



Waste topic paper 7:

Waste Management and Low Carbon Development



Somerset County Council

Minerals and Waste Development Framework

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SECTION 1

INTRODUCTION

1 INTRODUCTION

1.1 Context

1.1.1 Sustainable development and climate change are at the forefront of UK Government policy and national targets. Greater consideration is being given to carbon emissions from development, with opportunities for carbon savings during the construction and completion of development.

1.1.2 One of the key ways in which carbon savings can be achieved is via low carbon development. This represents development where specific regard has been given to minimising the potential for greenhouse gas emissions at all stages of the development's lifecycle, including construction, operation and (if relevant) demolition or decommissioning.

1.1.3 The management of waste has an important role to play in the move towards low carbon development. Around 3% of the UK's total greenhouse gas emissions come from waste. Around 89% of these emissions come from landfill sites where biodegradable wastes decompose to produce methane and carbon dioxide gas¹. Therefore diversion of waste from landfill is of paramount importance from a carbon perspective. Other sources of emissions arise from the movement of waste from its source to its destination. There are considerable savings to be made as a result of diverting materials from the waste stream and enabling them to be re-used or recycled, thus reducing the carbon emissions associated with the production of products from virgin materials. In addition, residual waste (waste remaining after recyclables are taken out) represents a potentially important source of energy in itself, with a variety of technologies available ranging from combustion, anaerobic digestion, gasification and pyrolysis, all of which have the potential for heat recovery. These methods of waste management are more 'carbon efficient' in dealing with residual waste than disposal to landfill.

1.2 Purpose of this waste topic paper

1.2.1 This topic paper forms part of the evidence base for Somerset County Council's Waste Core Strategy (WCS), and considers the ways in which more sustainable methods of waste management can contribute to low carbon development, and in particular how waste infrastructure can be integrated into new non-waste development. Significant opportunity exists to plan for the integration of waste management within new housing and mixed development. Plans for major housing and employment growth in Somerset offer an opportunity for

¹ Draft Government Carbon Plan, March 2011, paragraph 6.1

SECTION 1 INTRODUCTION

developers, local planning authorities and other stakeholders to collaborate in achieving exemplar environmental standards in design and delivery. Waste management infrastructure needs to be integrated into the planning and design of these areas from the outset.

1.2.2 A series of studies have recently been undertaken by Somerset County Council and several of the District and Borough planning authorities, on a range of issues of relevance to both waste planning and low carbon development. These include the following:

- *PPS1 Supplement Study: Planning and Climate Change*, Arup, September 2010;
- *Sustainable Energy and Buildings – Background Paper*, South Somerset District Council, October 2010 (unpublished draft)
- *Waste to Resources Plan: Report A - Waste Infrastructure Study*, Parsons Brinckerhoff, Draft July 2011;
- *Waste to Resources Plan: Report B - Integrating Energy from Waste*, Parsons Brinckerhoff, Draft May 2011;
- *Waste to Resources Plan: Report C - Site Waste Management Strategy*, Parsons Brinckerhoff, Draft July 2011.

1.2.3 The key conclusions of these documents, insofar as they relate to waste management and low carbon development, have informed the content of this topic paper.

1.3 Structure of the document

1.3.1 Section 2 of this topic paper examines the main policy drivers in respect of waste and low carbon development. Section 3 examines the key issues emerging from relevant legislation and policy guidance, the potential synergies that exist between the issues of low carbon development and waste, and the potential for integration via the planning system. Section 4 considers the ways in which the planning system can contribute towards delivering identified policy objectives. Section 5 presents a review and summary of key issues emerging from relevant content within recent studies, in relation to Somerset as a whole and specific districts, in particular those affected by recent proposals for urban extensions. Finally, Section 6 summarises the key conclusions arising from the topic paper as a whole, and the implications for the emerging Waste Core Strategy.

SECTION 2

POLICY DRIVERS

2 POLICY DRIVERS

2.1 Introduction

2.1.1 The following paragraphs outline the key legislative provisions and policy drivers which influence the issues considered in this topic paper. Consideration is first given to those policy drivers that are of relevance to waste planning 'across the board', followed by those documents of specific reference to low carbon development.

2.1.2 It should be noted that this section was drafted before publication of the draft National Planning Policy Framework (NPPF). This section will need to be updated to reflect the evolving policy position, in particular on adoption of a finalised National Planning Policy Framework.

2.2 EU Waste Framework Directive (2008/98/EC)

2.2.1 The Waste Framework Directive provides the overarching legislative framework for the collection, transport, recovery and disposal of waste across Europe. The key element of importance is the updated waste hierarchy contained in Article 4 of the Directive, which strengthens the hierarchy contained within the predecessor Directive. The revised hierarchy is as follows:

- Prevention;
- Preparing for reuse;
- Recycling;
- Other recovery - including energy recovery;
- Disposal.

2.3 UK Climate Change Act (2008)

2.3.1 The Climate Change Act, which came into effect in 2008, represents a long-term, legally binding framework to tackle the issues associated with climate change. It puts into statute the framework to set the UK's targets to reduce carbon dioxide emissions, through domestic and international action, by at least 80 per cent by 2050, and at least 34 per cent by 2020, against a 1990 baseline. One of the Act's key aims is to improve carbon management, helping the transition towards a low-carbon economy.

2.4 UK Draft Carbon Plan (March 2011)

2.4.1 The UK Carbon Plan is a Government-wide plan of action on climate change, with actions and deadlines for cutting carbon emissions over the next five years, having regard to the national targets set out in the UK Climate Change Act. Chapter 6 deals with cutting emissions from waste. The Government's near-term priority is to reduce the amount of waste going to landfill, given that methane and carbon dioxide from landfill represents 89% of the waste-related greenhouse gas emissions in the UK. In the longer term, generation of energy from waste is likely to become an increasingly important source of low carbon energy.

2.4.2 In order to achieve these objectives, the Government is keen to aid the transition to a 'zero waste economy', wherein nothing is actually 'wasted' and all resources are fully valued – financially and environmentally. This will involve:

- reducing the amount of waste we produce;
- finding better use for the waste we do produce through reuse and recycling;
- making use of a range of technologies such as anaerobic digestion, combustion with combined heat and power, gasification and pyrolysis, to produce energy from waste.

