for Large Applications) a service provided by English Partnerships has been set up to provide and independent advisory service to Local Planning Authorities.*

CMT meeting note (July 2008)

Whilst the above quote, illustrates and defines the necessary detail, introducing ATLAS and Planning Performance Agreements to the actor-network, arguably the most important detail is contained in the following quote, taken from the same meeting note of July 2008.

> *Both the LPA and the applicant have expressed an opinion that PPA would be an appropriate way forward for dealing with the application. ATLAS have agreed to hold an inception day for the project but are unable to provide further support as their remit is mainly within the South of the UK.*
>
> *Concern is raised regarding the capacity within the existing Development Control Team to deal with an application of this size and complexity therefore additional resources with be required…the commitment of council officers to a project of this extent will also require additional resources.*

CMT meeting note (July 2008)

This signifies 'the council' raising concerns over its capability and knowledge during the consideration of the proposed settlement. It is important to note the date (July 2008) and the publication of the above meeting note when tracing the actor-network's development through enrolment and the question of sustainability establishing and performing as an actant. Tracing the performance of sustainability as it begins to act through its nature of being too complex with 'sustainability' arguably forcing 'the council' to enact and perform in certain ways.

ATLAS and the planning performance agreement

Ahead of the outline planning application (submitted in August 2008), both 'the landowner' and 'consultant', concerned by the ever-increasing complexity of the application, sought additional advice from ATLAS, the advisory team for large scale applications. ATLAS became introduced (as an actant) into the actor-network in June 2008 as an impartial advisor to 'the council', 'the landowner' and 'the consultant'.

ATLAS, as 'the (impartial) advisor' provided assistance initially to 'the council' to '*clarify its ('the councils') own aspirations, addressing what was needed physically, socially and economically in the area*' (extract taken from Rotherham Council employee meeting notes, June 2008). Additional assistance was also provided to draft the necessary Planning Performance Agreement that was made following input from both 'the council' and 'the consultant' during an inception day on 11 June, 2008.

ATLAS and the inception day

The Planning Performance Agreement inception day can be described as an obligatory passage point within the actor-network, through which the other actants had to pass to agree on the Planning Performance Agreement, an agreement that can also be considered an intermediary within the wider Waverley actor-network, something that will be discussed in further detail shortly.

The inception day, chaired by ATLAS, was held in Rotherham and attended by 'the council' and 'the consultant'. It aimed to:

> *provide Rotherham Metropolitan Borough Council and UK Coal with guidance on the actions and next steps to take a PPA forward.*

ATLAS Planning Performance Agreement Inception Day Summary Report (June 2008)

It was during the inception day that the project vision was agreed and recorded:

> *to create a new mixed use, sustainable community of 4000 homes incorporating schools, health, leisure, social and cultural facilities sufficient to meet future needs. It will integrate with the recently restored landscape setting of this former coalfield and connect with surrounding villages and employment areas. The development will also complement existing planned growth and meet future housing needs within the Sheffield/Rotherham City Region.*

ATLAS Planning Performance Agreement Inception Day Summary Report, p.4 (June 2008)

Following the agreed vision for the new settlement, the inception day also considered various recommendations to aid the process of assessing the planning application. Several additional recommendations introduced additional actants and intermediaries to the actor-network, including a steering group, thematic groups, a project manager and a project plan. Their significance is considered below:

> *A steering group is already in place to deal with Waverley. This appears to currently be the main forum within which the various issues are being discussed. It was recognised by both parties at the inception day that the membership and function of this group needs reviewing to help separate out the technical issues and critical decisions and use resources more effectively. At a project specific level, meetings have occasionally taken place between RMBC and the applicant whilst several other topics are being address separately by the applicant, such as direct technical discussions with the HA. There is a need to identify a clearer corporate steer from RMBC in order to effectively manage the process.*

> *Given the scope and scale of the application for Waverley, it is proposed that a more project specific approach is adopted to give the project its own formal Steering Group which will be responsible for overseeing the day to day progression of the project, and coordinating a series of themed working groups to resolve specific project issues. A review of the role of project manager from RMBC is required and clarity about who is project Champion. To address the many issues involved with such a large scale application, it is proposed that a series of topic themed working groups be established below the Steering Group to address and resolve specific issues.*

ATLAS Planning Performance Agreement Inception Day Summary Report, p.7 (June 2008)

The above extract illustrates the importance of the project plan as both an intermediary and actant. It signifies the moment in June 2008 when a project plan became necessary to organise the delivery of the anticipated outline planning application. The 'planning performance agreement' became an obligatory passage point during interessement when the agreement transposed the necessary details to ensure the assemblage of associations between 'the council' and 'the consultant', ensuring they were in agreement with the settlement's vision. It signifies an obligatory passage point as one which the actants had to pass through to continue with the successful organisation and consideration of the substantial planning application. The planning performance inception day represents the point when 'the site', 'the landowner', 'the council' and 'the consultant' were collected together, bound by their overarching aim to deliver a new sustainable settlement on the former mining site. It represents the point at which if any settlement was to be delivered in the future, a 'project plan' would be needed to steer a clear and concise path of progression and progress.

Preparing for the movement through an obligatory passage point and the progression towards enrolment

Whilst it is possible to conclude that through the process of interessement sustainability performed as an intermediary, interessement culminated in the signing of the 'planning performance agreement' in July 2008. However, the actual moment interessement occurred, followed the submission of the first outline planning application on 26 August 2008. It was only following the application's submission that the Planning Performance Agreement became executed, thematic groups formed and enrolment began.

Before exploring the progression through enrolment, arguably the most complex stage of translation, it is important briefly to explore the additional actants introduced and defined within the actor-network, following the outline application's submission in August 2008.

As previously explored above, it has been possible to identify the following actants (illustrated in **Figure 14** below), defined through their presence throughout the process of interessement, performance of sustainability and inclusion in the evolving actor-network at Waverley. It was this collection of actants that approached the next obligatory passage point, (the submission of the outline planning application) and signified the passage from interessement to enrolment.

Figure 14: Actors emerging and defined through interessement

1. 'the landowner';
2. 'the council';
3. 'the consultant';
4. 'the site';
5. 'the press';
6. 'the public';
7. 'the planning performance agreement';
8. 'the masterplan';
9. 'the impartial advisor' (ATLAS); and
10. 'local planning policy'.

Figure 15: Intermediaries defined through interessement

1. news articles;
2. cabinet month meeting notes;
3. national planning policy;
4. regional planning policy; and
5. PPA inception day.

However, it is necessary to explore how the outline planning application performed within the context of the actor-network to appreciate the additional actants, artefacts and intermediaries involved during the network's progression to enrolment. Tracing the incorporation of additional actants during the preparation and submission of the planning application also allows for further detailed appreciation of the performance of sustainability as an intermediary and performance as an actant.

The outline planning application – an actant and obligatory passage point

The outline planning application was submitted by Atisreal 'the consultant' on behalf of 'the landowner', Harworth Estates (formerly UK Coal). Details of the media release issued by UK Coal are included below, publicising to 'the public' the application's submission to 'the council' on 26 August 2008.

Plans for South Yorkshire's biggest brownfield development submitted to council.

Multi million pound proposals for South Yorkshire's largest ever brownfield development creating a new 4,000 home community across 741 acres have been submitted to Rotherham Metropolitan Borough Council.

The plans by mining, property and energy company UK COAL would transform a former coke works and mining site near Catcliffe in South Yorkshire – which covers an area bigger than Sheffield City Centre – into a high quality residential and employment site.

UK COAL, through its property and development company Harworth Estates wants to redevelop the former surface mine site in Waverley over a 20 year period into a sustainable, high-density, mixed-use community, including approximately 4,000 houses, community facilities and green areas.

UK COAL and planners Atisreal have worked with the local communities to bring the masterplan to the public via consultation sessions and have now submitted an outline planning application.

Tim Love, Harworth Estates' development director said: 'This submission, which is the culmination of 15 years of preparatory work, aims to provide major economic benefits to South Yorkshire and if successful, will create a unique, sustainable development on a historic, fully restored former mine site.

The proposal would transform this area with a mainly industrial past to a modern twenty first century development that will benefit thousands of local people in terms of providing new affordable housing, employment opportunities, schools and leisure facilities.'

The scheme is aimed at creating a 9,000 strong community including two schools, shops, bars, restaurants and a stunning waterside frontage onto three man-made lakes.

The huge scale of the project means building will be phased over a 20 year period with a range of homes being built each year to allow the gradual influx of people minimising the impact on schools and infrastructure in surrounding areas.

Public open space is also a key feature to the proposals with almost half the site being made up of open space woodland and the lakes.

UK COAL has completed a series of public events for communities living near the site, explaining the plans to provide schools, a health centre, social and leisure facilities, environmental issues including sustainability, air quality, drainage and transport as part of the development.

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John Dunshea, head of the planning department at Atisreal's Sheffield office, added: 'We have worked to create a masterplan that takes account of planning policy, government requirements for housing needs and the local community and which will provide a vibrant and attractive environment.

The proposals aim to build on the existing consents for the Advanced Manufacturing Park by developing a complimentary mixed-use residential quarter and by providing the physical and functional framework that will allow Waverley to become an integrated, sustainable community.'

Rotherham Metropolitan Borough Council supports the principle of development at the site.

UK Coal Media Release (August 2008)

It is possible from exploring the above press release in closer detail to appreciate the initial performance of sustainability at Waverley. Outlined as '*an environmental issue*', sustainability performed as an intermediary, transporting the aspirations for the site and a method to deliver the proposed development to create the '*sustainable community*' and '*unique sustainable development*', described above.

The performance of sustainability when considered against the origins of actor-network theory, stressing how sociologists and social scientists should assume nothing before tracing the connections, construction and performance evident within actor-networks, illustrates how throughout the process of interessement sustainability performed as an intermediary, as a method to promote/transfer development of the site and a exemplar status/benchmark to attain.

The above media release reveals how the application was presented and performed to 'the public', illustrating also how sustainability was evoked within the network as an intermediary. However, it does not confirm how sustainability performed throughout the planning application, and it is, therefore, important to explore this through the following exploration of the application documents in order to appreciate the actants that were defined as part of the application's submission and the performance of sustainability brought into being during the original application.

The outline application constituted over 25 reports, documents and drawings. Copies of the application documents submitted are attached as a CD to the thesis. Whilst it is neither necessary nor critical to list the documents in full here, it is important to explore how sustainability performed and determine which documents emerged as

actants and which performed an intermediary or artefact function. By exploring the performance of sustainability and how it was evoked within the network at the time of the initial application, it will be possible to explore further the re-performance of sustainability within the second revised application and trace the evolution and process to appreciate if sustainability remained an intermediary or evolved into an actant or even a potential stabilising actor-network. As a point of clarity, this means tracing if sustainability '*became defined by its interaction within the network via the intermediaries it put into circulation*' or '*a set of relations constituting an additional network*' (Tait 2002, p.47).

It is also critical to recognise that the application in its entirety represents an obligatory passage point and the moment from which interessement progresses to enrolment. It is only following the application's initial outline submission that roles began to fully evolve and actants became interrelated with other actant(s).

The suite of documents submitted for consideration under the first outline application contained the standard application forms, site location and proposed development plans. It also contained, as expected, an environmental statement (addressing air quality, carbon footprint, climate change, ecology, flood risk, landscape, noise, socio-economics, soils, surface water, transport and the travel plan), masterplans (addressing land use, density, building heights, drainage, open space and phasing), a design and access statement, a statement of community involvement, a retail statement, a waste strategy report, an energy and renewables statement, a leisure and tourism statement, a foul drainage and utilities study, a planning support statement (including a housing assessment) and a sustainability appraisal.

Outline planning application documents

The analysis, therefore, now briefly considers the significance of each of the documents to the actor-network and the contribution to the performance of sustainability across the actor-network of Waverley. The application for development of the Waverley New Community was '*made in outline with access to be considered with all other matters reserved for future consideration*' (CMT meeting note, July 2008). The outline application included details of 3,890 residential units, commercial

space (400 sq metres), a food store (1,500 sq meters), pubs, bars and restaurants (2,750 sq meters), cafes (750 sq metres), a hotel (5,600 sq metres), a community centre (400 sq metres), a health centre (3,000 sq metres), a commercial gym (1,800 sq metres), sailing club, post office, chemist and dry cleaners. As part of the developer's Section 106 agreement, 25% of the residential units proposed were to be affordable and the development promised to provide two primary schools, community facilities, health care facilities, open space and site management and maintenance (CMT meeting note, July 2008).

Arguably, 'the outline planning application' as a complete suite of documents can be considered an actant within the network at Waverley. Together the documents formed an actant, which directed 'the council', 'the landowner', 'the consultant', 'the site', 'the public', 'the councillors' and 'the planning performance agreement' via the application's submission in August 2008, marking the actants' passage through an obligatory passage point.

The masterplan – a constituent planning document and an actant

'The masterplan' constitutes an architectural plan of the proposed new settlement. Providing a visual representation of all that was envisaged and proposed for Waverley, the plan communicates the intrinsic sustainable development qualities evident within the design and layout of the proposed development and communicated further within the additional application documents.

A copy of 'the masterplan' submitted as part of the 2008 'outline planning application' is included below to illustrate how this visual representation is as important to the actor-network as written text. Without 'the masterplan', the constituent actants present within the evolving actor-network at Waverley would have come together very differently. Their performance and orientation around each other would have changed and the visual illustration created by 'the masterplan' would be lost along with the resulting conversations and negotiations.

Figure 16: Waverley Illustrative Masterplan

Removed for online publication

Source: Harworth Estates Outline Planning Application 2009

The environmental statement

Submitted as part of the necessary suite of application documents, the environmental statement presented the statutory environmental impact assessment, compulsory for applications as large as Waverley in the planning process.

The report's environmental assessment was made following standard information provided by a previous RMBC ('the council') Scoping Report (February 2008), outlining the necessary issues an environmental assessment must cover. Issues addressed within the environmental statement included air quality, carbon footprint, climate change, ecology, flood risk, landscape and views, noise and vibration, socio-economics, soils and contamination, transport and waste. Whilst each of the aforementioned issues was explored as part of the complex environmental statement, it is not necessary to consider the detailed findings of each of the thematic assessments here, apart from to appreciate their significance within the wider actor-network.

The environmental statement described above, as a stand-alone document, represents an intermediary, responsible for communicating the necessary technical detail needed to inform 'the council' about 'the site' and its constituent 'physical characteristics'. The complex assessment concluded:

> *In view of assumptions on which the assessment is based, together with the effectiveness of the proposed mitigation, the cumulative, combined and sequential impacts are not anticipated to give rise to any additional significant effects.*

Environmental Statement – Non Technical Summary, p.11 (July 2008)

Design and access

The design and access statement was also submitted as part of the necessary application documents for the proposed development at Waverley. The document

outlines the context of the settlement, the design evolution, the settlement's overarching vision, design principles, the settlement layout and detailed masterplan elements. Once again as, it is not necessary or possible to explore this significant stand-alone document in detail. However, it is important to highlight, as previously discussed, how the document contained the overarching vision for the proposed settlement, illustrating how the performance of sustainability within the network as an intermediary, became defined by the actants present within the network and detailed within the outline application's vision.

Whilst the vision's significance to the actor-network is discussed in greater detail within the following section on the network's progression through the stage of enrolment, it is important to note that the vision developed throughout the initial conception of the actor-network before it became defined within the design and access statement, submitted as part of 'the outline planning application' in August 2008. The vision, as detailed below, continues to illustrate the performance of sustainability as an intermediary, defined by the actants present within the network at this time, as a status and the achievable characteristic of a new settlement.

> *The vision is for a fully sustainable community at Waverley which is unique to Sheffield and Rotherham, and enhances the setting of the surrounding villages, and the wider landscape…Sustainable transport, including walking, cycling and high quality public transport provision will provide ease of movement both within the development and externally to neighbouring communities.*
>
> Design and Access Statement, p.40 (July 2008)

The statement's detailed narrative exploring the masterplan's credentials and design concept explains how Waverley was presented:

> *The Waverley Development Site offers a major opportunity to accommodate an exemplar sustainable mixed development, which incorporates housing, employment and supporting use.*
>
> *The spatial concept for the site shows a substantial area of open space to the south, comprising the green belt, three new linked water bodies of substantial size, and a new park creating a green finger into the built up area.*
>
> *The open space has a number of functions: it preserves the Green Belt; it provides water for the new development; and it creates a superb recreational, drainage and ecological resource for local inhabitants.*

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The high density areas of the plan are mixed use and are served by dedicated public transport corridors…

The masterplan will provide a fully balanced community with a wide range of housing types, densities and tenures, and a comprehensive range of supporting land uses.

Design and Access Statement, p.52 (July 2008)

The above quote illustrates how the design of the new settlement at Waverley was defined by mixed use development principles, incorporating substantial areas of open space in addition to a wide range of housing types, densities and tenures across the residential areas, and connected by dedicated public and pedestrian transport corridors.

Detailed development principles described within the statement explain how the outline planning application promised a new residential settlement featuring a permeable layout, legibility, public transport provision, high densities, affordability for local people, prioritised pedestrians and cyclists pathways, managed car parking and integrated energy and sustainable design and development.

In addition to the above-outlined exploration of the performance of sustainability (defined as sustainable development within the design and masterplan credentials proposed at Waverley and submitted as part of the first outline application in 2008), it is necessary to explore the performance of sustainability within this statement further. Discussion surrounding the sustainability of the proposed development at Waverley covered four pages of the statement, outlining the intended dwelling performance, energy strategy, zero carbon aspirations and sustainable energy/transport/water/environmental/community and waste targets, illustrating how sustainability was defined at this point within the network as a quantifiable and measurable entity, an element against which the development's performance could be measured and a tool to implement and achieve. Therefore, it can arguably be described again as performing as an intermediary.

The performance of sustainability within the network became defined by the actants present and defined by them throughout the design and access statement in July 2008 as a quantifiable performance indicator of securing renewable energy sources on site,

public transport, enhanced biodiversity, and increased community integration on reused brownfield land. Additional justification and assessment to the quantifiable nature of energy performance across the development was also provided in the submission of an additional Energy Strategy document.

Planning support statement

The planning support statement provided details of the planning assessment. Such assessments are typically made by 'the consultant' to outline the proposed development's suitability in accordance with 'the council's' planning policy. As a single document, the statement, once again performed as an intermediary within the actor-network, communicating the necessary detail contained within 'the outline planning application' to 'the council', 'the councillors', 'the press' and 'the public'.

Again, sustainability here within the network performs as an intermediary. This is evident from the quote below, taken from the planning statement authored by 'the consultants', which clearly illustrates how the performance of sustainability became defined by the actants during August 2008.

> *In terms of sustainability the site is a brownfield site and reference has already been made to the high density of the development and to accessibility by a variety of modes of transport. Other sustainable features include a sustainable surface water drainage system based around attenuation of surface water flows and the use of reservoirs. A twin combined heat and power system, which will eventually use renewable energy sources, is proposed as an energy efficient means of providing power and heat to the development. In addition dwellings will be constructed to a minimum of Code Level 4 of the Code for Sustainable Homes.*

Planning Support Statement, p.10 (July 2008)

Illustrating further how the actants present sustainability at this point within the network, as focused around the delivery of quantifiable sustainable design features and technological methods including sustainable drainage systems, energy systems and housing design and focusing the essence of sustainability at Waverley around defined and measurable energy based technologies, whilst omitting the plethora of other sustainability credentials evident within the wider network and considerations including the diverse economic, environmental and social dimensions. No mention is

given to one of many forgotten elements evident within the network at Waverley; for example the provision of public green space, healthy communities, social inclusion, promoting diverse ecosystems, providing sustainable transport or ensuring accessible employment opportunities. Whilst such elements performed within the network previously, they also reflected other, wider (national) strands of thinking about sustainability.

Sustainability appraisal

Finally, before exploring how the actor-network passed through the obligatory passage point into the third stage of translation (enrolment), it is necessary to appreciate the sustainability appraisal of the proposed development and its significance within the stabilising network at Waverley.

The development of Waverley is defined within the appraisal and presents itself (defined by the network) as being: '*essentially about finding a way to improve quality of life for present and future generations by breaking the link between economic growth and environmental degradation or social exclusion…sustainable development therefore means developing our economy in ways that minimise environmental pollution / protect natural habitats / make efficient use of resources / tackle social inequalities*' (Sustainability Appraisal, p.3, July 2008).

The above quote illustrates further how sustainability performed as an intermediary and performed as a potential method for delivering development sufficient to improve the quality of life of present generations without depleting resources to the point where it would prohibit future prosperity. It also illustrates how the wider actor-networks that invoke sustainability are involved in making certain choices and trade-offs, and how this definition of sustainability refers to and invokes a particular definition or definitions of sustainability (e.g. Brundtland) as initially explored during the literature review.

The sustainability appraisal aimed to assess how successfully the outline application met set sustainability objectives, contributing to sustainable development and concluding where improvements were needed. The appraisal introduced Rotherham

Borough Council's ('the council') Sustainability Appraisal Framework (previously adopted by the council as part of supplementary local policy) to the actor-network in July 2008 as an actant. The sustainability framework contained 22 sustainability objectives, which, in addition to 'the council's' design guiding questions, provided the framework against which the sustainability appraisal was made.

Collectively, the sustainability framework and guiding questions ('the assessment framework') became an actant with the network, steering the assessment of 'the site', 'the masterplan', 'the vision' and 'the outline planning application' according to quantifiable sustainability criteria. This became evident particularly during design team meetings in the summer of 2008 when 'the assessment framework' continued to engage 'the council', 'the landowner', 'the consultant' and 'the masterplan' during extensive design negotiations.

'The assessment framework' was organised according to the five themes of achieving, learning, alive, safe, proud and fairness, and contained 22 sustainability objectives, as listed below in Figure 16.

Figure 16: RMBC's sustainability framework – guiding objectives

- the provision of local employment opportunities;
- enhancing conditions for sustainable economic growth;
- facilitating sustainable transport;
- improving the level of education;
- encouraging innovation;
- promoting the awareness of sustainable development whilst encouraging sustainable lifestyles and business practices;
- improvising access to health and leisure facilities;
- enhancing the function of town centres;
- reducing crime;
- conserving habitats;
- optimising the use of renewable energy;
- minimising pollution;
- reducing local vulnerability to flooding and climate change;

- enhancing the built quality of settlements;

- efficient land use;

- providing sufficient affordable housing;

- conserving historic assets;

- building community cohesion; and

- enhancing equality across the borough.

The above list highlights how the actants evident during the obligatory passage point as signified by the submission of 'the outline application' were beginning to become exposed to the intricacies involved with sustainability. Whilst previous descriptions of sustainability across the preparation and initial submission for development illustrate the performance of sustainability as an intermediary, the introduction of 'the council's' 'assessment framework' as an actant within the network represented the moment 'sustainability' began to potentially and very slowly evolve as an actant.

Further exploration of the actants' passage from the planning application's submission marking the obligatory passage point from interessement to enrolment will now continue, and the evolving performance of 'sustainability' and the stabilising actor-network will be traced.

Enrolment

Following interessement, where actants are bound to roles assigned by others, when such roles begin to evolve and become interrelated with other actant(s) that are drawn in, the third stage of enrolment is observed.

Following the application's submission in August 2008, 'the council' reported some initial concerns to 'the councillors' via the routine monthly meeting progress note. As outlined below, the concerns covered a range of topics, including sustainability, phasing, policy and transport. It is interesting to note how 'policy' or the lack of relevant policy began to push 'policy' from an intermediary to an actant within the network, and was potentially responsible for displacing other actants (such as sustainability) later within the network's development, as extended negotiation and assessment (compensating for a lack of relevant local policy) dominated the time available for potentially considering the complexities of implementing the 'sustainability' criteria.

> *The application is at an early stage; however, it is already apparent that there are some issues which will need to be addressed. It is possible that others may emerge during the processing of the application. In brief there are issues relating to: the policy basis for determining the application and phasing to take account of housing market renewal; phasing to take account of the long build out proposed (20 years); highways issues relating to the relationship with the existing road and public transport network; the proposed indicative grid layout; concerns of local residents regarding any increase to flood risk and traffic generation; impact on Sheffield authority; landscaping, open space and ecology provision and maintenance; sustainability issues including energy efficiency, use of renewable energy, life time homes and community safety; quality of the built environment, including housing mix and density; impact on air quality and negating the section 106 agreement.*

CMT meeting note (August 2008)

The wealth of diverse issues 'the council' faced taking forward in the application is evident from the above note. It is also important to note how 'the council', despite previously becoming aware of the intricacies presented and defined within 'the assessment framework', returned to disregard sustainability in August 2008. The quote above illustrates how 'the council' associated sustainability with issues of energy efficiency, renewable energy and community safety. Consequently, it was this

definition of sustainability that was carried forward by 'the council' and permitted throughout the stage of enrolment. It is also necessary to highlight, that the author of the CMT note was the privately contracted project management consultant recruited solely to manage the Waverley application and funded by UK Coal. The CMT meeting note from August 2008, therefore, also introduces the project management consultant – 'the project manager' – into the network as an actant. However, their introduction is increasingly significant, as it was at this moment the presence of sustainability within the network was acknowledged by 'the project manager' and carried forward via the August 2008 CMT meeting note (an intermediary), thereby representing 'the council's' definition of sustainability. It also represents how sustainability continued to perform within the network as an intermediary or a defined status, with set quantified qualities to meet in order to secure the implementation of the new settlement.

As previously discussed, following the signing of the Planning Performance Agreement and the actor-network's passage through the obligatory passage point, a series of additional actants and intermediaries became introduced into the network. The actants and intermediaries included thematic groups, who were charged with addressing selected issues and assisting in that element's consideration and contribution to the proposed settlement. As previously explored within the case study chapter, such groups fed into the established team structure and hierarchy. Each thematic group met on a monthly basis, feeding information down to the steering group. It was a continuous cycle of thematic groups, drip-feeding down information to the end-of-month steering group meeting.

> *To help determine the application, monthly Project Meeting Groups have been set up titled 'Housing and Design', 'Community Infrastructure', 'Environment' and 'Transport' to discuss and resolve concerns and issues raised. These groups include the Council and the developers and involve attendance by officers in specialist fields (such as highways, drainage, ecology, landscaping, education, open space etc.) and external consultants such as Environment Agency, Yorkshire Water and Highways Agency. These culminate in an end of month 'Steering Group' meeting which includes the Director on Environment and Development Services, Head of Planning and Regeneration, application case officer and the developers to review the issues raised at the Project Group Meetings and to agree a way forward.*

Extract from CMT Meeting Update Note (August 2008)

The thematic groups' creation, in part, represented the progression of the actor-network through the stage of enrolment, when roles became interrelated with other actants, as the establishment of the thematic groups and organisational structure under the Planning Performance Agreement created an interrelated nature and dependency. The thematic groups as intermediaries (apart from 'the steering group – an actant) 'compose the network' (Callon 1991, p.135), providing form for exchanges between 'the council', 'the consultant', 'the site', 'the masterplan', 'the vision', 'the management consultant' and 'the independent advisor' in assessing 'the outline application' and its ability to delivery development on the site at Waverley.

The analysis will, therefore, now consider how each of the thematic groups evolved, considering the details relevant to the continually emerging performance of sustainability at Waverley.

Thematic groups

Housing and design

The housing and design group was charged with assisting with issues relating to residential development and housing design. Through the consideration and negotiation of the application between the initial application in August 2008 to the revised submission in October 2009, the housing and design group became involved in a variety of issues, including the CABE review (considered in further detail separately below), debates addressing housing mix and density, securing detailed design codes with each subsequent phased application, securing 25% of all the units remained affordable, achieving code 6 sustainable home status, the importance of design codes in shaping future development and the potential relocation of the park and ride facility.

Community infrastructure

The community infrastructure group was charged with assisting with issues relating to the intended implementation of community structures across the new settlement. Through the application's consideration and continued negotiation, the community infrastructure group became involved in a variety of issues, including details of

necessary additional school provision, elements required from open space, community and health facilities, the necessary section 106 agreements needed to secure a management company to delivery and oversee the community infrastructures implementation, debating green space and sports pitch provision and allocations, designating responsibilities of the Waverley Management Company and the affordability of associated service charges.

Transport

The transport group was charged with assisting with issues related to the complexities of integrating existing and additional transport provision to serve the settlement and surrounding neighbourhoods. Through the process of considering the application, the transport group became involved in the detailed assessment of the proposed travel plan. The group's discussions included considering how the travel plan could realistically be implemented using planning conditions, the proximity of the park and ride facility in relation to the residential areas, anticipated additional traffic generated by the additional residents and the transport/highways networks ability to cope, the size and scale of the proposed park and ride facility and whether the settlement could remain sustainably exemplar if the bus rapid transit scheme or park and ride was not implemented.

Environmental

Finally, the environmental group was charged with considering the intricacies bound with the environmental elements of the application. During the application's consideration, environmental issues were traced throughout and included debating which code for sustainable homes would be attainable across the settlement, the design of the drainage scheme, deciding an appropriate level of landscape provision across the site, developing a green infrastructure strategy and ensuring an adequate assessment of the settlement's proposed environmental performance.

The steering group – an actant

The steering group held at the end of each month received summarised information fed from each of the other four thematic groups, whose meetings were held earlier in

the same month. Charged with overseeing the other groups and steering the direction and progress of the application overall, the steering group theoretically steered the direction of the application and ensured adequate progress. Whilst the group considered the elements and implications of all the aforementioned themes and issues, it was also concerned with project management tensions, 'the council's' project team's stretched capacity, a lack of suitable skills for the assessment of the application, completing a suitable public consultation strategy and managing the application's progress ahead of determination.

Whilst each group represents additional evidence for the actor-network's progression through enrolment with the addition of new actants into the developing network, they also provide the lengthy yearlong context within which the performance of sustainability changed evolving from an intermediary, to an actant and subsequently attempted to establish as an actor-network. Arguably each of the groups could be defined as an actant and even analysed as their own small actor-networks within the large dominant actor-network of Waverley. However, as this analysis is concerned with the performance of sustainability, it is important only to note that additional complex actor-network relations existed, before considering how they were involved with the performance of 'sustainability', and how it was defined at a given time by the actants present within the network.

Whilst reviewing the steering group's meeting notes, issues concerning transport, drainage, project management and sustainability evidently dominated the group's discussions. The implications of this will be considered in greater detail below during the discussion and the consideration of the performative evolution of 'sustainability' as an actant.

'Sustainability' – the evolution from intermediary to actant

The analysis has previously discussed the performance of sustainability at Waverley, how it performed throughout problematization and interessment as an intermediary. However, during enrolment, with the introduction of thematic groups and additional complex relationships and interdependencies between actants developing within the actor-network of Waverley, it is also possible to trace the evolutionary performance of 'sustainability' as an actant.

Through tracing the actant of 'sustainability' through the progression of enrolment, it will be possible to observe how sustainability evolved into performing as an actant and the subsequent attempts to establish an additional actor-network.

Initially, the notion of sustainability developed within the actor-network at Waverley during the preparation and publication of the Joint Position Statement in February 2007, the point that also signified the moment of problematization. During problematization, 'sustainability' performed as an intermediary within the actor-network and was defined by the actant 'Joint Position Statement' as described below.

> *There is considerable scope for Waverley to become an exemplar low carbon mixed use community. Development providing a mix of employment, housing choice, service and community facilities served by quality public transport within an attractive setting of bio diverse green spaces and water features, would help reduce the need to travel and create a sustainable, cohesive and distinctive new community, innovative layout, design and construction with integrated sustainable drainage, water recycling, waste management, energy conservation and renewable energy features would help combat climate change.*

Joint Position Statement (2007)

Sustainability at this point within the network became defined by the 'Joint Position Statement' as a tool for securing development on site and a status to aspire towards and attain. As Callon states: '*actors define one another in interaction, in the intermediaries they put into circulation'* (Callon 1991, p.35). It is evident from the above quote that the 'Joint Position Statement' (also an actant) defined itself using several intermediaries, including sustainability during its interaction with 'the site', 'the council' and 'the landowner' amongst others.

Moving through the second stage of translation, to interessement, as previously explored, it was possible to understand how sustainability remained to perform as an intermediary and was evoked by the assembled actants; 'the council', the consultant', 'the planning performance agreement' 'the masterplan' and 'the outline planning application' to describe and define the type of status the proposed settlement aspired towards. Waverley was continually referred to throughout the initial application process *'as a sustainable high density mixed use community'* (*The Star*, 21 January 2008), reflecting once again how sustainability remained defined by the assembled actants as a status, an entity to attain whilst it performed as an intermediary and not an actant.

This analysis previously considered how 'the council' raised initial concerns surrounding the management of the application and available expertise for assessing the proposed development. As previously discussed, 'the councillors' were informed in July and August 2008, around the application's initial submission, of 'the council's' fears.

> *Concern is raised regarding the capacity within the existing Development Control Team to deal with an application of this size and complexity therefore, additional resources will be required...the commitment of council officers to a project of this extent will also require additional resources. There is no identified officer within the Authority with expertise in sustainability.*
>
> CMT meeting note (July 2008)

> *The application is at an early stage; however, it is already apparent that there are some issues which will need to be addressed.*
>
> *In brief there are issues relating to: the policy basis for determining the application and...sustainability issues including energy efficiency, use of renewable energy.*
>
> CMT meeting note (August 2008)

It is, therefore, appropriate that we re-join the analysis from this same point, in August 2008, to trace the evolutionary performance of sustainability as an intermediary to an actant within the network. Comments, including those referenced above, indicate how the performance of sustainability evolve from an intermediary defined by the 'Joint Position Statement' as a quantified, aspirational attainment to

perform as an actant and a much looser entity that the assembled actants failed to define, therefore requiring further assessment, expertise and attention.

> *There is currently no up to date development plan framework upon which to assess the application. The site is not allocated for housing in the UDP and the LDF is not sufficiently advanced to identify the site for residential development. However, the LDF Core Strategy Preferred Options recognises the potential for an exemplar sustainable mixed-use community with significant housing provision in the borough. The Regional Spatial Strategy makes one reference to Waverley in Policy SY1 it states 'plans, strategies, investment decisions and programs for the South Yorkshire Area should support Advanced Manufacturing and related research and Development at Waverley'...Given the policy basis, the application will need to be referred to Government Office for a decision on whether the application can be determined by the authority. Therefore it is essential that the scheme will be an exemplar sustainable community to justify support for this large scale scheme.*

CMT meeting note (October 2008)

The above note introduced the additional actant of 'the Government Office' (Yorkshire and Humber) and illustrates how sustainability was still performing at the beginning of enrolment as an intermediary, with sustainability defined by the actants at this point as a method to deliver development on site. However, it is also possible to argue here how 'sustainability' began to perform as an actant as 'sustainability' became essential to the ongoing Waverley scheme and actor-network. 'Sustainability' began to perform not as an intermediary to simply carry the same relations forward but as a constituent actant around which others were beginning to align and function.

It was also during the same presentation of updated information to 'councillors' regarding the environmental and sustainability information submitted as part of the initial application that 'the council' indicated how '*the information contained within the application is currently being assessed with ATLAS who will provide feedback on the environmental standards proposed. The information is deficient in term of provision of an exemplar scheme and also information in relation to the buildings...*' (CMT meeting note, October 2008). In addition, this illustrates ATLAS' continued involvement within the actor-network throughout the transition of enrolment, highlighting its involvement in assessing the application and support of sustainability, when sustainability was performing simply as an intermediary and therefore not capable of delivering the '*provision of an exemplar scheme*'.

Sustainable Development Officers Group – failed enrolment

It is of note that while no actant has yet recognised the intricacies and significance of the broader actor-networks of sustainability' (i.e. the national and international networks and multiplicities of performances that are invoked in the name of sustainability 'sustainability', 'the council' did question their existing knowledge and the lack of specialist skills required to assess sustainability, appealing for additional assistance from 'the council's' existing Sustainable Development Officers Group (SDOG). During the group's monthly meeting in August 2008, meeting notes (below) illustrate how 'the council' attempted to enrol the group into the actor-network; however, with no response ever received, this also represents a failed act of enrolment.

> *It would be helpful if officers within the council could be identified with the necessary expertise to assess the documents and it is hoped that the Sustainable Development Officers Group can offer some suggestions and volunteer some assistance. Given the scale of development proposed and the sustainable development credentials claimed by the developer…the application could be brought to SDOG if the group thinks it would be useful, comments would be appreciated.*

SDOG meeting note (August 2008)

The same issue is also evident from a steering group meeting note dated October 2008, pushing 'the council' to allocate appropriate officers, who would become responsible for considering the environmental elements of the proposals and the assessment of the settlement's proposed sustainability. The meeting notes recorded 'the consultant's' request that an allocated '*officer be nominated with responsibility for design and sustainable development'*. However, 'the council's' recorded reply informed those in attendance at the October steering group that '*there is no sustainable development officer*' (Steering Group meeting note, October 2008).