2.4.3 The above will build upon the significant progress that has been made over the last 10 years, through instruments such as the landfill tax, to halve the amount of waste going to landfill. The Carbon Plan also highlights the Government's intentions to explore ways to increase the amount of methane that is captured from landfill sites (including closed sites still emitting methane) and is working in partnership with the Environment Agency and industry to examine the role that new technologies can play in capturing and exploiting this methane.

2.5 Waste Strategy for England 2007

2.5.1 The Waste Strategy for England 2007 establishes the Government's objectives and targets for the management of waste, including the aim of decoupling waste growth from economic growth and putting greater emphasis on waste prevention and re-use, in accordance with the principles of the 'waste hierarchy'. The Waste Strategy for England recognises the key linkages between the consumption of natural resources and the threat of climate change, and the important contribution that the reduction in waste can make towards what the WWF and BioRegional term 'One Planet Living':

“...Our aim must be to reduce waste by making products with fewer natural resources. We must break the link between economic growth and waste growth. Most products should be re-used or their materials recycled. Energy should be recovered from other wastes where possible. For a small amount of residual material, landfill will be necessary ...”.

2.5.2 Defra has recently undertaken a review of waste policy and delivery in England. The results of this Review were published in June 2011, including a series of actions. The main commitments, aimed at ensuring a more sustainable approach to the use of materials, delivering environmental benefits and supporting economic growth, are summarised below:

- Prioritise efforts to manage waste in line with the waste hierarchy and reduce the carbon impact of waste;
- Develop a range of measures to encourage waste prevention and reuse, supporting greater resource efficiency;
- Develop voluntary approaches to cutting waste, increase recycling, and improve the overall quality of recycle material, working closely with business sectors and the waste and material resources industry;
- Consult on the case for higher packaging recovery targets for some key materials;
- Support energy from waste where appropriate, for waste which cannot be recycled;
- Work to overcome the barriers to increasing the energy from waste which Anaerobic Digestion provides, as set out in the new AD Strategy;
- Consult on restricting wood waste from landfill and review the case for restrictions on landfilling other materials.

2.5.3 In addition, in order to improve the service to householders and businesses, while delivering environmental benefits and supporting growth, Defra has established the following key commitments:

- Support initiatives which reward and recognise people who do the right thing to reduce, reuse and recycle their waste;
- Work with councils to increase the frequency and quality of rubbish collections and make it easier to recycle;

- Encourage councils to sign the new Recycling & Waste Services Commitment, setting out the principles they will follow in delivering local waste services;
- Protect civil liberties by stopping councils from criminalising householders for trivial bin offences, while ensuring that stronger powers exist to tackle those responsible for flytipping and serious waste crime;
- Support councils and the waste industry in improving the collection of waste from smaller businesses;
- Reduce the burden of regulation and enforcement on legitimate business, but target those who persistently break the law.

2.6 PPS 1: Delivering Sustainable Development, January 2005

2.6.1 This PPS sets out the means by which the planning system can promote and facilitate sustainable and inclusive patterns of development. It recommends that development plan policies should facilitate the management of waste in ways that protect the environment and human health, including producing less waste and using it as a resource wherever possible.

2.7 PPS1 Supplement: Planning and Climate Change, December 2007

2.7.1 This PPS Supplement sets out how planning should contribute to reducing emissions and stabilising climate change and take into account the unavoidable consequences. It identifies, in paragraph 10, the following decision-making principles that should be employed by planning authorities in making decisions about their spatial strategies:

- the proposed provision for new development, its spatial distribution, location and design should be planned to limit carbon dioxide emissions;
- new development should be planned to make good use of opportunities for decentralised and renewable or low carbon energy;
- new development should be planned to minimise future vulnerability in a changing climate;
- climate change considerations should be integrated into all spatial planning concerns;

- mitigation and adaptation should not be considered independently of each other, and new development should be planned with both in mind.

2.7.2 The PPS1 Supplement also cites the provision of sustainable waste management as a key consideration when considering the environmental performance of proposed development (paragraph 42).

2.8 Planning for a Low Carbon Future, March 2010

2.8.1 A draft PPS published for consultation in March 2010 sets out a proposed planning framework for securing enduring progress against the UK's targets to cut greenhouse emissions and use more renewable and low carbon energy, as part of its strategy in planning for climate change. While it has not yet been published in final form, the draft PPS provides an indication of the Government's 'direction of travel'. The draft PPS is intended to bring together the *Planning and Climate Change Supplement to PPS1* (December 2007) with PPS22 on *Renewable Energy* (August 2004) into a single consolidated supplement to PPS1.

2.8.2 The draft PPS outlines the key ways in which the Government envisages that the planning system can help in supporting the transition to a low-carbon future. When planning for new development, consideration should be given to the means by which greenhouse gas emissions can be reduced significantly, via energy efficient location and layout (including the use of decentralised energy) and through the delivery of renewable and low carbon energy. Emphasis is also given to the ways in which local communities are given real opportunities to take positive action on climate change, in particular by encouraging community-led initiatives to reduce energy use and secure more renewable and low-carbon energy.

2.8.3 The draft PPS supports (inter alia) the promotion of greater integration of the waste and energy agendas. Policy LCF 1.4 advises local planning authorities to assess their area for opportunities for decentralised energy, in particular looking for opportunities to secure:

- i. decentralised energy to meet the needs of new development;
- ii. greater integration of waste management with the provision of decentralised energy;
- iii. co-location of potential heat suppliers and users; and

- iv. district heating networks based on renewable energy from waste, surplus heat and biomass, or which could be economically converted to such sources in the future.

2.9 PPS10: Planning for Sustainable Waste Management, March 2011

2.9.1 This PPS sets out those policies that should be taken into account by waste planning authorities in discharging their responsibilities in accordance with national waste policy. In particular, it encourages the provision of a framework in which communities take more responsibility for their own waste; there is sufficient and timely provision of waste management facilities to meet those communities' needs without endangering human health and without harming the environment; where waste is disposed of in one of the nearest appropriate installations; and where the design and layout of new development supports sustainable waste management.