Lack of resources identified and issues defining sustainability begin

Following receipt of responses from many statutory consultees, 'the council' wrote to inform 'the consultant' of a series of concerns with the application's submission. In response 'the consultant' concluded the following:

We consider many of the points made in the letter are based on misinformation and fail to properly reflect the progress made in discussions between the Harworth Estates Team and RMBC officers. Given RMBC's officers statement that they were unsure who had overall responsibility for dealing with design issues at RMBC, it is difficult to understand the basis for your disappointment with the quality of the WNC scheme…Harworth Estates agree, that the scheme should be of the highest quality and considered to be an exemplar of a sustainable community. This is why sustainability has been put at the heart if the Masterplan for the scheme and why every effort has been made to make the scheme an exemplar scheme.

At the Environment Project Group meeting on 23 October 2008 WYG explained to RMBC officers the principles behind the development of WNC as a sustainable community. When asked whether there were any comments, there were no comments from RMBC officers. Furthermore, RMBC had already stated on previous occasions that the Council does not have the expertise to fully consider issues of sustainability in relation to development proposals.

Atisreal (October 2008)

It is reasonable to conclude from the letter above how 'the council' and 'the consultant' were beginning to become aware of issues that required further attention and negotiation within the actor-network. Such issues included details of the design of the settlement contained within 'the masterplan' and securing certain levels of environmental performance. Although 'sustainability' performed previously within the network as an intermediary that was defined at that point within the network by the actants as a measurable entity of environmental performance, here we begin to see 'sustainability' emerge as an actant and begin to influence 'the consultant' and 'the council' within the network.

It is evident how 'the council' pushed for a higher code on the sustainable homes scale, while 'the consultant' stressed the code level proposed was already significantly higher than the set standards required. Such debate represented the moment environmental performance measures (one method of the application's 'application' of 'sustainability') elevated 'sustainability' to an actant, as 'Sustainability' began to cause other actants, including 'the council', 'the consultant' and 'the landowner' to act and assess how they needed to the (re)adjust environmental performance across the settlement.

The letter referenced above, therefore, illustrates the moment during November 2008, when 'sustainability' evolved and performed as an actant. This was witnessed

initially by 'the council', 'the landowner' and 'the consultant', who became pushed by 'sustainability' to reassess and adjust their application of proposed environmental measures across the proposed development. Interestingly, this change was something other actants within the actor-network remained oblivious to, as they only witnessed the performance of sustainability as an intermediary.

As illustrated further in the extract below, taken from emails exchanged between officers in the council highlighting issues with time, recourcing and the consideration of sustainability, as 'sustainability' began to perform and push 'the council', 'the landowner' and 'the consultant' to reassess their performance within the network at Waverley.

> *"The project plan is of course an important element of managing the project however, until now there has been difficulty in completing this, especially given the timescales. Now a line has been drawn in the sand, the response from the developer should hopefully crystalise.*
>
> *There needs to be better understanding of what work is involved in the key areas to understand how long it may take us (the Council) to assess the different elements.*
>
> *Sustainability remains an unresolved issue, resources need to be identified as a matter of urgency and an understanding of what our (the Council's) expectations / position is needed in order that the schemes credentials can be assessed.*
>
> *The scheme is shifting away from an exemplar scheme and the Councils position needs to be quickly established, as the arguments being put forward are not sufficient. We need to take a corporate view as to whether what is being offered is appropriate.*
>
> *There are some key areas that need more consideration – notably sustainability – with a lack of expertise and now the new area of viability."*
>
> Extract from RMBC internal team email (November 2008)

It is important to note from the correspondence exchanged throughout November 2008 how such issues escalated through the transition to enrolment, incorporating additional actants. Such actants included 'an environmental consultant', a supplementary 'sustainability assessment' and 'swine flu', all of which influenced 'sustainability' as actants within the actor-network at Waverley and are considered later within this analysis in addition to the continued presence of 'the site', 'the vision', 'the outline application', the council', 'the landowner' and 'the consultant', who were together evolving into a complex series of relations and interdependencies.

The analysis will therefore now trace the evolution of Waverley through enrolment from November 2008.

Reimagining 'the council'

During the application's continued consideration, within 'the council' individual teams and groups began to be enrolled into the actor-network through their preoccupation and concerns regarding the application of 'sustainability'. Suggesting the council and its individual teams were constituted as intermediaries by 'sustainability' as an actant. However they resisted this role. The following extract traces an email exchange between two colleagues from the development control and forward planning teams, highlighting the levels of concern amongst groups within 'the council' over the application's progress and consideration, pushing back and resisting the evolving performance of 'sustainability' as an actant.

Extract from email to the development control team from forward planning:

> *Further to the case team update yesterday afternoon, you are aware how concerned I am regarding the approach to dealing with the new Waverley community planning application with respect to carbon foot printing, renewables, waste management, sustainable construction and managing climate change…It is already clear to the Forward Planning team that the above issues are where we need to (as the LPA) undertake some blue sky thinking and create a policy framework for Waverley that captures these key stands.*
>
> *I am aware that you have tried unsuccessfully to engage Sustainable Development Officers Group in the development of some of this thinking for the Waverley new community…The case team already demonstrated a lack of understanding of these key issues and it appeared to me yesterday that we would be content to sweep them under the carpet as we currently don't have a policy basis to negotiate further. I trust my comments express my concerns regarding this approach – also I don't think Government Office Yorkshire and Humber will be very pleased with our lack of attention to this important matter.*
>
> Extract from RMBC internal team email (11 December 2011)

Whilst the email suggests areas requiring additional attention, the above exchange also highlights how 'sustainability' continued to be defined by the assembled actants at this point within the network (ie 'the council') as an intermediary, despite its presence as an actant within the network. Describing 'sustainability' with reference to

carbon foot printing, waste management and construction methods defined 'sustainability' again as a method to assist in the delivery of the new settlement and a quantifiable entity. However, the exchange also acknowledges 'the council's' lack of expertise and attempt to back out of the actor-network with 'sustainability' as the actant (much like the scallops ultimately did in Callon's chapter, suggesting 'the council' was unwilling and not equipped with the skills or knowledge to deal with 'sustainability' as an actant. 'Sustainability', however, was clearly an actant at this moment within the network, defined by its interactions with 'the council', 'the consultant', 'the landowner', 'the site' and 'the outline planning application' via constant revision of 'the vision' and 'the masterplan'.

Running parallel within 'the council' to the dismissive and elusive attitude towards 'sustainability', described above, were additional internal capacity and resource issues. Such issues included the need for the project team meetings to have a clear, defined focus and not represent progress meetings for senior figures in 'the council'. The meetings had become overly long, with too many people attending, directed by the now enforced 'Planning Performance Agreement'. As noted within the meeting notes reviewed as part of the analysis, key individuals were also not attending due to the length and poorly defined content of the project meetings. A lack of capacity at a senior level (discussed during interviews) also led to a lack of decision making during the meetings and project groups, thus representing once again the network's failure to enrol critical council figures into the actor-network of Waverley and illustrating points of contest throughout the movement through enrolment.

Crisis team meetings were held throughout February 2009 to attempt to address the above issues, with internal meeting notes detailing the issues well.

The meeting notes reported the following:

> *Mostly we know what needs to be done, although there are some key elements that need more consideration – notably sustainability and the management plan where the Council lacks expertise and now the new area of viability. Now a line has been drawn in the sand, the response of the developer will hopefully crystallise.*
>
> *Also there needs to be a better understanding of what work is involved in the key areas to understand how long it might take the Council to assess all*

these different elements…Sustainability is still an issue. Resources need to be identified as a matter of urgency and an understanding of what the Council's expectations/position is in order that the scheme's sustainability credentials can be assessed.

The applicant is shifting his position away from an exemplar scheme.

Extract taken from RMBC internal team meeting notes, 11 February 2009

The above extract reveals how 'the council' appreciated there was more work needed to be done in assessing the application of 'sustainability' at Waverley; however, due to a lack of available expertise in determining the settlement's sustainable viability, 'the council' pushed the responsibility back towards 'the consultant' and the applicant, 'the landowner'. A perceived lack of resources acted as a temporary shield to mask why 'sustainability' remained unconsidered, whilst 'the council' and 'the consultant' continued to fail to recognise the significance and intricacies of achieving the sustainable development previously envisaged. Thus the performance of 'sustainability' as an actant within the evolving network continued to cause issues between the assembled actants, therefore compromising the continuation of the actor-network and future development on site at Waverley, during which the council were ultimately unwilling to act as intermediaries in 'sustainability' actor-network.

The environmental consultant

As part of 'the council's continuing effort to attempt understand the application of sustainability at Waverley and therefore in the abstract sense the performance of 'sustainability', they recruited an additional consultancy team to assess the sustainability credentials and environmental performance of the proposed new settlement. Two consultancies were approached to provide quotes. The following extract illustrates the difference between the quotes and signifies the moment when the additional 'environmental consultant' became enrolled into the actor-network.

Further to our earlier conversation…as the application is in outline form and the development period will be over 20-25 years we need to know at this time if the reports are fit for purpose and how the Council can ensure that we achieve what we want over the development period. I would be grateful if you could provide us with a fee proposal…and I would like to present it to him (my director) as a matter of urgency.

Extract taken from an email sent from RMBC requesting additional consultancy support (March 2009)

With respect to the above planning application X (name removed to retain anonymity) are pleased to offer the following services in reviewing the applicant's Energy Strategy and Sustainability Statement…The project team incorporates expertise at a national level in implementing best practice environmental control and enhancement measures, via planning conditions and obligations, life-cycle analysis and EIA evaluation. The team are familiar with Rotherham LDF, Sustainability Appraisal Framework and Energy Strategy prepared for the Advanced Business Park.

Extract from Letter sent to RMBC from the competitor consultancy (9 February 2009)

The total estimated cost for the above consultancy to complete the necessary work proposed was £7,440. An additional quote from an alternative (subsequently appointed) consultancy was also requested by 'the council' and returned an estimated fee of £3,540. The successful 'environmental consultants' described themselves in their tender document as:

firmly established as one of the world's top five leading environmental and energy consultancies…We focus on keeping our clients at least one step ahead…transforming their vision into realities that are sustainable in every sense. We understand RMBC seek the following…technical support to understand the contents of the Environmental Strategy and Sustainability Appraisal documents, providing a non technical summary of such and advise the client as to the possible delivery mechanisms to ensure that the development can achieve its exemplar status and client requirements over the delivery period.

Extract taken from letter sent to RMBC from the appointed consultancy (March 2009)

The 'supplementary sustainability assessment' – defined as an actant

Whilst ongoing issues remained on addressing the necessary assessment of the Energy Strategy and Sustainability Appraisal, submitted as part of the initial outline application, progress had been made following successful amendments to 'the masterplan'. As an actant, 'the masterplan' evolved throughout the process of interessement and enrolment. During enrolment, with the continual performance of 'sustainability' performing as an establishing actant, 'the masterplan' negotiated successful interdependency.

The following extract, taken from a letter to 'the landowner' from 'the council', details the emerging stabilisation of 'the masterplan' as an actant, running parallel to the turbulent performance of 'sustainability' during the process of enrolment and 'sustainability's' attempt to establish and perform as an actant.

> *I thought it appropriate to write following the submission of the draft-revised masterplan in mid January. Having had chance to consider the revisions, and following a number of detailed project group meetings the revised masterplan provides most of the ingredients needed to achieve a sustainable cohesive community and we are encouraged by the progress made thus far. It is important to stress, that given the fact that this represents a departure from the development plan and because of its scale and nature, it is crucial that we have the support of the key agencies when we consider the application and ultimately refer it to the Government Office. In particular given we request Atlas's involvement with this proposal, it is important to retain their support.*
>
> *We remain committed to securing a mixed use exemplar sustainable community.*

Extract taken from letter to UK Coal from RMBC (February 2009)

It is interesting to note how the above illustrates the point within the actor-network when 'sustainability' begins to perform as an actant, enrolling additional consultancy expertise into the network to assess the settlement's sustainable credentials and manage the development's implementation.

Debating who is responsible for the assessment of sustainability

Throughout the establishment of 'sustainability' as an actant, the network refused to accommodate the complexities inherent with the performance of 'sustainability'. A letter from 'the council' to 'the consultant' detailed the continued negotiation regarding the assessment of sustainability. The extract below illustrates how 'sustainability' as an actant attempted to establish as an actor-network, drawing in 'the council' and 'the consultant' to consider and conduct further assessment. However, 'the landowner', in refusing to conduct additional assessment due to the financial implications, halted the attempt.

> *The relative sustainability of developing Waverley, compared to the alternatives, i.e. expansion of the existing settlements, needs to be addressed. No attempt seems to have been made to do this, they only looked at sustainability in relation to the characteristics for the proposal itself not*

in comparison to the alternatives…The lack of analysis of comparative sustainability, against the alternative ways of meeting the RSS requirement, represents a serious omission from the statement that will need addressing before we can make a favourable recommendation for this application.

Response:

We are not in a position to compare Waverley to the 'alternatives' as we do not know what the major alternative sites are, This information will not be available until the RSS 2009 Update and Sheffield/Rotherham SHLAA documents are complete…There is no requirement within PPS3 (policy) for developers to analyse the comparative sustainability of their proposed housing sites against other ways of meeting the RSS requirement. This is something that is the responsibility of LPA's to undertake as part of the production of their LDF documents and will be underpinned by the SHLAA. Therefore Harworth Estates will not be undertaking this assessment.

Extract taken from letter exchange between RMBC and Atisreal (March 2009)

Whilst the above exchange illustrates how both 'the council' and 'the consultant' recognised the significance of assessing sustainability, it also supports how they (the actants) continued to resist accommodating the evolving complex performance of sustainability. Sustainability was performing within the network as an intermediary, however, it is possible to appreciate here 'sustainability's' evolving performance as it begins to influence others, something that was dismissed and not tolerated by the other actants within the actor-network of Waverley.

The same letter exchange (referenced above) was also followed by various emails between 'the council' confirming the need for further assessment and the appointment of 'the environmental consultant' to complete the work necessary, as quoted above, at a cost of over £3,500.

I refer earlier to our earlier conversations regarding the assessment of UK Coal's Sustainability and Energy Strategies. I have in the first instance approach Sheffield City Council about utilising their knowledge, however their level of expertise would not cover all of the aspects required to make a full assessment and in the likely event that the application will be called in, I feel that a thorough evaluation needs to be provided at this stage. The appointment of X ('the environmental consultant') will enable negotiations to take place between RMBC and UK Coal regarding the implementation of a thorough sustainability strategy and in turn will ensure that future RMBC applications will have regard to this.

Reply:

> *We clearly need to do this piece of work, and am comfortable that we commission X.*

The above email exchange illustrates the continued transition through enrolment, with the addition of several actants, drawn into the network by existing actants and their evolving roles. It is evident how during March 2009, with the application being considered, 'the council' engaged 'the environmental consultant' during the assessment of the 'the sustainability appraisal' and 'energy strategy'. It is important to note how both of these documents became actants and not artefacts through their passage through enrolment during the process of assessment. Their roles evolved in addition to their ability to enrol others ('the environmental consultant') into the network to assess their complexities.

Assessing the sustainability assessment

Four months ahead of the revised submission of the outline application for the development of a new settlement at Waverley, 'the environmental consultant's' report assessing the assessment of sustainability was returned to 'the council'. A detailed assessment of the Sustainability Appraisal, Energy Strategy, Environmental Statement Technical Appendices 2 (Carbon Footprint) and 3 (Climate Change Adaptation) and the proposed application of sustainability at Waverley (detailed within the Design and Access Statement) was made in the absence of local policy using '*a set of project guiding principles*' (Review of Sustainability Supporting Documents, 2009).

The report represents the introduction of an additional intermediary, the 'supplementary sustainability assessment', into the network. The report's conclusions act to transfer meaning and influence other actants, 'the council', 'the consultant', 'the outline planning application', within the network to change and activate additional enrolment into the stabilising actor-network. Whilst sustainability was evoked by the actants and recorded within the artefacts of the network as an intermediary, 'sustainability' was actually working through the 'supplementary sustainability assessment' as an emerging actant threatening to destabilise the actor-network at Waverley.

The 'supplementary sustainability assessment' initially returned the following draft conclusion and recommendation.

> *X welcomes the level of sustainability technical support given to the project and planning application. The number of reports confirms Harworth Estates commitment to developing an exemplar site with the overall target being carbon neutral development. X has reviewed the sustainability documents and has presented a number of comments and queries to the project design team.*
>
> *Should these queries be resolved and these strategies clarified the it is possible that the site can be considered exemplar.*
>
> Review of Sustainability Supporting Documents First Draft (April 2009)

The above extract illustrates how 'the environmental consultant' would support 'the consultants' assessment of sustainability within the application, following modifications to the proposed design. This indicates how 'the environmental consultant' defined sustainability as an intermediary, attesting to how modifications to the settlement's design characteristics could deliver an exemplar 'sustainable' development. This suggests how 'the consultant' and 'the environmental' consultant continued to present 'sustainability' as an applicable and measurable method of design and construction. However, importantly, 'the council' began to recognise their error and acknowledge at this moment how 'sustainability' was becoming more of an issue than they had ever previously recognised. At this moment 'the council' became aware of the performance of sustainability not as an intermediary but as a establishing actant, evolving and perfecting their assemblages.

The quote below, taken from 'the council's' response to the draft 'supplementary sustainability assessment' concludes, '*after reading the entire report it is clear that the documents reviewed are deficient in the amount of information and accuracy of their data*' (Email to the environmental consultancy from RMBC, May 2009).

'The council's' response to the draft 'supplementary sustainability assessment' also stated: '*the review document summary's are deemed to be too positive and it is felt that firmer wording and conclusions would be appropriate*' (email to the environmental consultancy from RMBC, May 2009). Following 'the council's'

comments, 'the environmental consultancy' revised the 'supplementary sustainability assessment' and concluded:

> *X welcomes the level of sustainability technical support given to the project and planning application. The number of reports suggests that a number of technical areas have been explored to seek the development of an exemplar site.*
>
> *X have reviewed the sustainability documents and have presented a number of comments and queries to the project design team many of which appear to relate to technical errors within the reports or inaccuracies over baseline data.*
>
> *At present we do not feel that the strategy suggested will be technically viable and therefore we feel that further clarification, technical assessment, dialogue and reporting is needed to confirm the overall project sustainability strategy before Project Waverley can be considered an exemplar site.*
>
> Review of Sustainability Supporting Documents (April 2009)

The above is, therefore, important for highlighting how 'the environmental consultant' initially reviewed and approved the application documents. However, following further review, 'the council' identified errors and requested 'the environmental consultant' revise their report.

Acknowledging sustainability as an actant

The above represents the moment 'the environmental consultant' and the 'supplementary sustainability assessment' began to acknowledge the potential and performance of 'sustainability' as an actant. The narrative also illustrates how they ('the environmental consultant' and 'supplementary sustainability assessment') both now acknowledged the influence 'sustainability' had in ensuring the delivery of an exemplar settlement. 'Sustainability' clearly operated here as an actant within the network, defined by its interaction with 'the environmental consultant', 'the supplementary sustainability assessment' and 'the council' via the intermediary of the draft review of the sustainability supporting documents report.

The fracturing of 'sustainability' within the actor-network of Waverley

However, it also represents the moment at which the fracture of 'sustainability' as an actant within the actor-network began and signifies the moment the potential emerging actor-network of 'sustainability' began to be destabilised and disbanded. When 'the council' came into possession of the necessary knowledge to confirm that the 'outline planning application' contained deficient assessments of 'sustainability', the reality and the implications involved in ensuring an exemplar sustainable settlement began to emerge. Once the 'the council', 'the consultant' and 'the landowner' recognised 'sustainability' could and was performing as an actant, its presence within the actor-network became increasingly threatened. How and why this happened during 'the environmental consultants' delay in returning the necessary assessment of the sustainability material submitted, exacerbated by 'swine-flu' will be explored below. However, on recognising the performance of 'sustainability' as an actant, 'the council', 'the consultant' and 'the landowner' worked collectively to destabilise sustainability within the network, appreciating that the establishment of the actor-network of sustainable Waverley would erode the network of Waverley and result in the loss of any settlement on site. We also witness here 'sustainability' failing to cooperate with the Waverley actor-network and leaving (just as the scallops failed to do what the scientists expected them to do in Callon's essay). Arguably, this highlights again the complexity of the actor-network of sustainability and therefore offer an explanation of why sustainability (with its complex and fragile associations) could not perform as an actant in the Waverley actor-network.

'The council', 'the consultant' and 'the landowner' understood 'sustainability' had no place to perform as an actant if Waverley was ever to be achieved, but that sustainability could remain as a neat aspiration performing as an intermediary. It is also interesting to note the arguably black-boxing of sustainability: how through indicators, metrics, models and measures, sustainability becomes elusive and something other actants failed to unlock or reveal. The complexities of sustainability was never unlocked, appreciated or understood and, therefore, fell aside following the other actants failure to understand the elements it was composed of.

In the following month, June 2009, ATLAS presented a revised 'vision', and notes taken during the meeting illustrate further how 'the consultant' continued to move away from an exemplar sustainable settlement, supporting the conclusion that

between May and June 2009, the attempt to establish an actor-network of sustainability fractured further. This meant the actant of 'sustainability' was also threatened within the actor-network of Waverley.

> *Atisreal felt that the draft was too long and included the word exemplar…X (Atisreal employee) suggested that this would could be interpreted in many ways and to most it meant eco-town which Waverley was not. The cost of an exemplar scheme would be very high and financially unviable. Y (RMBC senior employee) agreed that he did not like the word 'exemplar' however, a replacement phrase would be needed for the vision.*
>
> Extract from RMBC Steering Group Minutes (1 June, 2009)

Revisions to the 'vision' resulting from the 'supplementary sustainability assessment' completed by the contracted 'environmental consultant' were conducted whilst 'the outline application' was redrafted overall. As part of the amended submission documents, the 'environmental consultant' assisted with revisions to the updated energy strategy. Whilst revisions to the energy strategy also support previous conclusions about the fractured and failed establishment of the 'sustainability' actor-network at Waverley, it was the report's approval date that became critically significant. As noted above, it might be argued that a 'sustainability' actor-network continues (globally and nationally), but that it failed to insert itself or be de-enrolled from the Waverley network.

'Swine flu' – the introduction of an additional actant

The energy strategy involved assistance from the 'environmental consultant' throughout July 2009 and, as expected, included a series of draft reports passing between 'the council' and the 'environmental consultant'. However, the introduction of an episode of illness (swine-flu) into the process also had crucial significance to the actor-network of Waverley. Aside from the actor-network at Waverley, swine-flu was emerging globally as a viral pandemic, causing significant flu-like illness to those who were susceptible (predominetly children of school age), creating higher numbers of people infected than the usual winter-time associated seasonal influenza.

Time was becoming increasingly tight, with a revised 'outline planning application' expected for submission to 'the council' in August 2009. However, revisions to the energy strategy were also needed to support the revised 'vision'. Previously within

this chapter, it was possible through tracing the process of enrolment to observe how the loss of the term exemplar from the 'vision' represented the beginning of the failed establishment of 'sustainability' as an actor-network and the fracturing performance of 'sustainability' as an actant. However, the introduction of 'swine-flu' as an actant into the network represented the moment that 'sustainability' the actant was completely dismissed from the network, reduced to an intermediary and overshadowed by several actants, including 'the vision' and 'the site's physical characteristics'.

The introduction of 'swine-flu' as an actant into the network represented the enlightening moment of realisation, when 'swine-flu' delayed the publication of 'the supplementary sustainability assessment'. 'The environmental consultant' constituted a single member of the team who was responsible for authoring and returning the report and 'supplementary sustainability assessment'. 'The council', having pushed the priority of 'sustainability' back, were up to the wire, with exceptionally tight deadlines. 'Swine-flu' pushed 'the council' to the edge and forced the realisation that 'sustainability' was overly complex to achieve as an exemplar status. 'Swine-flu', therefore, represented the critical realisation that ('the council') could not do this and implement an exemplar 'sustainable' settlement at Waverley. On reflection, highlighting how unstable the Waverley actor-network was, it was unable to cope with a single bout of illness from a single consultant performing within the evolving actor-network.

'The landowner' and 'the consultant' following knowledge gained during the 'supplementary sustainability assessment', therefore, acknowledged 'sustainability' as an actant. Whilst 'the council' initially pushed to ensure the settlement remained an exemplar sustainable development, they also acknowledged the intricacies bound up with securing and implementing such a settlement following discussion to revise the vision. Once financial realities were acknowledged: the introduction of 'swine-flu' into the actor-network highlights the moment on 5 August 2009 when 'the council' also dismissed 'sustainability' and the exemplar status they until then had chased as unachievable, and the actant of 'sustainability' was forced out of the actor-network of Waverley.

Extracts taken from the emails exchanged between 'the council' and the 'environmental consultant' illustrate the moment 'swine-flu' was introduced into the network. At this point, project timescales overran and the actants ('the site's physical characteristics', 'the vision', 'the S106 agreement' and 'the outline planning application') cumulatively removed 'sustainability' from the actor-network, changing both the actor-network at Waverley and the final settlement form achieved.

The following is an email to RMBC from 'the environmental consultant' informing them of the illness:

> *I apologise for not having the report ready as promised for close of play yesterday. Unfortunately I had to stop work for most of yesterday and today to look after my son who had come down with a temperature and swine-flu, which was a concern to us. Obviously I could not put him into crèche and so I have been unable to complete the report or indeed work at all the past two days. I have enlisted the support of another colleague who will work on this tomorrow so that I can review it over the weekend and send it to you for Monday morning.*

The reply from RMBC sent on the same Monday afternoon references the above:

> *Can you please update me on when you expect to send through your comments on the revised energy/sustainability strategy.*

The reply from the environmental consultant is:

> *Yes sorry again for the delay but this time no swine-flu at fault. The report is essentially finished…is now with Z and I shall chase today, if all agree then I shall send the revised report to yourself as soon as possible.*

The reply from RMBC is:

> *I have now read your summary…clearly there is a great deal of uncertainty as to the final methods to be employed in developing this site relative to the changing energy and other utility supply issues.*

> Email exchange between RMBC and Environmental Consultancy Team (August 2009)

However, it is important to note that whilst the above email exchange represents the moment 'sustainability' was removed from the actor-network, overshadowed by 'the

site's physical characteristics', 'the vision', 'the S106 agreement' and 'the outline planning application', the actants' loss from the network ensured the network continued to evolve. Whilst it has been critical to this thesis to trace the narrative and performance of sustainability through the actor-networks progression through the stages of translation, it is necessary that we continue through to the final stage of translation (mobilization) to appreciate what followed after the loss of the settlement's exemplar status and the final physical settlement form.

The Vision

Through tracing the development of Waverley using Callon's sociology of translation as the informing theoretical framework for analysis, it has been possible to explore the evolution and performance of sustainability. Arguably, the (re)performance of sustainability was presented via the settlement's 'vision'. The extracts below, therefore, illustrate how the 'vision' evolved and became moulded to represent the transition and evoked the performance of sustainability through the process of translation at various points within the network.

During problematization, the joint position statement stated:

> *There is considerable scope for Waverley to become an exemplar low carbon mixed use community. Development providing a mix of employment, housing choice, service and community facilities served by quality public transport within an attractive setting of bio diverse green spaces and water features, would help reduce the need to travel and create a sustainable, cohesive and distinctive new community, innovative layout, design and construction with integrated sustainable drainage, water recycling, waste management, energy conservation and renewable energy features would help combat climate change.*

Joint Position Statement (2007)

Evidently the above illustrates the performance of sustainability during the moment of problematization as an intermediary, an aspiration to be achieved via the implementation of defined elements, including public transport provision, integrated sustainable drainage solutions, innovative design and renewable energy provision.

Moving through to the second stage of translation, during interessement, the performance of sustainability within 'the vision' is evident below. The quote, taken from the planning performance agreement, continues to illustrate how sustainability

performed as an intermediary, described via the implementation of defined community facilities.

> *The Project vision which was articulated on the Inception Day is: to create a new mixed use, sustainable community of approximately 3,900 homes incorporating schools, health, leisure, social and cultural facilities sufficient to meet future needs. It will integrate with the recently restored landscape setting of this former coalfield and connect with surrounding villages and employment areas. The development will also compliment Sheffield/Rotherham city region.*
>
> Planning Performance Agreement (July 2008)

Moving through to the third stage of translation, during enrolment, 'the vision' continued to be revised and, initially, during the first months of enrolment, it still contained references to the provision of an exemplar settlement.

The quote below dates from March 2009, five months prior to the moment when implementing an exemplar settlement became financially unviable, realistically unachievable and not practically applicable due to an absence of the necessary skills, experience and support in implementing and assessing elements of the more challenging sustainability and energy-saving technologies proposed for Waverley.

Sustainability evidently during the initial phase of enrolment remained evoked as an intermediary within 'the vision', as illustrated below. It is described against defined, implementable design characteristics. Sustainability remained the vehicle through which to deliver an exemplar settlement via set ordered design elements.

> *To create a mixed use exemplar sustainable community, which offers a range of good quality house types and tenures including affordable homes and provides opportunities for employment. Facilities will provide for the health, leisure, education, social and cultural needs of the community. The relationship between land uses will maximize their synergy and accessibility and create a new community hub.*
>
> *The development will create a sense of place and provide the best in architectural urban design and public realm to ensure that a high quality of life is delivered.*
>
> *Enhanced links to existing communities will be created and public services provided to discourage the use of the private car and minimize the impact on the surrounding highway network and living environments. Mitigation measures will appropriately manage the impacts on the highway network.*

> *Sustainable urban drainage principles will be applied to ensure that the site is adequately drained and there are no adverse impacts on surrounding communities.*
>
> *The management of the community infrastructure will ensure that a safe, clean, green and bio diverse high quality environment is created and maintained.*
>
> RMBC Case Team meeting note (March 2009)

However, as previously explored, five months later, following the above presentation of sustainability, when it performed as an actant, it became forced/removed from the actor-network. Chasing an exemplar settlement was no longer attainable, and 'the council', 'the consultant' and 'the landowner' revised their vision and aspirations for 'the site'.

During the final stage of translation – mobilization – the actants were reassembled during the final obligatory passage point, signified by the submission of the revised outline planning application to present the following final 'vision':

> *Waverley New Community will be a sustainable, well connected and well built settlement able to meet the day to day needs of its community and also contribute to meeting the needs of the wider local area. It will be a home to approximately 9,000 people and together with the AMP and Highfield Commercial sites will form part of a wider community on the Waverley site.*
>
> *The settlement will be physically, socially and environmentally sustainable. Transport, reinforced by a public transport hub, will provide a choice of movement and modes of transport ensuring good access through the settlement and the surrounding communities and beyond. Low carbon development and sustainable energy principles will be promoted throughout the scheme as will green infrastructure.*
>
> *The place will have a clear design rationale, identity, and character to which people will aspire. The design will provide robust and adaptable buildings and spaces which conform to Building for Life principles. It will provide a positive response to the characteristics of the site and area, including the open space and lakes to the south, employment to the north and the surrounding residential communities.*
>
> *There will be an appropriate and sustainable mix of uses, including tenures and types of housing, and an appropriate range of facilities, amenities and social infrastructure. Good governance and management of the settlement will be important and residents will have the opportunity to become involved in this process.*

Clearly the above illustrates how 'the vision' presented the performance of sustainability as an intermediary, following 'sustainability's' banishment from the

actor-network as an actant for being too overly complex to control and implement successfully.

'Sustainability' performed as an actant predominantly through its progression from interessement to enrolment and subsequently returned during mobilization, as an intermediary. The difference between the two quotes is not that great, with the word 'exemplar' being critical as the removal of references to an 'exemplar' sustainable settlement illustrates the recognition by 'the council', 'the consultant' and 'the landowner' of 'sustainability' performing as an actant, with all its inherent complexities, unachievable implementation and financial implications. On removing references to 'exemplar sustainability', sustainability returned to survive and perform within the network solely as an intermediary, defined by acatants at this point within the network as a well-defined, network structuring, financially viable entity at this point.

Sustainability's performative status and circular transition between actant to intermediary is illustrated by 'the vision's' description of sustainability, at which it remained, presented and performing as an intermediary throughout all four stages of translation. Before considering the implications this had for the resulting settlement's final physical form – the practice of planning and implementation of sustainability – in the conclusion, it is necessary to complete the actor-networks passage through mobilization, the fourth and final stage of translation.

Mobilization

Finally, although not always, the process of translation results in the mobilization of allies, where the once dispersed actant(s) have reassembled at a particular place and time. This final stage of '*mobilization or concentration has a definite physical reality which is materialized through a series of displacements*' (Callon 1986, p.78).

Before exploring in detail the actor-network's progression through the final stage of translation, it is important to explore how the network passed via the obligatory passage point of 'the revised outline planning application' to enter mobilization.

'The revised outline planning application' – an actant and obligatory passage point

Following the sidelining of 'sustainability' as an actant, it returned to perform as an intermediary, defined by the actants at this point as diluted and without its aspirational exemplar status. Revisions to the full application suite continued throughout the summer of 2009, ahead of the revised application submission on 5 August, 2009.

This is detailed in the Summary of Changes to the Outline Planning Application Report submitted as part of the application's revisions:

> *The proposals have been revised following negotiations with Rotherham Metropolitan Borough Council and a wide range of consultees…*
>
> *The masterplan has been revised through a series of workshops and meetings with RMBC officers and ATLAS. Changes to the plan include; variations to the overall grid, modifications to the transport interchange, the introduction of the mixed use zone, the location of Orgreave Square and clearer definition of character areas…*
>
> *The vision under the design evolution has been updated accordingly…with a Sustainability Framework added, sustainability tables updated and Planning Statement amended to reflect these changes…*
>
> *The Sustainability Appraisal has been updated to reflect the updated Energy and Sustainability Strategy and carbon foot print recalculations…*

In addition the following new planning application documents have been prepared to accompany the application; Green Infrastructure Strategy, Surface Water Strategy, Community Management Scheme, Ecological Management Strategy and Green Belt Supporting Statement.

Summary of Changes to the Waverley New Community Outline Planning Application (August 2009)

It is important to note from the following extract, taken from the revised application's planning support statement, how sustainability and sustainable development continued to be referenced through the application documents, publicity material and vision statement. However, it is critical to appreciate how only 'sustainability' the actant became dismissed from the actor-network during enrolment and not completely disregarded as an entity overall within the network.

'Sustainability' the actant was overthrown by its inherent complexity and overshadowed by both the time and resource demands placed on the evolving network by 'the site', 'the section 106 agreement', 'the vision' and 'the outline planning application'. However, sustainability remained within the actor-network as an intermediary, explaining its continued reference, performing throughout the revised planning application and mobilization. It is important also to note how reference to 'an exemplar sustainable settlement' became replaced by reference only to 'a sustainable community', typifying the standard residential applications of the time. However, 'sustainability' as an actor-network is much broader and perhaps diffuse and it is important to reflect on the ability of actor-network theory to describe the diffuse, rather than the powerful and successful (Latour, 2007).

The latest iteration of the Masterplan, which forms the context of this planning application, has been prepared around the concept of sustainability. The various elements of the sustainability themes are; the site is a brownfield site, could be described as an urban extension, is in a highly accessible location, with mixed density/tenure housing, providing a mix of uses across the settlement, extensive areas of open space, code 4 level sustainable homes and based on the Rotherham Sustainability Appraisal Framework will meet a significant proportion of the sustainability objectives.

Revised Planning Support Statement (October 2009)

The above quotation represents 'the consultant's' and therefore 'the landowner's' final description and representation of sustainability at Waverley before being

dismissed from the network as an actant and reinstated as an intermediary. Thus, sustainability was defined at this point by the assembled actants once again via deliverable qualities and characteristics.

The analysis will, therefore, now consider the network's final progression through mobilization, returning to September 2009 to follow the network's passage through the obligatory passage point signified by the submission of the revised planning application.

Considering 'the revised planning application'

Similarly to the initial outline planning application, the revised suite of application documents also represented an actant within the network, responsible for engaging 'the council', 'the councillors' and the Secretary of State via the Government Office of Yorkshire and the Humber into the network during the application's consideration.

Extracts, quoted below from correspondence between 'the council' and 'the consultant', highlight the arrangements made for the planning application's consideration, in January 2010.

> *I refer to our recent discussions about Planning Committee dates. Until recently it was understood that the application would be considered at a regular Planning Committee. However, the application is now going to be determined at a 'special' Planning Committee held to consider solely this application.*
>
> *Further to my letter dated 28 September 2009, I am confirming the arrangements for the special additional Planning Board meeting to consider the Waverley applications only and will include a full site visit followed by the meeting. The meeting and site visit will take place on Monday, 25 January 2010.*

Extract from letters exchanged between RMBC and Atisreal (September 2009)

'The officer's report' defined as an actant

Following the planning committee on 25 January 2010, conforming to procedure and process, the officer's report was published, recommending approval for the proposed settlement.

Extracts taken from the Planning Board Executive summary report are included below, and signify the introduction of 'the officer's report' into the stabilising network. The introduction of the report into the network as an actant occurred following the report's publication and its ability to bring other actants in line behind its findings and way of representing/evoking the world at Waverley, recommending councillors to allow development of the site. The report, therefore, acted to ensure continued associations between 'the council', 'the landowner' and 'the site', who assembled around 'the officer's report' to implement and encourage development on site and the continuation of the actor-network of Waverley.