2.9.2 The PPS's content is framed within the context of the Government's overall policy objectives for waste, namely to protect human health and the environment by producing less waste and by using it as a resource wherever possible. It advocates the implementation of more sustainable waste management, by moving the management of waste up the 'waste hierarchy' of prevention, preparing for reuse, recycling, other recovery, and disposing only as a last resort. It also emphasises the important role of the planning system in delivering sustainable waste management through i) the development of appropriate strategies for growth, regeneration and the prudent use of resources; and ii) by providing sufficient opportunities for new waste management facilities of the right type, in the right place and at the right time.

2.10 Planning Act 2008 / CIL Regulations 2010

2.10.1 Part 11 of the Planning Act 2008 provides the legislative basis for the introduction of a charge, known as the Community Infrastructure Levy (CIL), to ensure that costs incurred in providing infrastructure to support the development of an area can be funded (wholly or partly) by owners or developers of land. This came into force on 6 April 2010 through the *Community Infrastructure Levy Regulations 2010*.

2.10.2 CIL comprises a tariff, imposed at a rate set locally by a charging authority, to "... *fund infrastructure to support the development of its area...*". It is applicable to developers on a range of projects, subject to some exemptions, including minor developments. The definition of

infrastructure to which CIL can contribute is set out within section 216 of the 2008 Planning Act. For example, it should be applicable to investment in heat distribution network where that infrastructure has been identified in a local Infrastructure Delivery Plan.

2.11 PPS: Eco-towns (Supplement to PPS1): July 2009

2.11.1 This PPS Supplement provides supplementary advice to PPS1, setting out policies and minimum standards in respect of the Government's proposed eco-towns that are more challenging than would normally be required for new development.

2.11.2 The PPS1 Supplement contains a series of 'Eco-Town Standards' on a number of relevant criteria, including ET19 which relates to Waste. ET19 sets out the requirement for the provision of a sustainable waste and resources plan for Eco-towns, the detailed requirements of which comprise the following:

*Eco-town planning applications should include a **sustainable waste and resources plan**, covering both domestic and non-domestic waste, which:*

(a) sets targets for residual waste levels, recycling levels and landfill diversion, all of which should be substantially more ambitious than the 2007 national Waste Strategy targets for 2020; it should be demonstrated how these targets will be achieved, monitored and maintained;

(b) establishes how all development will be designed so as to facilitate the achievement of these targets, including the provision of waste storage arrangements which allow for the separate collection of each of the seven priority waste materials as identified in the Waste Strategy for England 2007;

(c) provides evidence that consideration has been given to the use of locally generated waste as a fuel source for combined heat and power (CHP) generation for the eco-town, and

(d) sets out how developers will ensure that no construction, demolition and excavation waste is sent to landfill, except for those types of waste where landfill is the least environmentally damaging option.

2.12 Eco-Towns Waste Management Worksheet: November 2008

2.12.1 Produced by the Town and Country Planning Association, this note outlines the role of eco-town developments in providing mechanisms, facilities and services that will make it easier for people to manage their waste sustainably. It stresses that, as exemplar developments:

"... eco-towns should aim to achieve more than current best practice. They should be leaders in the transformation from a waste management

economy to one based on resource management, and they should contribute to reducing the impacts of waste on climate change.”

2.12.2 All eco-towns should adhere to the following five principles on waste:

- View waste as a resource;
- Take an integrated approach to waste / resource management;
- Seek solutions that provide multiple benefits, including contributing to ‘zero carbon’ development;
- Eco-towns as exemplars, going beyond national average expectations;
- Eco-towns as catalysts for change in performance in surrounding areas.

2.12.3 In order to achieve the above, the following minimum measures should be implemented:

- **Plan for Zero Waste:** via the preparation of a waste and resources plan;
- **Set ambitious targets:** going substantially beyond those in the Government’s 2007 Waste Strategy;
- **Co-ordinate waste management:** making the most of opportunities presented, such as synergies for co-managing municipal, commercial and industrial waste;
- **Set high building design standards:** achieving maximum points available on all waste components of the Code for Sustainable Homes (residential); maximum points for waste and materials under BREEAM (non-residential) and use of Green Guide A-rated building components and construction materials as standard;
- **Move towards zero construction waste:** in excess of the Government’s national target of at least a 50% reduction in construction, demolition and excavation waste to landfill (compared with 2008);
- **Provide high quality waste facilities:** of high quality, visually attractive, and not detrimental to their immediate surroundings.

SECTION 3

KEY ISSUES EMERGING

3 ISSUES EMERGING

3.1 Introduction

3.1.1 This Section provides an overview of the key issues emerging from the review of policy and legislative drivers as set out in Section 2. It summarises matters of relevance to waste management and low carbon development, which will need to be taken into account when developing robust policies capable of delivering the relevant targets and objectives in respect of this issue. The main themes emerging from the preceding review are outlined in the sections below.

3.2 Objectives and Targets

3.2.1 The following provides a summary of the current relationship between waste management and carbon emissions, along with the salient targets and objectives set by the EU and UK Government in seeking to address the impacts of climate change and waste management's contribution to it:

- Waste accounts for around 3% of the UK's total greenhouse gas emissions;
- Around 89% of the above emissions come from landfill sites where biodegradable wastes decompose to produce methane and carbon dioxide gas;
- The Government has set a target of 80% reduction in greenhouse gas emissions by 2050 (UK Climate Change Act, 2008) with an interim target of 34% by 2020, compared to the 1990 baseline;
- The UK is bound by a requirement to implement waste management in accordance with the 'Waste Hierarchy' (as set out within the EU Waste Framework Directive, 2008);
- The Government is seeking to aid the transition to a 'zero waste economy' where all resources are fully valued and which operates in broad accordance with the principles set out in the waste hierarchy.