Sustainability

Based on the implementation of the energy strategy, it is reported that Waverley will achieve an overall 61% reduction in Carbon emissions (excluding appliance loads). As the construction phasing develops and allowing for minor design changes in line with changes in the technical, commercial and legislative frameworks then it is anticipated that Project Waverley will be cable of achieving the 70% onsite CO2 reductions in accordance with the proposed redefinition of Zero-Carbon.

In summary, should the proposed energy strategy be implemented in full, the new community at Waverley can be said to be making a significant contribution to the reduction of carbon emissions and the threat presented by Global Climate Change.

The proposals, whilst not in accordance with the current UDP are generally in accordance with Regional and National policies and where they are not, reasoned justification has been given. The development will supply some of the quantum of housing needed in the Borough to assist in achieving the housing targets set out in the RSS, as well as a proportion of affordable housing and will provide the scale and range of services and facilities required to enable the establishment of a successful mixed sustainable community.

The development would have clear impacts on the highway network, however mitigation measures will be put in place to reduce this so far as is practical. Improved public transport provision will be established benefiting not only the future residents of Waverley but also the existing residents of the outlying villages. On balance, it is considered that the benefits of developing this former colliery site, together with the matters that would be secured via the S106 planning agreement, would outweigh any negative impacts the development would have on the surrounding highway network.

It is therefore recommended that consequent upon the Secretary of State deciding not to intervene, planning permission be granted subject to completion of an agreement between the applicant and the Council pursuant to Section 106 of the Town and Country Planning Act 1990.

Executive Summary – RMBC Officers Report (January 2010)

Sustainability is defined within 'the officer's report' by the assembled actants via quantifiable and defined targets which the settlement should aim to attain.

Here it may be possible to argue how detailed consideration of 'the revised outline planning application' could have represented the moment mobilization occurred. Arguably, 'the site', 'the council', 'the councillors', 'the vision', 'the consultant', 'the landowner' and 'the revised outline application' could all have become represented by 'the officer's report'. 'The officer's report' could have signified the single actant, the spokesperson that represented the network in its entirety, communicating all the constituent elements of the proposed settlement and the intricate negotiations inherent within the actor-networks. However, I believe that it is actually 'the decision notice', with all the attached conditions, that was introduced into the network as an actant following the application's approval that signified the moment mobilization occurred within the actor-network of Waverley.

The Secretary of State and the special planning board defined as intermediaries

Following the application's consideration at a special planning board held in January 2010, further assistance was sought from the Government Office Yorkshire and Humber. Both the planning board and the Government Office represent intermediaries within the network, relaying factual information between 'the council', 'the site', 'the vision', 'the councillors', 'the consultant' and 'the revised outline planning application'.

Quotes taken from a series of letters exchanged between 'the council', 'the consultant' and the Secretary of State (Government Office Yorkshire and Humber) highlight further the passage of such facts and 'the council's' and the 'consultant's' firm belief that the enrolment of the Secretary of State into the actor-network was not necessary.

An extract from a letter sent to the Secretary of State in February 2010, explains why 'the consultant' felt it unnecessary to enrol their additional experience and consideration of the application.

The application has been referred to the Government Office for Yorkshire and the Humber as a departure application for decision on whether or not to call in the application for determination by the Secretary of State…The Directions require that certain planning applications which do not accord with the provisions of the development plan, and which the local planning authority do not propose to refuse, should be notified to the Secretary of State…RMBC have given thorough and comprehensive consideration to the issues addressed and has taken account of the relevant policies in reaching the conclusion to grant planning permission. We do not consider that intervention from the Secretary of State is justified, as there is not sufficient conflict with national planning policies on the above matters, or any sufficient reason, to warrant calling in of the application for the Secretary of State's determination.

Extract taken from letter to Government Office Yorkshire and Humber from Atisreal (1 February 2010)

Below is an extract taken from a letter sent to the Secretary of State, also in February 2010, from 'the council' supporting 'the consultant's' belief that the involvement of the Secretary of State was again unnecessary.

It was resolved at the meeting of the Planning Board on 25 January 2010 that the Borough Council be disposed to grant planning permission for the development, subject to the application being referred to the Secretary of State under the Town and Country Planning (Development Plans and Consultation) (Departures) Direction 1999. The Officers report to Planning Board provided a full assessment of all material considerations, which informed members when making their decision to grant planning permission.

The above assessment of the proposals against the criteria for calling in planning applications provides additional information relating to why the local authority does not consider that interventions from the Secretary of State is justified.

Extract of Letter to Government Office Yorkshire and Humber from RMBC (5 February 2010)

Finally, the extract below is taken from a letter of reply from the Secretary of State to 'the council' confirming that their involvement in the application's consideration is unnecessary and 'the council' should retain the necessary authority to consider the application's fate.

I refer to your letter of 5 February referring to the Secretary of State an application for planning permission for the above development.

As you know the Secretary of State's general approach is not to interfere with the jurisdiction of local planning authorities unless it is necessary to

do so. Parliament has entrusted them with responsibility for day to day control in their areas. Local planning authorities are normally best placed to make decisions relating to their areas and it is right that, in general, they should be free to carry out their duties responsibly, with the minimum of interference.

Having carefully considered the relevant planning issues raised by this proposal, together with the representations received, the Secretary of State has concluded that his intervention would not be justified. The application does not in the Secretary of State's view raise issues of such wider significance, which require a decision by him. The decision as to whether to grant planning permission will therefore, remain with the council.

Letter sent from Government Office Yorkshire and Humber to RMBC (22 June 2010)

Following the Secretary of State's withdrawal from the actor-network, 'the revised application' remained under the consideration of 'the council' for an extended period of legal and financial negotiations. Finally, on 16 March 2011, 'the council' issued 'the decision notice' granting planning permission for the new settlement of Waverley. It is the publication of 'the decision notice' which signified the single moment of mobilization and 'the decision notice's' performance as the single dominant, representative actant within the entire network of Waverley.

Moment mobilization occurs via the issuing of 'the decision notice'

'The decision notice', I believe, represented the single actant that, from 16 March, 2011, spoke for 'the site', 'the council', 'the consultant', 'the vision' and 'the revised outline planning application'. It evolved into a single voice directing the future development and the final physical reality of the new settlement of Waverley.

The extract below illustrates only a small proportion of the detail and defining conditions stipulated across 'the decision notice'. It is representative of the information contained within 'the decision notice's' conditions, directing any future development of 'the site' resulting in detailed negotiations and work of 'the council', 'the consultant', 'the landowner', 'ATLAS', 'the neighbouring council' in delivering 'the masterplan' and 'the vision' to ensure 'the landowner' correctly implemented the final physical reality of the actor-network at Waverley, signified by the settlement's final erection on site.

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The introduction of the decision notice into the network as an actant occurred following the legal notice's publication, permitting development of the site at Waverley and pushing 'the council', 'the landowner' and 'the site' to assemble around 'the officer's report' during the implementation of any development on site and the continuation of the actor-network of Waverley.

You are hereby notified that your application (Reference Mr John Dunshea) for OUTLINE PLANNING PERMISSION for the above development was GRANTED CONDITIONALLY on 16 March 2011 under Article 4(1) of the Town and Country Planning (Development Management Procedure) Order 2010 subject to the following standard conditions:

(a) Application for approval of reserved matters must be made within three years of the date of this permission.

(b) The development hereby approved must be begun not later than whichever is the later of the following dates:

(i)The expiration of five years from the date of this permission; OR

(ii)The expiration of two years from the final approval of the reserved matters or, in the case of approval on different dates, the final approval of the last such matter to be approved.

SUSTAINABILITY AND ENERGY

Each reserved matters application within geographical phases 1a and 1b as identified on the phasing plan in the revised Energy Strategy (October 2009) shall be accompanied by a scheme detailing how the dwellings applied for shall achieve at least Level 4 of the Code for Sustainable Homes. The development shall thereafter be carried out in full accordance with the approved scheme.

With the exception of the 915 dwellings that comprise phase 1a and 1b as identified on the phasing plan in the revised Energy Strategy (October 2009) no residential development shall take place until the Local Planning Authority has been provided with, and approved in writing, a Pre-Assessment carried out by a Building Research Establishment (BRE) Licensed Code for Sustainable Homes Assessor, proving that each dwelling proposed as part of the reserved matters application in question has been designed to achieve at least Level 4 of the Code for Sustainable Homes (or equivalent level of such national measure of sustainability for house design that replaces the Code). This information shall be submitted and approved as part of the submission of each reserved matters application that includes residential development. Each residential building, of which the reserved matters application in question relates, shall then be the subject to a post completion check by the licensed assessor (after the Design Stage report has been carried out and an interim certificate obtained) and issue of a final Code certificate of compliance prior to its first occupation.

RMBC Decision Notice (March 2011)

The above signifies how for the next five years to March 2016 the development of only 915 dwellings was permitted, with subsequent development requiring additional

energy and sustainability assessments for the Local Authority's approval. Thus, emphasising how of the initial 3,890 units outline permission for less than 25% was permitted via the above decision, with significant further assessment and evidence necessary before continued development at Waverley would be permitted.

Initial Concluding Remarks

Evidently, sustainability performed (as shown in 'the decision notice'), as an intermediary and was considered by the assemblage of actants as an entity to be delivered via aspirational performance indicators. Whilst 'sustainability' remained during a brief period within enrolment, performing as an actant, once 'sustainability' became recognised as too overly complex to manage, it became marginalised. The actor-network of Waverley eventually succeeded, where the actor-network of sustainability in relation to Waverley had dissolved.

It is important to appreciate through exploring the translation of sustainability at Waverley how the actants and networks we have followed may only ever create a partial stabilisation: they are always open to be pulled apart. The establishment of Waverley was and, therefore, remains a performance, something that requires continual associations between actants, intermediaries and artefacts, as together they are continually performing and reperforming to create assemblages. By tracing the actor-network of Waverley, it has been possible to explore and expose the relationships at Waverley to question what made actants perform and assemble. The importance of such relations, performance and assemblage, therefore, ultimately became evident during the fracturing of sustainability from Waverley.

It is also critical that we recognise no actant within the actor-network at Waverley ever merely existed. They crucially were all present due to their associations with others within the network. The realisation of Waverley, therefore, represents the accomplishment of the actants' associations and performance. An actor-network must always be addressed as an achievement due to the constant fluidity evident within the evolution of any actor-network. Therefore, whilst the vision achieved at Waverley may not have been the exemplar sustainable settlement originally strived for, the erecting of a new settlement on the former coke works at Orgreave and the

development of Waverley are testament to the associations between a plethora of actants.

Callon questions: '*who speaks in the name of whom…who represents whom*?' (Callon 1986, p.76) For the actor-network of Waverley, 'the decision notice' spoke for and subsequently represents 'the site', 'the council, 'the consultant', 'the masterplan', 'the vision' and 'the outline planning application', who, through the evolution of the actor-network, succeeded in answering the question posed during problematization: how to deliver a sustainable settlement at Waverley. However, following the analysis we can now question if we can ever actually define something in the actor-network sense as 'sustainable'?

The publication of 'the decision notice' in March 2011 is ultimately where we leave the narrative of Waverley. Whilst the settlement's evolution inevitably continued, it is necessary to leave the sociology of translation and turn to consider the impact and resulting conclusions. As Latour concluded: '*the trick is to allow the actors to teach us the causes of the success or failure of network building…we do not fix the causes – such as efficiency, interest, or structure – in advance, they come at the end of the story*' (Latour 1991, p.121).

The thesis will, therefore, now consider the consequences resulting from the processes evident during the sociology of translation at Waverley. The destabilisation of sustainability was an inherently complex process, through which the analysis has traced a series of emerging and evolving compositions. Whilst no single moment of crisis became evident, a series of mini-crises' led to the actants' marginalisation. The conclusion will, therefore, consider how sustainability became marginalised at Waverley and how this may represent the marginalisation of sustainability elsewhere or as a practice overall.

Could the series of events observed at Waverley and the performance of sustainability observed have wider implications for the practice of planning?

7. Wider Discussion & Conclusions

Introduction and structure of the chapter

This chapter will conclude by considering the wider implications applicable to planning practice revealed previously within the analysis, using the tools of actor-network theory to expose the nuances contained within the application of sustainability, the process of translation and the resulting settlement.

Before examining the implications for wider planning practice and the generalised appreciation of sustainability, it is necessary to explore the lessons learnt from the performance of sustainability throughout the continual creation and continuation of the actor-network evident at Waverley.

It is important to consider sustainability and the extent that it performed as an actant, its failure to be established as an actor-network, subsequent marginalisation and dismissal from the stabilising Waverley actor-network. Such consideration will involve exploring certain questions: did sustainability drive action, co-ordinate others, have bite within the wider actor-network or cause other actants to orientate around it? Or did sustainability become defined by the other actants assembled as simply another accepted and predefined entity? Ultimately, did 'sustainability' as an actor require too much because the chains of association it tried to link together were too long and fragile?

The exploration of such questions will begin by considering how the thesis has answered each of the original research questions. It then discusses the problems encountered when using an actor-network informed approach, appraising the merits and restrictions raised during tracing the narrative of Waverley via the sociology of translation. Finally, the chapter considers potential future areas of additional research before defining how the research has contributed to existing academic thought.

We begin, therefore, by considering how the thesis and analytical exploration can answer each of the thesis' original research questions.

Research Objectives

The thesis' overarching objectives were to explore the performance of sustainability and the resultant final settlement form.

The overarching objectives were also subsequently broken down into a series of research questions.

Research questions

Objective one concentrated on the interpretation and application of sustainability, seeking to explore the performance of sustainability, and how it was understood, valued, prioritised and applied by those involved in the planning of new settlements.

The research questions relevant to this objective were:

1. How does sustainability perform during the planning process associated with the implementation of Waverley?
2. How do actant associations and assemblages influence the performance of sustainability?

Objective two focused on the progression, amendments and implementation of sustainability: To explore the implementation of the sustainability vision at Waverley and the resultant final settlement form.

The questions posed comprised:

1.   How does the (re)performance of actant assemblages and resulting associations:
   a. change the final settlement?
   b. change the nature and use of sustainability?
   c. influence the planning and development process?

Evaluation of the Research Questions

Objective One: exploring the interpretation and application of 'sustainability'

1. Exploring how sustainability performed during the planning process associated with the implementation of Waverley.

In tracing the narrative of Waverley using the actor-network's passage through translation, a plethora of intermediaries and actants revealed their intricate networks. During the exploration (discussed in detail in the analysis chapter of this thesis), it became possible to appreciate how sustainability performed in the emerging network resulting in the development of the settlement at Waverley.

The tracing of the performance of sustainability at Waverley began by exploring the preparation of the first outline planning application during the network's progression through interessement. Various actants became involved in the performance of sustainability during the planning application's evolution, including; 'the press', 'the council', 'the consultant', 'the councillors', 'ATLAS', 'the landowner', 'the planning performance agreement', 'the masterplan', 'the vision' and 'the outline planning application'. Certain intermediaries and artefacts within the evolving network also communicated the performance of sustainability; most notably planning policy, project team meeting notes and press articles.

An extract from a press article in January 2008 exemplifies how 'the press' initially articulated the performance of sustainability at Waverley.

> *Significant development has also been made on the residential development at Waverley. This will comprise a modern mixed-use sustainable community incorporating up to 4,000 homes, community facilities and open space/recreation areas. This housing development will provide a range of housing and is intended to incorporate latest government thinking on sustainable development. This scheme has the support of Rotherham MBC and an Outline Planning Application will be submitted towards the middle of 2008.*

Extract taken from an article in *The Star* (21 January 2008)

Using the article referenced above, it is possible to appreciate how sustainability was presented as '*Waverley, a sustainable high density mixed use community…intended to incorporate latest government thinking on sustainable development*' (*The Star*, January 2008). The presentation of sustainability by 'the press' in January 2008 illustrates how sustainability initially performed as an intermediary, recorded at this point within the network as a status to attain and a standard to implement, serving (as an intermediary) to further the Waverley network. This mirrors its presentation less than 12 months earlier in 'the Joint Position Statement', when sustainability was also described as '*a sustainable mixed-use community at Waverley…with considerable scope for Waverley to become an exemplar low carbon mixed-use community…creating a sustainable, cohesive and distinctive new community*' (Joint Position Statement, RMBC 2007).

As an intermediary within the network, planning policy also transposed the performance of sustainability between actants. The National Planning Policy Statement 1: Delivering Sustainable Development (PPS1), defined sustainability as '*the core principle underpinning planning…at the heart of sustainable development is the simple idea of ensuring a better quality of life for everyone, now and for future generations*' (PPS1, 2005). Regionally, sustainability also performed as an intermediary, presented by the actants assembled here as an implementable and deliverable status, described as a means '*to enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life, without compromising the quality of life of future generations*' (The Yorkshire and Humber Plan – Regional Spatial Strategy, 2008). Rotherham's then already outdated Unitary Development Plan referenced the popular Brundtland Report and failed to add any additional understanding or appreciation, stating: '*the Plan seeks to meet present day needs without compromising the ability of future generations to meet theirs, i.e. a sustainable future…sustainable development means living on the earth's income rather than eroding its capital*' (Rotherham Unitary Development Plan, 1999, pp.6 and 84).

Such examples, therefore, continue to illustrate how sustainability performed as an intermediary within planning policy across the geographical scales, as an entity that helped to bring associations together within the ever-evolving actor-network at

Waverley. However, it is also necessary to acknowledge that such presentations only illustrate examples of the performance of sustainability within policy evident in the actor-network at Waverley and not the wider geographical actor-networks of planning policy and or sustainability.

Meanwhile 'the outline planning application' containing 'the masterplan' and 'the vision' articulated 'the consultant's' and 'the landowner's' application of sustainability and recorded the entities' performance within the actor-network. 'The masterplan' provided a graphical representation supported by the Design and Access Statement, which articulated 'the vision', previously prepared during 'the planning performance agreement' involving 'the council' and 'the consultant'.

'The vision' details sustainability as an aspect of the new community: '*the vision is for a fully sustainable community at Waverley which is unique to Sheffield and Rotherham…sustainable transport, including walking, cycling and high quality public transport provision will provide ease of movement both within the development and externally to neighbouring communities*' (Design and Access Statement, July 2008, p.40).

Whilst the Design and Access statement's detailed narrative explored 'the masterplan's' credentials and design concept to explain how:

> *the Waverley Development Site offers a major opportunity to accommodate an exemplar sustainable mixed development, which incorporates housing, employment and supporting use.*
>
> *The spatial concept for the site shows a substantial area of open space to the south, comprising the green belt, three new linked water bodies of substantial size, and a new park creating a green finger into the built up area.*
>
> *The high density areas of the plan are mixed use and are served by dedicated public transport corridors…*
>
> *The masterplan will provide a fully balanced community with a wide range of housing types, densities and tenures, and a comprehensive range of supporting land uses.*
>
> Design and Access Statement (July 2008, p.52)

Once again, such chains of association continue to illustrate how the actants assembled at this point within the network record sustainability as a constituent

element of the new development and a method for implementing the proposed exemplar design credentials. Therefore, sustainability evidently remained throughout interessement recorded by 'the outline planning application's' as a set, attainable, tangible entity, presented as an adjective and described as one (descriptive) aspect of the new development.