3.3 Relationship Between Low Carbon and Waste Management

3.3.1 Potential synergies exist between the Government's targets for greenhouse gas emissions and its objectives in relation to waste management, in particular the transition towards a zero waste economy. Broadly speaking, as waste management is driven up the waste hierarchy, there is the potential for a corresponding decrease in carbon emissions. This is likely to arise as a result of a combination of the measures summarised below:

- Reduction in landfill gas emissions, as a result of implementing measures higher up the waste hierarchy and thus diverting waste from landfill;
- Reduction in the requirement to use virgin materials, due to the recycling or recovery of materials that would otherwise become waste;
- Reduced requirement for use of fossil fuels if energy is recovered from waste rather than landfill.

3.4 Low Carbon via Location and Design

3.4.1 In addition, when planning for new waste management facilities, opportunities will exist for adopting low carbon principles in the type, design and location of plant. There are potential carbon savings associated with the following:

- Potential for reduced transport emissions if waste materials are dealt with locally;
- Potential for local use to be made of any power or heat generated by the facility;
- Potential for minimising carbon emissions generated (e.g. through the building's energy use) via facility design, and through industrial processes adopted;
- Potential for carbon savings to be made via operational practices, e.g. the availability of, and support for, sustainable modes of travel for employees.

3.4.2 The above opportunities all contribute to the overall 'carbon footprint' of a proposed development. According to the Carbon Trust, "... a carbon footprint measures the total greenhouse gas emissions caused directly and indirectly by a person, organisation, event or product ..."². The above issues can all determine the 'organisational' carbon footprint of a

² <http://www.carbontrust.co.uk>

proposed development, which relates to emissions from all the activities across the organisation, including buildings' energy use, industrial processes, and company vehicles. The Carbon Trust also defines the wider carbon impacts of a proposal, namely the 'product' impact, which relate to the emissions over the whole life of a product or service, from the extraction of raw materials and manufacturing through to its use and final re-use, recycling or disposal.

- 3.4.3 By taking into account the carbon impacts of proposed developments when considering new applications for waste treatment facilities, appropriate consideration can be given to the overall carbon footprint of proposals, thus enabling more sustainable waste management practices to be employed.

3.5 The eco-towns concept

- 3.5.1 "Eco-town" developments apply higher than normal environmental standards on a range of issues, including waste. The term eco-town may be transient. Regardless of terminology or the impact of changing political positions, low carbon design is of fundamental importance. Focusing on waste matters, such developments should plan for zero waste and seek to incorporate integrated waste management measures achieving high levels of sustainability. In Somerset the urban extensions proposed at Taunton and Yeovil have been conceived as fulfilling eco-town objectives.

- 3.5.2 This provides an opportunity not only to review what could be achieved by an exemplar approach but also to embed some of the "basics" in the planning of urban growth, including support for source separation of waste – which in turn will lead to a greater ability to divert waste from landfill and thus reduce carbon emissions.

3.6 The role of local communities

- 3.6.1 Another important issue arising from the examination of key policy drivers is the role of community in the successful implementation of more sustainable methods of waste management. PPS10 in particular encourages the provision of a framework in which communities take more responsibility for their own waste, and advocates the sufficient and timely provision of waste management facilities to meet the needs of local communities, with due consideration being given to the concerns and interests of those communities. This recognises the

SECTION 3 KEY ISSUES EMERGING

importance of community 'buy-in' and potentially also community benefit in respect of sustainable waste management.

- 3.6.2 Both of these issues are of specific relevance to low carbon waste management strategies. For sustainable waste management to be effective, communities need to be committed to measures aimed at driving waste up the hierarchy, including recycling and recovery rather than disposal, and neighbourhoods and the premises within them need to be designed in a manner that facilitates this. Conversely, there is also the potential for some low carbon waste management schemes to directly benefit local communities, in particular those which employ heat / energy recovery. The theme of community buy-in / benefit is a cross-cutting issue which is relevant to the consideration of low carbon waste infrastructure 'across the board'. This message is reinforced in the recent government review of national waste policy.

SECTION 4

PLANNING CONSIDERATIONS

4 PLANNING CONSIDERATIONS

4.1 Introduction

4.1.1 This Section considers the ways in which the planning system can contribute towards delivering the objectives identified in respect of low carbon waste development. It also provides touches on Somerset's existing performance in respect of the issues discussed.

4.2 Applying the Waste Hierarchy in Planning for Sustainable Waste Management

4.2.1 As the synergies between sustainable waste management and low carbon development identified in Section 3.3 are all dependent upon implementation of the waste hierarchy, it can be seen that this is crucial if waste management is to become a realistic means of delivering low carbon development. A number of key principles apply to when considering the hierarchy.

4.2.2 Application of the waste hierarchy determines that, for almost all waste types recycling is placed above energy recovery. Possible exceptions include, for example, the combustion of contaminated wood and the anaerobic digestion of food waste (in preference to composting). It is therefore important that measures are implemented to maximise reduction, re-use and recycling, ahead of the development of residual waste treatment solutions. That being said, energy from waste (EfW) should be viewed as complementary to recycling. The countries in Europe that lead the way in recycling also lead the way in terms of energy recovery. EfW thus forms part of the mix of options that enable the best use to be made of waste as a resource.

4.2.3 Furthermore, in order for combustion of waste to be considered above disposal in the waste hierarchy, there must be a means to recover the energy. Incineration without recovery is considered tantamount to disposal so far as the waste hierarchy is concerned.

4.2.4 The planning system offers considerable opportunity to ensure that sustainable waste management can be fully integrated into new development, and the key provisions of the waste hierarchy applied. The following sections provide an overview of the means by which each element of the waste hierarchy has the potential to be influenced by the adoption of sustainable waste planning policy, together with a summary of the resultant carbon benefits that would accrue.

4.3 Waste Prevention

4.3.1 Waste prevention is the foremost challenge set out within the waste hierarchy. By minimising the amount of surplus materials with the potential to become waste which are generated in the first place, those carbon emissions that would be associated with the transport and disposal of waste would also be minimised. The key challenge identified by the Government in respect of this issue is ‘preventing waste wherever it occurs’.