2b. Exploring the actant associations and assemblages influencing the performance of sustainability

It is important to explore the factors that influenced the initial performance of sustainability, including how the actants initially witnessed and assembled around sustainability, which inevitably influenced the resulting application and continuing performance. Such initial associations exploring sustainability as an intermediary, initially presented as a clearly defined entity, evolved into the consensus initially achieved during the publication of 'the Joint Position Statement' and subsequently, replicated during the submission of 'the outline planning application' via 'the masterplan' and 'the vision'. Therefore, 'the landowner's' and 'the consultant's' initial association with sustainability continued and became applied during their submission of 'the outline planning application'. While, arguably, planning policy had the potential to develop from an intermediary into an actant at Waverley, the local policy's out-of-date nature prevented this transition and, therefore, failed to influence 'the consultant's' and subsequently 'the outline planning application's' association and assemblage with sustainability. National and regional planning policy provided the overarching generic reference point for the initial association between sustainability and the other constituent actants within the evolving network at Waverley.

In addition, a lack of available resources across 'the council' and concerns regarding the appropriate assessment of sustainability across the proposal also influenced how sustainability performed and assembled within the actor-network. As an extract taken from an internal 'councillor's' meeting note illustrates:

> *Concern is raised regarding the capacity within the existing Development Control Team to deal with an application of this size and complexity therefore, additional resources will be required…the commitment of council*

officers to a project of this extent will also require additional resources. There is no identified officer within the Authority with expertise in sustainability.

CMT meeting note (July 2008)

The application is at an early stage; however, it is already apparent that there are some issues which will need to be addressed.

In brief there are issues relating to: the policy basis for determining the application and…sustainability issues including energy efficiency and use of renewable energy.

CMT meeting note (August 2008)

Cumulatively, a lack of current local policy, the performance and resultant associations with sustainability as an intermediary, a general lack of experience in assessing sustainability and a lack of available resources across 'the council' ultimately instigated extended negotiation and the reperformance of sustainability during the preparation of the revised planning application. Such elements are explored in greater detail below.

The level of association and assemblage with sustainability became evident, during the tracing of the actor-network through the evolution of translation. Due to sustainability initially performing as an intermediary, the actants within the network dedicated little attention to sustainability, evidenced by the lack of complex associations or assemblage. Sustainability was therefore defined by the actants assembled at this point, as a method or status to aspire towards and described against set characteristics, 'sustainability' received little attention/assemblage during problematization and interessement.

Extended attention/assemblage, raising sustainability as a priority, occurred following concerns raised during internal 'council' meetings during December 2008. This is revealed in an extract from an internal email sent to the development control team from forward planning:

Further to the case team update yesterday afternoon, you are aware how concerned I am regarding the approach to dealing with the new Waverley community planning application with respect to carbon foot printing, renewables, waste management, sustainable construction and managing climate change…It is already clear to the Forward Planning team that the above issues are where we need to (as the LPA) undertake some blue sky

thinking and create a policy framework for Waverley that captures these key strands.

I am aware that you have tried unsuccessfully to engage Sustainable Development Officers Group in the development of some of this thinking for the Waverley new community…The case team already demonstrated a lack of understanding of these key issues and it appeared to me yesterday that we would be content to sweep them under the carpet as we currently don't have a policy basis to negotiate further. I trust my comments express my concerns regarding this approach – also I don't think Government Office Yorkshire and Humber will be very pleased with our lack of attention to this important matter.

Extract from RMBC internal team email (11 December 2008)

Whilst the email suggests areas requiring additional attention, the above exchange also highlights how sustainability continued to be defined (by those assembled) within the actor-network as an intermediary, despite its performance as an emerging actant within the network. Crisis team meetings were held throughout February 2009 to attempt to address problems as defined by key actants, with internal meeting notes detailing the issues well.

The meeting notes reported:

Mostly we know what needs to be done, although there are some key elements that need more consideration – notably sustainability and the management plan where the Council lacks expertise and now the new area of viability.

Also there needs to be a better understanding of what work is involved in the key areas to understand how long it might take the Council to assess all these different elements…Sustainability is still an issue. Resources need to be identified as a matter of urgency and an understanding of what the Council's expectations/position is in order that the scheme's sustainability credentials can be assessed.

The applicant is shifting his position away from an exemplar scheme.

Extract from RMBC internal team meeting notes (11 February 2009)

The above extract, reveals how 'the council' appreciated there was more work needed in assessing sustainability; however, due to a lack of available expertise in assessing the settlement's sustainable viability, 'the council' pushed the responsibility back to 'the consultant' and the applicant, 'the landowner'. A perceived lack of resources acted as a temporary shield to mask why sustainability remained unassessed, while

'the council' and 'the consultant' continued to fail to recognise the significance and complexities inherent within sustainability.

Following the additional attention drawn to assessing sustainability between February and June 2009, involving 'the environmental consultant' and 'the supplementary assessment', 'sustainability' was dismissed from the actor-network. Briefly performing as an actant, it was subsequently banished from the network. 'The landowner' and 'the consultant', following knowledge gained during the 'supplementary sustainability assessment', acknowledged 'sustainability' as an actant and assembled accordingly. While 'the council' initially pushed to ensure the settlement remained an exemplar sustainable development, they also acknowledged the intricacies bound up with securing and implementing such a settlement following discussion to revise the vision.

Once financial realities were acknowledged, the introduction of 'swine-flu' into the actor-network highlighted the moment on 5 August, 2009, when 'the council' also dismissed sustainability, as the exemplar status they chased as unachievable, and the actant of 'sustainability' became forced out of the actor-network of Waverley.

Sustainability was removed from the actor-network, overshadowed by 'the site's physical characteristics', 'the vision', 'the S106 agreement' and 'the outline planning application'. However, the actant's loss from the network ensured the network continued to evolve. The priority now not being given to 'sustainability' ensured that the limited resources available could be dedicated to ensuring the delivery of a development on site at Waverley. The actants ('the council', 'the landowner' and 'the consultant') became preoccupied from the start with the recognised complexities of implementing the necessary highway infrastructure, site remediation and Section 106, development-led financial contributions.

As 'the landowner' explained:

> *I suppose what I will end up saying to you is that…erm things have changed a lot given the circumstances and the context and that the scale has certainly reduced and that probably sustainability has been affected by that and taken more of a…erm let's say water down in a way and that's considering that I have worked on Waverley since 2002…erm sustainable*

Extract from interview with Harworth Estates (December 2011)

Following the submission of the revised planning application and the network's passage through an obligatory passage point into enrolment, it is important to appreciate how sustainability (re)emerged to perform during the preparation of the revised planning application, the resulting consequences for the settlement and its overall sustainable status. This is achieved through discussing the second objective.

Objective Two: Exploring the implementation of the sustainability vision at Waverley and the resultant final settlement form.

Following 'the outline application's' original submission and subsequent assessment by 'the council' with assistance from 'the environmental consultant' and 'the supplementary assessment', the performance and assemblages with sustainability evolved. However, arguably through the evolution of the actor-network, sustainability began and also returned to perform as an intermediary. Beginning as an aspirational 'exemplar' status to be attained via defined, implementable elements, 'sustainability' evolved into the briefly evident actant, marginalised from the network due to the fragile and lengthy chains of association, too complex for the process of translation. Sustainability returned, performing once again as an intermediary now void of its previously assigned (by those assembled) exemplar status, arguably now resembling any standard new residential development.

The performance of sustainability can be illustrated by tracing the evolution of the settlement's 'vision', by exploring how the 'vision' shifted, to appreciate further the detail masked within the performance and associations/assemblage with sustainability throughout the process of translation.

During problematization, 'the joint position statement' recorded the performance of sustainability as an intermediary, marking sustainability at this point within the network as an aspiration to be achieved via the implementation of defined elements, including public transport provision, integrated sustainable drainage solutions, innovative design and renewable energy provision.

Moving through to the second stage of translation, during interessement, sustainability continues to perform as an intermediary, recorded within the planning performance agreement at this point within the network, via the implementation of defined community facilities.

Moving through to the third stage of translation, during enrolment, 'the vision' continued to be revised, and initially, during the first months of enrolment, still contained references to the provision of an exemplar settlement. Sustainability, evidently during the initial phase of enrolment, remained as an intermediary recorded within 'the vision', transferring associations between actants and described against defined, implementable design characteristics. Sustainability remained defined by the actants assembled at this point as the vehicle through which to deliver an exemplar settlement via set ordered design elements. However, five months later, as 'sustainability' rose to perform as an actant it became disassociated with the actor-network, due to the overly complex, lengthy and fragile chains of association. Chasing an exemplar settlement was no longer attainable, becoming overly complex and costly, 'the council', 'the consultant' and 'the landowner' subsequently revised their vision and aspirations for 'the site'.

During the final stage of translation (mobilization) following the displacement of the actants, they reassembled during the final obligatory passage point, signified by the submission of the revised outline planning application to present the final 'vision': during which sustainability (re)emerged as an intermediary following banishment from the actor-network as an actant for being overly complex to control and implement successfully.

Sustainability performed predominantly through its progression from interessement to enrolment and subsequently (re)emerged during mobilization as an intermediary. Throughout which the actants outlined through the analysis refrained from assemblage and associations with sustainability. This was personified by 'the vision's' application of sustainability, through which the assembled actants recorded sustainability as a defined, implementable entity throughout all four stages of translation.

'Sustainability' in its role as an actant was overthrown for its inherent complexity and was overshadowed by both time and resource demands placed on the evolving network by 'the site', 'the Section 106 agreement', 'the vision' and 'the outline planning application'. However, sustainability (re)emerged within the actor-network as an intermediary. It is important to note how reference to '*an exemplar sustainable settlement*' became replaced and therefore, recorded by the actants present as '*a sustainable community*', typifying standard residential applications of the time. 'The consultants' and, therefore, 'the landowners', final application and association with sustainability at Waverley ensured it was presented via deliverable qualities and characteristics, therefore containing sustainability as a known, manageable entity that could extend the actor-network.

Extracts taken from the Planning Board Executive summary report (below) illustrate how diluted sustainability became during its final reperformance. Here 'the council' attempted to justify its position:

> *[Whilst] The development would have clear impacts on the highway network, however mitigation measures will be put in place to reduce this so far as is practical. Improved public transport provision will be established benefiting not only the future residents of Waverley but also the existing residents of the outlying villages. On balance, it is considered that the benefits of developing this former colliery site, together with the matters that would be secured via the S106 planning agreement, would outweigh any negative impacts the development would have on the surrounding highway network.*
>
> Executive Summary – RMBC officer's report, January 2010.

As 'the landowner' supported and justified further during their interview: '*we were keen to stick to the ethos…we wanted to keep the same principles but had to look in it at a way where we had to get things started, it would never have been started as it was…*'. This, therefore, suggests that the reperformance of sustainability was necessary and justified by 'the landowner' and 'the council' to secure any development on site in the then current climate following a period of economic recession.

2. How does the reperformance of actant assemblages and resulting associations:

a. change the final settlement?

While tracing the actor-network at Waverley resumed following the occurrence of mobilization, signified by the publication of the planning approval and supplementary planning conditions, it is necessary to explore a little further how the reperformance of sustainability influenced the final settlement. Clearly from the analysis, it is possible to conclude that the performance and reperformance of sustainability at Waverley did influence the final settlement. During 'the outline planning application's' revision, 'the vision' and 'the masterplan' evolved, inevitably changing the settlement's design and layout.

Throughout negotiating the presence of sustainability within the network at Waverley including debates surrounding the provision of a centralised heat pump and dedicated park and ride service, how sustainability was presented became diluted within the settlement's design. During the reperforrmance of sustainability and its brief performance as an actant, the entity's complexities became exposed and resulted in 'sustainability' becoming marginalised and dismissed from the established network relations. Whilst sustainability remained as an intermediary within the network, the presentation including the characteristics associated with the 'exemplar' status were lost, and when reflecting on the settlement evident today at Waverley, it is hard to distinguish it from many other new settlements.

Again, material collected during interviews with 'the landowner' and 'the council' explore further how the performance and reperformance of sustainability influenced the final settlement. As 'the landowner' explained:

> *the densities have an important impact on what you can provide in terms of heat source and if the densities are not there then it may not be financially viable to do that and provide a CHP...we struggled if I'm been totally honest because we haven't the expertise and experience in house to assess things like this so we had to outsource and we hadn't come across anything like this before...for an exemplar development at the start it was woolly...even those who assessed it couldn't quantify it and didn't really know how they were articulating it (sustainability).*

Extract from interview with Harworth Estates, December 2013.

This further emphasises how the initial emergence of sustainability born from the associations present within the network at Waverley, performing as an intermediary and recorded as a defined and deliverable entity, neglected the application of the true detail, expertise and knowledge required to implement an exemplar sustainable settlement and, therefore, severely reduced the sustainable characteristics and capabilities of the final settlement achieved as a result of the assembled actor-network.

b. change the nature and use of sustainability?

The reperformance of actant associations also influenced the settlement's 'vision' and, as a result, 'the vision' charged with articulating and communicating 'the landowner's' aspiration for 'the site' to 'the council' was reduced in scope and prescriptively defined.

It is possible to illustrate how the reperformance of actant assemblages influenced the settlement's 'vision' by comparing its progression and associations during revisions to 'the outline planning application'.

Initially 'the vision' for Waverley described/evoked sustainability via the implementation of defined community facilities '*to create a new mixed use, sustainable community of approximately 3,900 homes incorporating schools, health, leisure, social and cultural facilities sufficient to meet future needs*' (Planning Performance Agreement, July 2008).

However, during the final obligatory passage point signified by the submission of the revised outline planning application, the final 'vision' described the settlement as:

> *Waverley New Community will be a sustainable, well connected and well built settlement able to meet the day to day needs of its community and also contribute to meeting the needs of the wider local area. The settlement will be physically, socially and environmentally sustainable.*

 Design and Access Statement (October 2009)

At this point within the actor-network the final 'vision' prescriptively defined the sustainable features that the new settlement would implement, including a public transport hub, sustainable energy principles, green infrastructure, a sustainable mix of

uses and social infrastructure. Such a clear definition in comparison to the original 'vision' reflects how 'the vision' evolved and assembled following 'the council's' and 'the landowner's' recognition of the complexities inherent within the application and implementation of an exemplar 'sustainable' scheme, thus representing how 'the vision', following the reperformance of 'sustainability', became to be presented in an increasingly descriptive and defined, and arguably less aspirational and more realistic manner.

Once again, this was articulated during an interview with 'the landowner', who recognised how:

> *you reprioritise and manage the best you can in the given circumstance...this isn't unique to Rotherham, in that sort of situation problems often come to the fore at the point when the developers engage, they look at the vision, at what's proposed and they say well actually I don't think we can achieve that and the landowner starts to think well these things are potentially adversely affecting the land value and our ability to sell so they often start to reconsider the vision*

  Extract from interview with Harworth Estates, December 2013.

Such comments raise further questions of the applicability of the events observed at Waverley to the wider appreciation of the performance of sustainability during the development process. We need to consider that while the re-performance of actant assemblages at Waverley created an increasingly defined, prescriptive and realistic sustainability 'vision', is this often the occurrence as 'the council' and 'landowners' align sustainability with aspirational qualities, requiring 'the developer' and 'the market' to mediate aspirations and introduce the boundaries of experience, knowledge and finance?

c. influence the planning and development process?

How the reperformance of sustainability influenced both the final settlement and 'the vision' statement used throughout the settlement's planning and implementation are explored above. However, it is also possible to consider how the reperformance of sustainability influenced the planning process bound up with ensuring the optimum development on site.

As previously explored, the reperformance of sustainability at Waverley occurred following the entity's emergence as an actant and subsequent return to an intermediary, presented by the actants assembled via reduced, basic and defined 'sustainable' features, arguably typical of many new standard settlements. However, how did the act of (re)performance within the actor-network at Waverley and resultant associations and assemblages influence the planning processes apparent during the network's progression through the stages of translation?

The act of reperformance ate into the increasingly stretched time available, pressing limited resources further and significantly extending the time the application was under consideration. Both 'the council' and 'the consultant' were pressured to invest additional resources into the stretched consideration and reperformance of sustainability following 'the supplementary assessment'. Additional actants ('the project management consultant' and 'the environmental consultant') were drawn into the constantly evolving network. The reperformance of sustainability also influenced the time and resources available for considering the already existing complexities intricately woven in to the actor-network at Waverley. Such existing complexities included negotiating additional financial contributions via the formally binding Section 106 agreement and intricate engineering issues concerning various physical restrictions evident when developing such a previously contaminated industrial 'site'.

It has already been possible to appreciate how the re-performance of sustainability, which inevitably led to the redrafting of 'the vision' and raised issues within 'the council' by questioning the lack of suitable knowledge, experience and expertise required by the originally presented exemplar sustainability credentials proposed at Waverley, ultimately suggests that it caused 'the council' to question its own experience and available skills.

Supplementary interview material also supports the view that events evident at Waverley may have wider applicability across planning. As 'the additional advisor' observed:

> *the answer to the question as to whether it (Waverley and the contesting of sustainability) is typical or not…well the answer is yes and no. It's typical*

*in respects that there are some challenges that Waverley faced and faces
that are common to all these sorts of developments and urban extensions.
Waverley suffered coming off the back of the recession and it's in an area
that is probably more difficult in terms of demand for housing.*

Extract from interview with ATLAS January 2014.

Additional material collected during an interview with 'the landowner' reveals further
how 'the council', 'the consultant' and 'the landowner' worked together to ensure any
development was secured on site and that momentum to process the application
continued.

*Everyone didn't want Waverley to become a big white elephant, so we sat
down, we all sat down and said ok what do we really need to go to get
things moving again and to get things started…the recession led us to think
a bit more creatively about doing business and making profit…we were
saying we need to release this land to pay for the road and to keep
momentum going.*

Evidently, the reperformance of sustainability exasperated existing demands placed
on overly stretched resources within the time made available for considering the
planning application. It is also possible to appreciate how such pressures and the lack
of available expertise were arguably not unique to Waverley, raising the wider
question as to whether planners are truly equipped with assessing the credentials often
presented as sustainability. Inevitably, there are even wider implications and
questions of whether planners and planning actually recognise the multifaceted
dimensions of sustainability and the time, skills and resources needed to allow for its
accurate and fair consideration.

A comment made by 'the council' during an interview succinctly concludes the
influence the reperformance of sustainability had on the planning process at Waverly.
The comment was as follows:

*it feels quite good to see from the beginning to this…not everything can be
great because you learn from your mistakes, there's parts we love and parts
that will unfortunately have a knock on effect for the remainder of the
development. It's been a difficult one, there's permission for nearly 4000
units, based on densities of 75 dwellings per hectare and we are never
going to achieve that now, even if the market was as buoyant as it once
was…I still think we were being ambitious with it all in hindsight…*

Interestingly, 'the additional advisor' (ATLAS) explained most revealingly during their interview how they appreciated sustainability, stating:

'it's so you know, its multi-faceted, multi-layered, it's a tricky thing, it's like pinning jelly to the wall, trying to pin this stuff down, it's kind of what you and others are doing in academia isn't it?'

Extract from an interview with ATLAS, January 2012.

Conclusions

By using the sociology of translation as a theoretical framework to explore the narrative of Waverley, it has been possible to explore the performance of sustainability and how it performed at given points within the network by the assembled actants involved in the planning of the new settlement at Waverley. It allowed the further exploration of how the performance of sustainability evolved and the influence this had on the settlement and its sustainability principles. In summary, the following final conclusions are offered.

Appreciating the initial performance of sustainability

One can conclude that sustainability initially emerged during problematization (the initial stage of the actor-network) as an intermediary, presented by the assembled actants at this point as a definable and assumed entity, a method for achieving exemplar status and attaining an aspirational quality. It was an intermediary around which other constituent actants within the network exchanged association as sustainability evidently remained to perform throughout the phase of interessement and 'the outline planning application's' preparation recorded as a set, attainable, tangible entity, presented as an adjective and as one (descriptive) aspect of the new development.

Whilst the attention given to and assembled against sustainability fluctuated throughout the planning application process, it was only once 'sustainability' became an actant within the actor-network, increasing its presence and pushing for raised priority, it was quickly viewed as too demanding and complex to maintain and

perform an actant role within the network. 'Sustainability' was subsequently forced from the actor-network, overshadowed by 'the site's physical characteristics', 'the vision', 'the Section 106 agreement' and 'the outline planning application'. The actant's loss from the network ensured the network continued to evolve, as the priority associations and assemblages not given to sustainability ensured the limited resources available could be dedicated to ensuring the delivery of a development on site at Waverley.

Whilst noting the political and economic context of the recession and its inevitable influence and the reassessment of the development's financial priority, the complexities associated with implementing the evoked 'exemplar' constituent elements of the new sustainable settlement were so complex that even removed at a time of recession, the priority of ensuring a standard development of the size and scale proposed at Waverley would have arguably pushed sustainability down the list of priorities for 'the landowner' to ensure a return on his investment and 'the council' to deliver on their housing targets.

The reperformance of sustainability at Waverley

Whilst 'sustainability' briefly performed as an actant through interessement to enrolment before subsequently returning during mobilization as an intermediary, the performance of sustainability at Waverley is exemplified by 'the vision's' presentation of sustainability, within which sustainability was presented by the assembled actants and remained referred to as a defined and attainable status throughout all four stages of translation.

Extracts taken from the Planning Board Executive summary report illustrate how diluted sustainability became during its final assemblage. As 'the landowner' stressed: '*we were keen to stick to the ethos…we wanted to keep the same principles but had to look in it at a way where we had to get things started, it would never have been started as it was…*' (extract from interview with Harworth Estates, December 2013). This suggested that further to the reperformance of sustainability the diluted presentation of sustainability was necessary and justified by 'the landowner' and 'the council' to secure any development on site in the then current climate following a period of extended economic recession.

The effects of the reperformance of the actant assemblages on the final settlement achieved

Through tracing the narrative of Waverley via the stages of translation, it has become apparent how the performance of sustainability influenced the final settlement's form, 'the vision' and the planning and development process responsible for implementing the development.

One can conclude that the emergent and evolving performance of sustainability within the network at Waverley as an intermediary and the resulting associations and assemblages within the network that evoked sustainability at given points across the network, neglected to expose the true detail, expertise and knowledge required to implement an exemplar sustainable settlement and, therefore, reduced the sustainable characteristics and capabilities of the final settlement achieved.

The reperformance of sustainability also influenced the settlement's 'vision'. Following the reperformance of sustainability, after it became marginalised and dismissed from the network, it (re)emerged evoked at this point, diminished and stripped of the 'exemplar' status and aspirational attainment. As a result, 'the vision' charged with articulating and communicating 'the landowner's' aspiration for 'the site' to 'the council' became reduced in scope and prescriptively defined.

The reperformance of sustainability also influenced the planning processes evident at Waverley and exposed associations within the actor-network, eating into the increasingly stretched time available, pressing limited resources further and significantly extending the time the application was under consideration. The reperformance of sustainability also influenced the time and resources available for considering the already existing complexities intricately woven into the associations and assemblages constituting the actor-network at Waverley.

Clearly the re-performance of sustainability exasperated existing demands placed on overly stretched resources within the time made available for considering the planning

application. It is, therefore, undeniable how significantly sustainability influenced events at Waverley, from changing the final settlement's urban form to instigating extended periods of negotiation and squeezing overly stretched resource and time demands. However, as Waverley represents only one settlement, 'one council' and 'one site', it is important we move to consider the implications the observations revealed at Waverley may have for sustainability and planning practice in general.

Contribution to existing academic thought and implications for wider planning practice

As previously explored during the literature chapter and in the appreciation of existing academic thought, sustainability needs to be contested and deliberated on in order for it to work in any given context. Whilst the need to interpret and deliberate is recognised, few have explored how such interpretations work in practice and the effect this has on planning practice (Owens, 2002). This research, therefore, chose to explore how the interpretation of sustainability occurred during the planning of Waverley, exploring further how the performance of sustainability evolved and the influence this had on the final settlement and its sustainability principles.

Owens and Cowell (2002) stressed the need to explore further if 'sustainability' in practice is either interpreted via a range of techniques and procedures, with the potential to mobilise radical conceptions of sustainable development, or if it is viewed as a static and accepted notion because it is constrained by existing structures of power, promoting 'safe' conceptions of sustainability. As Owens and Cowell stated, there is a need to explore further, '*which of these dominates…must be a question for empirical enquiry*' (Owens 2002, p.78).

The research presented here explored further how sustainability was operating, as sustainability certainly has the promise and opportunity to become a forum for learning, but unfortunately it was observed to be evoked as a restricted, restrained static and accepted notion, reduced to 'safe' conceptions of change and possibility. This is unfortunate because it could be so much more and the question now needs to be: how can we as planners and academics ensure that sustainable development is able to meet its potential?

Ultimately, 'the site' and the actor-network at Waverley resisted the 'sustainability' approach. The actor-network could not mediate between 'the site' and 'sustainability', during which 'the council' failed to consider that 'the site' could be an actant and act, ignoring the complexities of sustainability and the materiality of 'the site'.

This inevitably has wider implications, suggesting that planners do not take the material world seriously enough, as material elements are often just reduced to things that 'exist'. However, we need to consider the constituent material elements of 'things', including 'the site' and 'sustainability', as actants within the planning and development process. They also need to be recognised as actants that have agency around which to shift and change things.

Sustainability, therefore, became just another entity that the actants failed to associate and assemble around, regarded as too difficult to maintain within the network and, therefore, something that needed to be manipulated and managed out. To sustain any network at Waverley, 'sustainability' had to be sacrificed and lost as an actant, (re)emerging as it previously had as an intermediary, allowing sustainability to be presented as a 'safe', contained and readily implementable characteristic of development.

As Rydin articulates succinctly within her concluding remarks of '*the future of planning – beyond growth dependence*':

> *What is needed now is a view of planning as a system, a profession and a set of practices that offers and enables choice in different localities and at different times as to which approach will be most appropriate. This would give planners, local politicians and local communities the tools with which to tackle the challenges that face us in the 21st Century. These are severe challenges, but there is scope for a positive and creative response, rather than slipping back into a lazy and probably ineffective reliance on facilitating market-led growth…with our ageing population and overhang of debt…would we be better off thinking about how we can enjoy a good life in conditions of low(er) growth?*
>
> Rydin (2013, p.202)

The research presented within this thesis has added additional research evidence to existing thought on how sustainability has the potential to become a forum for

learning but has unfortunately and frequently become a static and disregarded notion, deemed too complex to implement.

Planning is charged with the implementation of sustainable development. However, if planning is to remain capable of implementing sustainable credentials, changes within planning practice need to take place (Rydin 2013). Additional skills within planning practice are therefore required to appreciate the complexities of sustainability during interpretative practices. Planning needs to become increasingly reflective and question how, if we continue to be led by growth-dependent typologies, we can work together with those working closely with planning to implement sustainable development.

Surely the aspirations of planning can no longer solely rely on exponential growth and that reassessment is needed to fully incorporate the possibilities and practicalities of implementing sustainability by readdressing our consumerist motivation and desire to strive to achieve bigger, faster and better. When we strive for 'true' sustainability, we should be thinking about lowering such growth projections to 'sustain' realistic and achievable aspirations that, while no longer lining the pockets already full of private capital, will provide for existing generations while not limiting the capacities of the future population.

Implications for planning practice and sustainability

Initially, sustainability was narrowly interpreted, dismissed as an intermediary and failed to establish itself as an actant. Following 'sustainability's' brief emergence as an actant within the network, it became marginalised and subsequently dismissed for being overly complex and demanding. Whilst recognising that the case study represents only one area, such observations are applicable to our wider application of sustainability. If such practices are occurring within the local authority explored in detail here, how do we know that similar events are not also occurring across other authorities? Is it not reasonable to assume that they are?

If sustainability is being misunderstood and its complexities overlooked and dismissed, the sustainability criteria may not be being fully implemented to its full potential across planning practice nationally. Hypothetically if planners understood

the actor-network informed approach and recognised the 'materialistic' capacity of entities and their ability to act, would they treat sustainability in quite the same way?

Sustainability has the promise to shape and change planning, but currently it does not. Previous work has not recognised 'sustainability' as an actant in the way it has been presented here. Its complexities caused it to be dismissed from the actor-network at Waverley. Two images of Waverley progressed, the initial aspirational 'exemplar' sustainable settlement alongside the 'realistic', attainable standard settlement developing in unison in the shadows, and which emerged as dominant following the 'exemplar's' demise.

Does such an analogy mirror the implementation of sustainability in practice, projected as an exemplar aspirational status, an entity that offers promise, while the diluted, piecemeal, plea-bargain version, diluted in its articulation and implementation, is delivered, all the while masquerading as sustainability?

Merits and issues raised with the use of an actor-network informed approach

The chosen approach has allowed for a detailed exploration, to reveal a surfeit of nuances and intricacies, allowing for a full appreciation of the practices apparent during the performance of sustainability. With the chosen approach raising the question of whether those involved in the conception and implementation of new settlements actually appreciate the full complexities bound up within sustainability, and suggesting further that additional knowledge and expertise are needed within planning practice to apply sustainability principles and practices. However, the use of an actor-network theory informed approach, whilst returning insightful conclusions, has also created several, though arguably minor, issues.

As is well documented, through the use of an actor-network informed approach, it becomes increasingly difficult to know where to start an analysis and where to stop As Woods (1997) observed alternatively do we simply accept networks are infinite? Everything and anything can potentially be included as an actant or intermediary, and a line has to be drawn on what should and should not be included as significant to the

evolving actor-network. However, what if something that becomes dismissed is actually a critical minutia? As with all research, it is interpretative, and although one's tracing of the actor-network can reveal different elements to another's, this can be seen as both a downfall and the insightful beauty of the nature of research.

We all have different approaches and elements to add to appreciating actants, assemblages and performance. As actor-network theory aims to trace assemblages and performance to explore how practices are constructed and evolve, it would be wrong to approach the task with a predefined set of actants or intermediaries. However, the analysis has to begin somewhere and, therefore, chose to begin by exploring the intermediaries (texts) that existed within the network. The exploration of texts chronologically, tracing the network from the initial masterplan in 1996, approached the actor-network process, as Lockie and Kitto (2000) suggested, by commencing the initial focus of the analysis on the material resources used within the network's setting.

Complications however, also became evident during the analysis of texts; as a text may be viewed as both an intermediary (describing a set of relations) and as an actant (authoring new sets of relations). This inevitably added to the complexity of the analysis as things which we would 'normally' assume to be singular entities (such as a policy document) are assigned by actor-network theory multi-dimensional characteristics. The analysis therefore, had to accept that at some points things have an 'intermediary-role' whilst at other times have an 'actor-role' (CalIon, 1991).

The principle of generalised symmetry is also arguably one of the most controversial elements of actor-network theory open to debate and criticism, by ascribing agency to both human and non-human actors. Many have criticised this principle arguing it is both intellectually and morally problematic to remove humans from their pivotal elevated position (Collins and Yearley, 1992; Munir and Jones, 2004; Whittle and Spicer, 2008). Whilst the counter argument describes how actor-network theory seeks to overcome the emphasis given to the human centred agency presented across social science studies, the extreme position of symmetry is inevitably difficult and relies on those who choose to engage with your works ability to understand the complex symmetry principle.

Laurier & Philo (1999, p.1060) observed how '*humans involved are increasingly linked to non humans and the humans are 'levelled down' to the status of non-humans*'. Should we therefore be concerned that there are still some things distinctly human, and some things distinctly non-human, which get ignored by this process? Especially when considering how the notions of power and human intention (Murdoch 1998) are presented by actor-network theory, where we rely once again on the ability of readers engaging with the appreciation afforded by actor-network theory. That is that power is distributed through networks, stabilising sets of relations and is therfore reproduced through differing actions and materials.

Finally the use of a specific analytical language, 'metalanguage' has itself also received criticism from Latour, as '*poor, limited, short and simple*' (1997, p.7). At times the terminology associated with actor-network theory has been difficult to engage with as a researcher and required extensive additional research to allow me to engage with the conceptual theory, before applying the language to the research became possible. Fortunately, tackling such complexities although exceptionally time consuming and at times confusing, returned a wealth of detail and allowed the narrative of Waverley to reveal the black-boxing of sustainability within planning practice.

Despite such difficulties encountered during the application of actor-network theory, this thesis also illustrates how beneficial actor-network theory has been to understanding the application of sustainability. Allowing the detailed exploration of the concept to understand and appreciate how fluid sustainability is and how it is performed in different ways.

Whilst it is not practical to unpick sustainability using actor-network theory, the application of the theory has allowed the research to trace what lies beyond/behind within the 'black-box' sustainability. Here we are not just accepting the notion but exploring how it connects to wider debates and how it is used within wider networks and the wider material world. More specifically at Waverley, the application of actor-network theory allowed the exposure of the part sustainability played in promoting the new settlement. If we had chosen to view sustainability as a static matrix, we would have ignored the work and detail that maintain the performativity therefore,

going against the longevity and the future forward 'sustained' thinking encompassed by the practice and application of sustainable development.

Actor-network theory accommodates the detailed exploration of multi-dispciplinary projects – like Waverley that occurred over many years. Hajer's understanding of social constructivism stresses the need to take apart the discursive practices guiding perceptions of reality in order to understand the foundational dynamics of sustainability practice. In acknowledging this, the thesis, therefore, considered further what lay behind the generic image involved in the process of developing new settlements, questioning, as social constructivism questioned, the different actants involved, providing different perceptions (interpretations) of what the problem really is.

The thesis, therefore, acknowledged the existing academic base, exploring how planning is not just about implementing the sustainability agenda, but also about providing a forum where different interpretations can be contested and defended. As with the increased generic interest in sustainability has come an increased attention in planning and ever-increasing expectations of its practice (Owens 2002). Exploring the influence sustainability has on logic has therefore exposed the thought processes apparent in policymaking and the potential for institutional learning and policy change (Owens 2002).

Potential future research additions

The work is also mindful that it only represents a single case study and future comparative work may add to existing understanding. Potentially tracing an arguably more 'exemplar' settlement (for example Cranbrook in Devon) or expanding the existing study to consider the accompanying Advanced Manufacturing Park at Waverley or exploring more recent revisions of the latest phase of Waverley to compare how sustainability is currently reperforming are all options for additional study.

The research explored within the thesis is hopefully only the beginning of a long academic research career in the exploration of sustainability across planning practice.

With aspirations to apply the conceptual framework adopted by this thesis to a comparative study of Cranbrook in Devon or to explore further the applicability of actor-network informed approaches to planning practice. By opening the Pandora's box of sustainability, additional comparative studies can inform the initial findings and implications revealed initially at Waverley. As Cranbrook has managed to implement a seemingly more 'exemplar' sustainable settlement, a comparative study employing the same methodological approach could reveal increasingly interesting comparisons because we continue '*to need better understanding of the ways in which sustainability is interpreted in the context of land use change, of the values embedded in the interpretations and of the effects on planning outcomes*' (Owens 1994, p.450).

Final words

'*Much ink has been spilt trying to define the term sustainable development*' not least my own, but to '*count the number of such definitions available [is] to point to the ambiguity surrounding the concept's use*' (Rydin 2012, p.2).

> *All models of governing need to prioritize learning, to reframe their activities within the ambitions of a more sustainable way of urban living, and to ensure that all urban development actors learn from each other and continue to learn from each other until we can be sure that our future is truly sustainable.*
>
> Rydin (2010, p.139)

The onus is on to reassess and reprioritise how we achieve sustainable development and implement the sustainability concept. We can no longer aspire to continued economic growth if we wish to also achieve a sustainable urban form.

Developers arguably resist the restrictions sustainability places on their developments due to the ingrained negative connotations associated with sustainability, its frequently acknowledged inherent complexities and costly implementation. As established arguments addressing the collective nature of sustainability suggest, collective thought is important in delivering change. Does therefore, any hope of future change lie with moving away from the term and notion of sustainability and towards a new term void of previous political failure and expectation?

In today's consumerist driven and media fuelled society, we compare our value and worth against our peers, and if sustainability could be deemed fashionable, it arguably would be easier to foster such necessary change. Perhaps change needs to begin within the planning profession by resisting such growth-dependent paradigms in favour of lower sustainable economic growth?

> *The alternative is as exists where market processes play a role in delivering sustainable urban form, with the reliance on the market delivering sustainability conforming to the paradigm of ecological modernisation. However, planning in the future may need to consider how to deliver sustainable credentials during periods of de-growth.*
>
> Rydin (2010, p.130).

We cannot continue to simply favour market driven development, can we? How we value planning practice should ignite progressive change from simply managing procedure to proactively changing urban form, as:

> *in some approaches planning expertise seems to be reduced to knowing how to manage procedures and how to ensure that the usually are given voice, but planning expertise must go beyond this to provide knowledge about the locality and how it might change, and about how it should change for urban sustainability.*
>
> Rydin (2011, p.137).