Prevention of construction and demolition waste

4.3.2 Much of the opportunities for minimising and preventing waste lie outside of the jurisdiction of the planning system, for example issues of waste packaging. However, there is considerable opportunity for the minimisation and / or prevention of waste to occur at the construction stage of development. Developers promoting schemes with a value in excess of £300,000 have a statutory duty³ to produce a Site Waste Management Plan (SWMP) which involves forecasting how much waste will be generated, of what type, and how it will be managed. However, many local planning authorities are now requiring the preparation of SWMPs via planning policy, with the potential for requiring consideration of these matters in relation to all scales of projects. This issue is explored in more detail in Waste Topic Paper 4: Site Waste Management Report.

4.4 Re-use and Recycling of Waste

4.4.1 Increased re-use and recycling of waste can reduce the amount of residual waste which needs to be treated, either via energy recovery or disposal, with consequential carbon benefits. It thus reduces landfill gas emissions and the use of virgin materials, and, depending upon the means by which waste is re-used or recycled, there can be reduced transportation emissions.

Storage and collection of recyclable materials

4.4.2 Municipal waste services (collection, recycling and disposal) in Somerset are delivered by the Somerset Waste Partnership (SWP). This comprises all six local authorities in the county, and represents the

³ Site Waste Management Regulations, 2008

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first standalone waste partnership in the country, delivering a standardised service across all households.

- 4.4.3 Somerset has a well deserved reputation for excellence in the recycling of municipal waste. This is facilitated by focusing on source separation (at the kerbside) and through a network of recycling centres across the county. SWP's original 'SORT-IT' scheme, collecting paper, cans, glass, shoes, clothes, foil and car batteries, has been operating since 2007. Following its success (receiving the 2005 LARAC National Recycling Award for Best Local Authority Initiative) SWP trialled the additional collection of plastics and cardboard. Resultant successful trials have allowed the SWP to roll out new 'SORT-IT+' collections, adding plastic bottles and cardboard to kerbside recycling in all Somerset districts and introducing weekly food waste and fortnightly refuse collections in Sedgemoor and West Somerset. By 2012 it is anticipated that all households in Somerset will receive this service.
- 4.4.4 Householder participation is crucial to the success of recycling schemes such as the above, and it is important to ensure that new development is planned in a way that makes it easy for people to recycle. PPS10 emphasises the role that good design and layout in new development can have in helping to secure opportunities for sustainable waste management, including for kerbside collection and community recycling as well as for larger waste facilities. *"..... planning authorities should ensure that new development makes sufficient provision for waste management and promote designs and layouts that secure the integration of waste management facilities without adverse impact on the street scene or, in less developed areas, the local landscape.....waste management facilities in themselves should be well-designed, so that they contribute positively to the character and quality of the area in which they are located. Poor design is in itself undesirable, undermines community acceptance of waste facilities and should be rejected...."* (paragraphs 35 and 36).
- 4.4.5 Appropriate waste infrastructure is needed to allow new development areas to be serviced in a way that helps to drive waste recycling performance upward and thus divert more waste from landfill. This includes provision of convenient space and facilities for household waste segregation (both inside new homes and in housing layouts) and ensuring that development pattern and roads provide for effective movement of recycling and refuse collection vehicles throughout.
- 4.4.6 Adequate provision of local / community-based recycling facilities is another important element when driving up recycling rates. Where comprehensive kerbside collection services exist, the collection of recyclables direct from source tends to achieve higher recycling rates than communal facilities. However, communal facilities still have an

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important potential role to play for those recyclable materials not covered by kerbside schemes.

- 4.4.7 The installation of "Recycling on the go" facilities for materials that would otherwise enter the waste stream as litter represents another important element in the recycling chain. Products consumed 'on the go' include drinks, food, newspapers and magazines. Provision for recycling of such end-products while out of the home or workplace not only contributes towards the move towards zero-waste, but also maintains the link with those recycling activities practiced within the home or work environment and helps to ensure a behavioural shift towards more responsible use of resources.

Commercial and industrial waste

- 4.4.8 Plans need to consider business waste as well as municipal waste. Issues relating to commercial and industrial waste (C&I waste) are considered in Waste Topic Paper 5. This topic paper highlights the fact that significant potential exists to increase the amount of C&I waste recovered or recycled, particularly in respect of commercial waste where it is estimated that 55% was landfilled in 2006, and one in four commercial businesses did not recycle.

- 4.4.9 It is important that effective provision for waste segregation and recycling is made within commercial development layouts since this is a key area of use where recycling standards must be improved in the coming years.

Biodegradable waste management

- 4.4.10 Planning for biodegradable waste management is an important concern from a carbon perspective, which in the first instance can be facilitated by separating biodegradable from non-biodegradable waste.
- 4.4.11 In Somerset, biodegradable MSW is currently managed primarily via an in-vessel composting (IVC) facility at Dimmer near Castle Cary (which is reaching the end of its working life) along with a network of open windrow composting sites around the county. In partnership with Viridor Waste Management, SWP is planning to procure anaerobic digestion capacity to process up to 30,000 tonnes of food waste which will replace the Dimmer IVC facility.