Whilst acknowledging that planning reforms are not completely intended to replace the growth-dependent paradigm, it was also evident during the observation of the development at Waverley that instigating changes to practice and knowledge whilst, '*not a simple task, such knowledge is highly contested and planners need to choose and prioritise between different bodies of knowledge and the visions they imply*' (Rydin 2011, p.137).

Clearly, as illustrated through tracing the process of translation at Waverley, we struggle to interpret and implement the concept of sustainability. However, via further additional studies, the practicalities of implementing sustainability could be better appreciated and complexities explored in greater detail.

The challenge of sustainability revealed via tracing its performance at Waverley illustrated how the practice of interpreting and implementing sustainability requires planners to have the appropriate tools, knowledge and resources available to make informed choices. Furthermore, this raises the question as to whether the profession is equipped with the necessary resource to implement 'sustainability', given it is so often also working against market demand. within the wider context of inevitable tension when moving towards 'sustainability' within a market economy.

Is perhaps a reassessment of the term and criteria now necessary, against the practical consideration of the market? Would replacing sustainability with the notion of resilient or resilience, lose the negative connotations to instil fresh enthusiasm and co-operation to engage change? Just as companies have been encouraged by government and non-government organisations to engage in cross-industry partner-ship/voluntary agreements to reduce the environmental impact of their products and services (Bocken and Allwood, 2012; Spaargaren and Mol, 2008) could developers be engaged into agreements that initially promote and later foster such necessary change?

The final words draw on both Latour and Rydin to articulate the challenges planning continues to face during the interpretation and performance of sustainability:

> *the dance of practice is thus about working with actants (social and material) in a variety of small ways, using intermediaries to bring actants into relationships with each other so that traceable associations and resultant action can be generated but in the knowledge that many other associations are also at work*
>
> Latour (2007, p.37).

> *choosing between different scenarios for the future is a complex business. It involves imagination as to what could possibly be achieved as well as practical judgement over what can actually be achieved. It involves debates between people and organisations to discuss critical choices about alternative development paths with different impacts. And it involves understanding these impacts and identifying impacts that might otherwise go unconsidered.*
>
> Rydin (2011, p.9).

The challenge lies with ensuring planners are equipped to make 'informed choices', to implement the political minefield associated with the now ageing and stigmatised sustainability criteria.

References

Adams, D. (1994) *Urban Planning and the Development Process*. Oxon: Routledge.

Agyeman, J. and Evans, B. (2004) 'Just Sustainability': The Emerging Discourse of Environmental Justice in Britain? *The Geographical Journal*, 170 (2) pp.155-164.

Alexander, E. (2003) 'Response to "Why do Planning Theory?"' *Planning Theory*, 2 (3), pp.179-82.

Allmendinger, P. (2002) *Planning Theory*. London: Macmillan.

Archer, M. (1995) *Realist Social Theory: The Morphogenetic Approach*. Cambridge: Cambridge University Press.

Behrens, W.W, et al. (1972) *The Limits to Growth – A Report for the Club of Rome's Project on the Predicament of Mankind*. London: Earth Island Limited.

Bingham. N, (1996) Objections: from technological determinism towards geographies of relations, *Environment and Planning D: Society and Space*, 14 (6), pp.635-657.

Bocken. N, Allwood. J, (2012) Strategies to reduce the carbon footprint of consumer goods by influencing stakeholders in *Journal of Cleaner Production*, 35, pp.118-129.

Breheny, M., Gent, T. and Lock, D. (1993) *Alternative Development Patterns: New Settlements*. London: University of Reading and David Lock Associates.

Bryman, A. (2008) *Social Research Methods*. 3rd edition. Oxford: Oxford University Press.

Callon, M. and Latour, B. (1981) 'Unscrewing the Big Leviathans: How Do Actors Microstructure Reality?' in *Advances in Social Theory and Methodology: Toward an Integration of Micro and Macro Sociologies*. London: Routledge.

Callon, M. (1986) 'Some elements of a sociology of translation: Domestication of the scallops and the fishermen of St Brieux Bay' in *Power, Action and Belief – A New Sociology of Knowledge* (ed. Law, J.) pp.196-229.

Callon, M. (1991) Techno-economic networks and irreversibility, pp.132-164, in Law, J (ed.) *A Sociology of Monsters*. London: Routledge.

Callon, M and Law, J. (2005) On Calculation, Agency and Otherness, *Society and Space*, 23, pp.717-733.

Campbell, H. (2006) Just Planning – The Art of Situated Ethical Judgement. *Journal of Planning Education and Research*, 26, pp.92-106.

Campbell, S. (1996) Green Cities, Growing Cities, Just Cities? Urban Planning and the Contradiction of Sustainable Development. *Journal of the American Planning Association,* 62 (3), pp.296-312.

Collins, H.M. and Yearley, S. (1992) 'Epistemological Chicken', in *Pickering*, 1992. pp. 301-26.

Cook, I. (1997) Participant Observations in Flowerdew, R. and Martin, D. (eds) 1997 *Methods in Human Geography – A Guide for Students Doing a Research Project*. 2nd edition. Essex: Pearson.

Cowell, C. and Owens, S. (2004) Governing Space: Planning Reform and the Politics of Sustainability. *Environment and Planning C: Government and Policy*, 24, pp.403-421.

Cowell, R. and Owens, S. (2002) *Land and Limits: Interpreting Sustainability in the Planning Process*. London: Routledge.

Crang, M. (1997) Analysing Qualitative Materials in Flowerdew, R. and Martin, D. (eds) 1997 *Methods in Human Geography – A Guide for Students Doing a Research Project*. 2nd edition. Essex: Pearson.

Davoudi, S. (2000) Sustainability: A New Vision for the British Planning System. *Planning Perspectives*, 15 (2), pp.123-137.

Demerritt, D. (1996) Social Theory and the Reconstruction of Science and Geography in *Transactions of the Institute of British Geographers*. 21 (3), pp.484 – 503.

Dobson, A. (1995) *Green Political Thought*. London: Routledge.

Dobson, A. (1998) Justice and the Environment – Conceptions of Environmental Stability and Dimensions of Social Justice. Oxford: Oxford University Press.

Dunn, K. (2000) Interviewing in Hays, I. (eds.) 2nd edition 2005 *Qualitative Research Methods in Human Geography*. Oxford: Oxford University.

Eden, M. et al. (2000) The Built Environment and Sustainable Development: Research Meets Practice in a Scandinavian Context. *Planning Theory and Practice*, 1 (2), pp.260-272.

Evans, M. (2001) Understanding dialectics in policy network analysis, *Political Studies,* 49 (3), pp.542-550.

Fainstein, S. (2000) New Direction in Planning Theory in *Urban Affairs Review,* 35 (4), pp.451-78.

Fainstein, S. (2005) Planning Theory and the City in *Journal of Planning Education and Research,* 25, pp.1-10.

Fainstein, S. (2009) 'Planning and the Just City' in Maracuse, P. et at (eds.) *Searching for the Just City: Debates in Urban Theory and Practice*. Abingdon: Routledge.

Fainstein, S and Campbell, S. (eds.) (2012) *Readings in Planning Theory*. Oxford: Wiley-Blackwell.

Fairclough, N. (1989) *Language and Power*. London: Longman.

Fairclough, N. 1992. *Discourse and Social Change*. Cambridge: Polity Press.

Flick, U. 2002. *An Introduction to Qualitative Research*. 2nd edition. London: Sage.

Flyvbjerg, B. 2001. *Making Social Science Matter – Why Social Inquiry Fails and How It Can Succeed Again.* Cambridge: Cambridge University Press.

Forester, J. 1993. *Critical Theory, Public Policy and Planning Practice*. New York: State University.

Frey, H. 1999. *Designing the City Towards a More Sustainable Urban Form*. London: E & FN Spon.

Giddens, A. (1984) *The Construction of Society*. Cambridge: Polity Press.

Giddens, A. (1986), *The constitution of society: outline of the theory of structuration*, University of California Press, California.

Goldemberg, J. 1996. *Energy, Environment and Development*. London: Earthscan.

Greed, C. 1996. Policy: What Do We Want? In Greed, C. (eds) 1996. *Implementing Town Planning – The Role of Town Planning in the Development Process*. Essex: Langman Group Limited.

Hajer, M.A. 1997. *The Politics of Environmental Discourse – Ecological Modernisation and the Policy Process*. Oxford: Oxford University Press.

Harvey, D. 1997. The Environment of Justice in Merrifield, A. and Swyngednw, E. (eds) *The Urbanisation of Justice*. New York: New York University Press

Harvey, D. 2001. *Spaces of Capital: Towards a Critical Geography*. London: Routledge.

Haughton, G. 1999. Environmental Justice and the Sustainable City. *Journal of Planning Education and Research*, 18, pp.233-243.

Hay, C. (1995) Structure and agency, In, Marsh, D. Stoker, G. (Eds.), *Theory and methods in political science,* Palgrave MacMillan, London, pp.189-207.

Hay, C. (2002), *Political analysis: a critical introduction,* Palgrave MacMillan, Basingstoke.

Healey, P and Barrett, S.M. (1990) Structure and Agency in Land and Property Development Processes: Some Ideas for Research. *Urban Studies,* 27, pp.89-104.

Healey, P. (1997) *Collaborative Planning – Shaping Places in Fragmented Societies* (1st edition) Hampshire: Palgrave.

Healey, P. (2006) *Collaborative Planning – Shaping Places in Fragmented Societies* (2nd edition) Hampshire: Palgrave

Healey, P (2010) The Planning Project in the Twenty First Century. London: Macmillan.

Hillman, M. (1996) In favour of the Compact City in Jenks, M., Burton, E. and Williams, K. (eds) *The Compact City: A Sustainable Urban Form?* London: E & FN Spon.

Kearns, R. (1991) 'Talking and Listening: Avenues to Geographical Understanding'. *New Zealand Journal of Geography* 92, pp.2-3.

Kirkby, J. et al. (1995) Sustainability an Introduction in Kirkby, J. et al (eds.) 1995, *The Earthscan Reader in Sustainable Development*. London: Earthscan.

Latour, B. (1988) *The Pasteurization of France*. Cambridge: Harvard University Press.

Latour, B. (1991) 'Technology in society made durable', in *A Sociology of Monsters: Essays on Power, Technology and Domination* Ed. J Law (Routledge, London) pp.103 -132.

Latour, B. (1996) *Aramis or the Love of Technology*. Cambridge: Harvard University Press.

Latour, B. (1999) On Recalling ANT, in *Actor-Network Theory and After* (eds. Law, J. and Hassard, J) Oxford: Blackwell.

Latour, B. (2007) *Reassembling the Social: An Introduction to Actor-Network Theory*: New York: Oxford University Press.

Laurier, E. and Philo, C. (1999) X-morphising: a review essay of Bruno Latour's ' Aramis or the love of technoloy', *Environment and Planning A*, 31, (6) 1047 – 1071.

Laurier, E. (2003) Participant Observation in Clifford, N.J. and Valentine, G. (eds) 2003 *Key Methods in Geography*. London: Sage.

Law, J. (1992) Notes on the Theory of the Actor-Network: Ordering, Strategy and Heterogeneity, *Systems Practice*, 5, pp.379-93.

Law, J. (1994) *Organizing Modernity*. Oxford: Blackwell.

Law, J. (1997) Metrics and Fluids: Notes on Otherness in *Into the Realm of Organisation: Essays for Robert Cooper*, edited by Robert Chia, London, Routledge.

Law, J. (2008) Actor-Network Theory and Material Semiotics, in Bryan S. Turner, *The New Blackwell Companion to Social Theory 3rd Edition*, Blackwell, pp.141-158.

Law, J. (2009) 'Assembling the World by Survey: Performativity and Politics', *Cultural Sociology*, 3 (2), pp.239-256.

Macnaughten, P. and Urry, J. (2001) *Bodies of Nature*. London: Sage.

Marsh, D. (2010) Meta-Theoretical Issues in Marsh, D. and Stoker, G. (eds) 2010 *Theory and Methods in Political Science*. Hampshire: Palgrave Macmillan.

Marshall, T. (1997) Dimensions of Sustainable Development and Scales of Policymaking in Barker, S. et al (eds.) 1997, *The Politics of Sustainable Development, Theory Policy and Practice within the European Union*. London: Routledge.

McAnnulla, S. (2002) 'Structure and Agency' in Marsh, D. and Stoker, G. (eds.) 2nd edition 2002 *Theory and Methods in Political Science*. Baisingstoke: Palgrave.

McLaren, D. (1992) Compact or Dispersed? Dilution is No Solution. *Built Environment,* 18 (4), pp.268-284.

Meadowcroft, J. (1999) Planning for Sustainable Development: What Can be Learned from the Critics? in Kenny, M. and Meadowcroft, J. (eds.) 1999 *Planning Sustainability*. London: Routledge.

Munir, K.A. and Jones, M. (2004) "Discontinuity and after: the social dynamics of technology evolution and dominance." Organization Studies, 25(4): 561-581.

Murdoch, J. (1997) Inhuman/nonhuman/human: Actor-network theory and the prospect for a nondualistic and symmetrical perspective on nature and society in *Environment and Planning D: Society and Space*, 15 (6), pp.731-756.

Murdoch, J. (1998) The Spaces of Actor-Network Theory, *Geoforum*, 29 (4), pp.357-374.

Naess, A. (1997) Sustainable Development and the Deep Ecology Movement in Barker, S. et al (eds) 1997 *The Politics of Sustainable Development, Theory Policy and Practice within the European Union*. London: Routledge.

O'Neill, O. (1996) *Towards Justice and Virtue – A Constructive Approach to Practical Reasoning*. Cambridge: Cambridge University Press.

O'Riordan, T. (2004) Environmental Science, Sustainability and Politics. *Transactions of the Institute of British Geographers*, 29 (2), pp.234-247.

Owens, S. (1986) *Energy, Planning and Urban Form*. London: Pion.

Owens, S. (1992) Energy, Environmental Sustainability and Land Use Planning in Breheny, M.J (ed.) *Sustainable Development and Urban Form*. London: Pion.

Owens, S. (1994) Land, Limits and Sustainability: A Conceptual Framework and Some Dilemmas for the Planning System. *Transaction of the Institute of British Geographers*, 19 (4), pp.439-456.

Rawls, J. (1993) *Political Liberalism*. New York: Columbia University Press.

Rydin, Y. (2010) Actor-Network Theory and Planning Theory: A Response to Boelens in *Planning Theory,* 9, pp.265-271.

Rydin, Y. (2010) *Governing For Sustainable Urban Development.* London: Earthscan.

Rydin, Y. (2011) *The Purpose of Planning – Creating Sustainable Towns and Cities*. Bristol: Policy Press.

Rydin, Y. (2012) Using actor-network theory to understand planning practice: exploring relationships between actants in regulating low carbon commercial development in *Planning Theory*, 12, p.23.

Rydin, Y. (2013) *The Future of Planning – Beyond Growth Dependence*. Bristol: Policy Press.

Selman, P. (2001) Social Capital, Sustainability and Environmental Planning. *Planning Theory and Practice,* 2 (1), pp.13-30.

Sherlock, H. (1991) *Cities are Good for Us*. London: Paladin

Shrove, E. (1994) Sustainable Developments in Environmental Sociology in Benton, T. and Redclift, M. (eds) 1997 2nd edition, *Social Theory and the Global Environment*. London: Routledge.

Spaargaren, G., Mol, A.P.J. 2008. Greening Global Consumption: Redefining Politics and Authority. Global Environmental Change, 18 (3).
Strauss, A.L. and Carbin, J.M. (1997) *Grounded Theory in Practice*. London: Sage.

Tait, M. (1999) *The Articulation of Structure and Power in Planning Theory: Methodological Issues* in Future Planning: Planning Future Conference, University of Sheffield, UK, 29th – 31st March 1999. Sheffield: University of Sheffield.

Tait, M. (2002) Room for Manoeuvre? An Actor-Network Study of Central – Local Relations in Development Plan Making, *Planning Theory and Practice*, 3 (1), pp.69-85.

Thomas, L. and Cousins, W. (1996) The Compact City: A Successful, Desirable and Achievable Urban Form? In Jenks, M., Burton, E. and Williams, K. (eds) *The Compact City: A Sustainable Urban Form?* London: E &FN Spon.

Thrift N and Whatmore S (Eds) (2004). *Cultural Geography: Critical Concepts in the Social Sciences.* Routledge, London.

Valentine, G. (1997) Tell Me About Using Interviews as a Research Methodology in Flowerdew, R. and Martin, D. (eds) 1997 *Methods in Human Geography – A Guide for Students Doing a Research Project*. 2nd edition. Essex: Pearson.

Wheeler, S.M. (2004) *Planning for Sustainability – Creating Livable, Equitable and Ecological Communities*. Oxon: Routledge.

Whittle, A. and Spicer, A. (2008) 'Is Actor Network Theory Critical?', in *Organization Studies* 29(1): 611-29.

Wild, A. (2000) Planning for Sustainability: Which Interpretation Are We Delivering? *Planning Theory and Practice*, 1 (2), pp.273-284.

Yin, R.K. (2003) *Case Study Research: Design and Methods*. London: Sage.

Websites

Details of the Rio Earth Summit, 1992. The World Earth Summit. [Online] Available at http://www.worldearthsummit2002.org.index.htm?http//www.worldearthsummit2002.org/guide/unced.htm (Accessed 12.5.11)

The Rio Declaration, 1992. [Online] Available at http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm (Accessed 12.5.11)

Agenda 21, 1992. [Online] Available at http://www.un.org/esa/dsd/agenda21/res_agenda_21_00.shtml (Accessed 12.5.11)

The Conservatives Climate Change and Energy Policy. 2011. [Online] Available at http://www.conservatives.com/policy/where_we_stand/climate_change_and_energy.aspx (Accessed 1.6.11)

www.exeterandeastdevon.gov.uk/cranbrook (Accessed 12.06.11)

www.barratthomes.co.uk/new-homes/south-yorkshire/H595301-The-Edge-Waverley (Accessed 1.5.13)

www.taylorwimpey.co.uk/find-your-home/england/devon/exeter/cranbrook (Accessed 1.5.13)

www.waverlycommunity.org/the-development/sustainability (Accessed 26.7.12)

www.exeterandeastdevon.gov.uk/cranbrook (Accessed 1.5.13)

www.harworthestates.co.uk/sector/strategicland (Accessed 8.9.14)

www.harworthestates.co.uk/about-us (Accessed 8.9.14)

Appendix 1 – Narrative Timeline

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Appendix 2 – Decision Notice and Conditions

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Appendix 3 – Press Articles

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Appendix 4 – Images of Waverley

Waverley 2016

Waverley 2011