4.5 Recovery of Waste (Energy from Waste)

- 4.5.1 A range of technologies can be used to treat residual waste (the material left after reuse and recycling). The use of the calorific value within residual waste, after the recovery of materials has been maximised, is commonly referred to as energy from waste. The recovery of energy from residual waste is endorsed within the Waste Strategy 2007: *“... recovering energy from waste which cannot sensibly be re-used or recycled is an essential component of a well-balanced energy policy, and most of our European competitors already pursue this vigorously ... Recent sharp increases in energy prices and continuing instability in a number of supplier countries underline the importance of maximising energy recovery from the portion of waste which cannot be recycled. This means using the most efficient technology for the job, and recovering heat as well as electricity where practicable ...”*. (chapter 5, paragraphs 17 and 18).
- 4.5.2 The Waste Infrastructure Delivery Programme Information Note on CHP produced in June 2010 cites the concurrent publication of the Energy White Paper and the Waste Strategy for England 2007 as *“...clear evidence of the accelerating convergence of energy and waste policy...”*. The Government’s recent review of waste policy in England also stresses the importance of efficient energy recovery from residual waste, which can deliver environmental benefits, reduce carbon impacts and provide economic opportunities. However, the Government’s stated aim, *“...to get the most energy out of waste, not to get the most waste into energy recovery...”* acknowledges the position of EfW within the waste hierarchy, wherein the higher level emphasis remains on minimisation, re-use and recycling.
- 4.5.3 The recovery of waste via EfW has potential carbon savings via the potential displacement of fossil fuels in energy generation. In addition it can allow for greater efficiencies from the production of energy, and greater security of fuel supply. There are also considerable potential benefits for making local use of heat and / or power generated that can be generated from waste.
- 4.5.4 The most common EfW process is incineration with energy recovery. There are also a number of other thermal treatment options, often referred to under the umbrella term ‘Advanced Thermal Treatment’ (ATT) and usually based on pyrolysis or gasification, whereby some form of pre-treatment is required to change the form of the material that is combusted. These also have the potential for the creation of by-products via the manufacture of a homogenous fuel pellet or flock, usually known as Solid Recovered Fuel (SRF) or Refuse Derived Fuel (RDF). In addition, Anaerobic Digestion (AD) combines recycling and energy production from burning the bio-gas generated by the AD

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process. AD is suitable for input materials that have a high organic content. The Government's recently published Waste Policy Review (June 2011) places AD at the forefront of energy recovery, with the publication of an Anaerobic Digestion Strategy and Action Plan.

4.5.5 All EfW solutions are more efficient if the surplus heat can be used as well as direct energy generated in the form of electricity or gas (Combined Heat and Power or CHP). The most efficient plants are those that also use low grade heat, for example in district heating schemes, as these do not reduce the electricity generation capacity which is dependent upon high grade heat.

4.5.6 The following energy from waste technologies are listed in Waste Strategy for England 2007:

- Anaerobic Digestion;
- Direct Combustion (Incineration);
- Secondary Recovered Fuel (an output from mechanical and biological treatment processes);
- Pyrolysis;
- Gasification;
- Plasma arc heating.

4.5.7 Somerset has a pressing need for residual waste treatment capacity, with a significant amount of the county's residual waste currently sent to landfill. While there is continued capacity for this to occur, there are more preferable options for the treatment of this waste (i.e. those further up the waste hierarchy). Details regarding the requirement for residual waste treatment capacity are outlined within Waste Topic Paper 1: Waste Management Need to 2028. The Waste Core Strategy (WCS) will need to provide a suitable framework for the delivery of the required residual waste capacity.

4.6 Waste Disposal

4.6.1 Disposal lies at the base of the waste hierarchy and so is the least desirable option for managing waste. It has the greatest potential for carbon emissions, principally due to landfill gas emissions, and as such does not represent a low carbon method of waste management.

4.6.2 By moving waste up the hierarchy in the manner indicated in the preceding sections, positive measures can be taken to restrict the amount of waste which will fall within the disposal option. However, it is likely that a requirement for some form of landfill capacity will remain

within the Plan period, not least as the majority of waste recovery technologies involve some form of residue leftover which needs to be disposed of in a landfill.

4.7 Carbon Footprint of New Development

4.7.1 PPS10 refers to the need for a step-change in the way waste is handled, along with significant new investment in waste management facilities. The planning system is acknowledged as being pivotal to the timely provision of the new facilities that will be needed (paragraph 1). Key planning objectives include: the provision of sufficient and timely waste management facilities to meet the needs of communities; provision to enable waste to be disposed of in one of the nearest appropriate installations; and ensuring the design and layout of new development supports sustainable waste management (paragraph 3).

4.7.2 Assuming that the above measures can be implemented, the potential carbon benefits associated with sustainable waste management should be capable of being accrued within new waste developments.

4.8 Major Development Planned in Somerset

4.8.1 More sustainable waste management operations, designed to address the issues raised within Sections 4.3 to 4.7 above, are significantly easier to incorporate at the design stage of proposed developments. The WCS offers the opportunity to develop robust planning policies which will facilitate the implementation of lower carbon measures into new developments on a countywide basis over the Plan period.

4.8.2 Particular opportunities are presented by the urban extensions planned for Taunton and Yeovil, which are being shaped to provide low-carbon development through high quality masterplanning, building design and construction materials. Between them, these two developments are expected to account for up 10,000 new homes and so have the potential to have a significant effect on waste arisings within the county overall and on these urban centres in particular. Large scale mixed use development is also taking place at North East Bridgwater.

4.8.3 Development of the scale of these urban extensions provides a valuable opportunity to plan for integrated waste management infrastructure that may be difficult to deliver viably at smaller scales and is often difficult to retrofit to existing urban areas.

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SECTION 5

OVERVIEW OF RELEVANT RESEARCH IN SOMERSET

5 OVERVIEW OF RELEVANT RESEARCH IN SOMERSET

5.1 Introduction

5.1.1 This Section outlines the relevant research that has been undertaken recently, by and on behalf of Somerset County Council and District and Borough authorities, in relation to issues of relevance to waste and low carbon development, and the key conclusions arising. In each case, a commentary is provided on the likely effectiveness of the suggested measures, and the issues that may arise in implementing them.

5.2 PPS1 Supplement Study: Planning and Climate Change, September 2010

5.2.1 This study, undertaken by Arup, comprises a joint project between Taunton Deane Borough Council (TDBC), Sedgemoor District Council (SDC), and Somerset County Council (SCC), investigating the potential for decentralised and renewable or low-carbon energy in Taunton Deane and Sedgemoor. The study considered renewable resources in the two districts and the potential for implementation of measures and mechanisms in respect of low energy consumption and renewable energy within new building developments. Specific recommendations contained within the report, insofar as they are relevant to waste management, are set out in the sub-sections below.

5.2.2 The final report advised that TDBC and SDC should not be too prescriptive about solutions. While it is important to adopt a flexible approach at this stage due to viability issues, a framework which ensures some certainty should be developed.

Low Carbon Infrastructure Fund

5.2.3 The study suggests that renewable energy infrastructure, such as heat distribution pipework, could be financed via the establishment of a low carbon infrastructure fund, paid into by developers. Given that the fund is likely to be channelled towards solutions at a county level, for example the introduction of heat infrastructure connecting EfW plant to new development, the study suggest that there is a role for SCC in setting up and coordinating the fund. It also suggests that there may be a requirement for up-front pump-prime funding from TDBC and SDC due to the staggered nature of such an income source.

- 5.2.4 A number of the study's recommendations are linked to the establishment of such a fund. However, there are likely to be significant barriers to overcome in the current economic climate (from both public sector and development industry perspectives) if the concept is to become a working funding mechanism.
- 5.2.5 This type of mechanism does have a precedent. Tariff / Community Infrastructure Levy (CIL) approaches have previously been adopted by a number of local authorities (e.g. Swindon Borough Council's tariff and Mid-Devon District Council's CIL) and the Homes and Communities Agency (HCA) has been running a low carbon infrastructure project, awarding pump-priming money to successful bidders from the Government's Growth Areas programme. The critical issues which might affect this type of mechanism being established relate to i) who it is that takes the risk and ii) the means by which up-front pump priming money, if required, can be secured. In the current economic climate, particularly in the public sector and with the demise of the Regional Development Agency, public sector organisations may not wish to take the risk on or have the funds to start up the fund.
- 5.2.6 Notwithstanding the above, the principle of a low carbon infrastructure fund is sound and so, if linked to an in-place CIL or tariff mechanism, one or more local planning authority (LPA) may wish to pursue the option. If this is the case, it may be worth engaging in dialogue with the HCA, which has pursued such a fund nationally with pilot projects⁴.
- Site specific feasibility work for EfW*
- 5.2.7 The study recommends that SDC and TDBC encourage developers to work closely with SCC to carry out full and site specific feasibility work when integrating EfW into new developments including a commercial assessment covering the source of the pre-funding for the infrastructure and understanding of risk to SCC.
- 5.2.8 The aim of viability / feasibility testing as part of the development of a Core Strategy is to ensure (as far as possible) that the preferred strategy approach is deliverable, rather than to purposely limit aspiration in achieving renewable energy targets or merely allocating land for development with little prospect of it being delivered during the plan period. From a technical perspective, those case studies identified in the study provide broad guidance on the potential feasibility of certain technologies which could be explored further when assessing

⁴ The following resources may prove helpful in determining how best to approach the development of a low carbon infrastructure fund. <http://www.homesandcommunities.co.uk/low-carbon-infrastructure> and http://www.swcouncils.gov.uk/nqcontent.cfm?a_id=4736&tt=swra

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development options and related renewable energy installations. For waste, this includes energy from waste, biomass and combined heat and power (CHP).

- 5.2.9 Feasibility work can take place in stages, with a broad assessment being undertaken as part of a site's assessment for inclusion in the Waste Local Development Framework (waste LDF) and LPA Infrastructure Delivery Plans and a more detailed assessment being undertaken by developers as they approach submission of a planning application (the latter could form a policy requirement in the WCS, Site Allocations DPD and / or Development Management Policies DPD). Developers will undertake feasibility work in any case to determine whether to pursue a site or not.
- 5.2.10 The study suggests that pump-priming money for the delivery of energy from waste development could come from local authorities. It seems unlikely that, beyond existing staff capacity, feasibility work could be completed in any detail for individual development sites beyond that needed for the Waste Core Strategy and a policy requirement for more detailed assessment is needed, with the onus placed on the developer to explore such opportunities.

Energy opportunities in relation to new development including urban extensions

- 5.2.11 The study states that, although it usually follows that economies of scale mean that larger developments can secure larger scale renewable energy solutions, in the case of CHP, the technologies are less well suited to larger developments where the demand profile is increasingly influenced by the demands of non-residential development.
- 5.2.12 Additionally, the study states that, although there are opportunities for standalone renewable energy generation from waste, these are not generally located near to planned new development⁵ although some potential may exist to link EfW to built development in Taunton Deane and Sedgemoor. In this context, EfW schemes operate in a similar manner to biomass, insofar as their fuel supply (in this case waste) can be transported more readily than the heat and power they generate, and consequently the greatest potential will be achieved if EfW plants and their potential customers can be located in close proximity to each other.

⁵ The study does identify commercial viability for the Northgate redevelopment in SDC for biomass or gas CHP – further site specific work will need to be done to explore detail.

- 5.2.13 This suggests that the core of the approach to renewable energy supply in the two districts, and hence potentially applicable elsewhere in Somerset, could be that of decentralised energy, on-site energy efficiency and reduction measures and building integrated renewables. The attractiveness of such solutions is likely to grow as technology improves and the Code for Sustainable Homes introduces more stringent requirements in time (for example the energy aspects of Code Level 6 coming into force in 2016 require 70% of regulated heat energy demand coming from on-site measures).
- 5.2.14 The study notes that EfW is considered to be most viable in relation to i) employment with light industrial development and ii) urban mixed use development, of a low / medium density. This can be facilitated by the implementation of heat distribution pipework capable of supplying heat to developments from EfW plants.
- 5.2.15 Notwithstanding the above, waste planning policy will need to take account of major development sites identified in emerging local policy, in particular with regard to identifying potentially suitable locations for EfW / CHP and biomass sites, even if to discount their feasibility.
- 5.2.16 The study provides some guidance on the process, criteria for location and required infrastructure associated with development of an EfW plant and its connecting heat piping.

Waste streams

- 5.2.17 The study suggests that SCC should promote initiatives for the separation of organic waste and the generation of secondary recovered fuel to maximise EfW potential. Alignment, as far as is practicable, between waste management policies and practices, including as per the strategy of the Somerset Waste Partnership, and the thrust and policies of the WCS, will be important in aiding renewable and low carbon energy objectives. Closer alignment will, of course, mean that the aims and aspirations of the Strategy are more robustly deliverable.

Facilitation of biomass

- 5.2.18 The study recommends that TDBC, SDC and SCC should be active in setting-up a virgin wood and waste wood supply chain to facilitate easy adoption of biomass. An appropriate spatial framework is needed to deliver this (assuming a countywide adoption of a biomass resource). Furthermore, the functional relationship with other neighbouring LPAs and the role that they will play in establishing and delivery of the preferred strategy for biomass should be recognised in the waste LDF.

Waste Planning Policy

- 5.2.19 The recommendations in the study on waste planning policy follow an expected logic based principally on national and other well-established waste planning policy supported by a new investment fund (the low carbon infrastructure fund). Recommendations include the need for viability / feasibility testing of sites and potential development (e.g. EfW), reference to the waste hierarchy in the allocation of sites and the application of waste management policies, alignment of waste planning policy and waste management services, and considerations to be taken into account when identifying suitable locations for energy from waste sites (proximity to development, density of development to which the plant is servicing, economic viability of a plant, etc.).

5.3 Sustainable Energy and Buildings – Background Paper, October 2010

- 5.3.1 In addition to the Taunton and Sedgemoor PPS1 Supplement Study, SCC has supported South Somerset District Council (SSDC) in its in-house research on the potential for decentralised and renewable or low-carbon energy in South Somerset. This project is not as detailed as the TDBC / SDC study and the outcomes have yet to be finalised and published. Nonetheless, it helps to ensure that when writing its waste policy, SCC can take account of the quantum of development proposed in Yeovil – alongside Taunton and Bridgwater - which helps to integrate county policy with district policy. These three towns are the urban areas of Somerset likely to see most growth in the coming years.

Potential for low carbon and decentralised energy in South Somerset

- 5.3.2 The study identifies that the major scale of development proposed in the emerging Core Strategy, particularly the 3,700 dwelling urban extension at Yeovil, provides opportunities for the development of decentralised energy and sustainable buildings. Substantial use of decentralised and renewable or low carbon energy is likely to be required in addition to adopting more stringent energy efficiency standards, in order to meet the proposed CO₂ reductions (as an example, the study cites a scenario of a 3.5MW CHP plant, PV panels on each dwelling and four large scale wind turbines being required to meet these targets in South Somerset). Government analysis on viability of achieving required CO₂ reductions shows that biomass technologies are required to meet the higher standards.

- 5.3.3 Another key energy opportunity identified in the study is that provided by the diversion of waste into energy recovery processes. The study recommends that, to maximise the potential energy contribution from waste, measures should be taken by the appropriate authorities to promote the separation of organic waste and, potentially, the generation of secondary recovered fuel. This is consistent with recommendations from the PPS1 Supplement Study for Taunton Deane and Sedgemoor.

Energy from Waste

- 5.3.4 It has been suggested that, if one assumes that 25% of South Somerset's waste is diverted into energy recovery by 2020, waste could offer about 4MW of electricity and 8MW of heat. The study also highlights that there is anaerobic digestion potential from arisings generated in South Somerset for a centralised anaerobic digestion facility of over 1MW of electricity and 1.3MW of heat.
- 5.3.5 The study recommends that further research is required to understand the anaerobic digestion potential in more detail, particularly in the context of existing contractual obligations linked with the district's municipal waste and the demand for feedstock elsewhere in Somerset. The potential for the generation of biogas from waste in smaller-scale plants is also identified as an area where further research is needed and this could represent a potential option for market towns. The study also stresses the importance of linking any new energy from waste facilities to new development, in particular to enable effective use of the heat produced.
- 5.3.6 Any consideration of energy recovery in the manner suggested above should be undertaken in the context of the waste hierarchy, thus ensuring that recycling is maximised and that only residual waste is subject to the recovery option. Positive consideration of anaerobic digestion as a potential energy recovery option would be consistent with the Government's recent waste policy review.

Energy opportunities at the Urban Extensions

- 5.3.7 With specific regard to the proposed urban extensions, the study notes that the relatively high density of Yeovil's proposed urban extension (at least 50dph) would make decentralised energy more viable and given the mix of uses within the urban extension there is potential for district heating to be incorporated.

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5.3.8 The study also notes that, as a greenfield site without the constraints of extensive existing road network, buildings, contaminated land etc. the cost of bringing the site to the market may be less and there could be an opportunity to incorporate decentralised energy from the outset as part of an overall master plan.

5.3.9 Further research into the installation of biomass district heating and energy recovery from waste (for example, through anaerobic digestion) as part of the development of Yeovil's urban extension is recommended. This will require close engagement with SSDC and the promoters of the scheme.

Low Carbon Infrastructure Fund

5.3.10 The study identifies a requirement for a mechanism by which to secure delivery of the infrastructure required to deliver the sustainable energy, in particular the heat pipework. The study suggests that a funding mechanism will be required to support the delivery of relevant infrastructure. In principle this could be established and managed at a local authority level, with contributions recovered from developers as they come on board. The study suggests that further research is required on how such a mechanism would operate to encourage the delivery of relevant low carbon infrastructure. Comments on the appropriateness of this approach are made in the preceding section of this report.

Waste Planning Policy

5.3.11 The study also recommends that appropriate links need to be made between waste planning policy and local development documents, to help to support making the best use of locally-generated waste as a resource, including ensuring waste collection vehicles can access new developments, developers can maximise resource efficiency in their site waste management plans and occupiers can separate materials effectively. While these issues can be addressed at a high level within the Waste Core Strategy, the key development management policies will need to be incorporated within the District and Borough authorities' relevant LDDs, as the lower tier authorities will be the determining planning authorities except for those proposals which are county matters.

5.4 Waste Infrastructure Study, Draft - July 2011

- 5.4.1 This study was undertaken by Parsons Brinckerhoff (PB) on behalf of SCC as part of a project to deliver a sustainable waste to resources plan for the urban extensions planned for Yeovil and Taunton in Somerset, in accordance with the advice and guidance offered in Planning Policy Statement: Eco-Towns (Supplement to PPS1) published July 2009.
- 5.4.2 Both the Yeovil and Taunton Deane urban extensions have been conceived as being delivered in accordance with eco-town principles. As proposed exemplar developments, therefore, both urban extensions should surpass current best practice and be leaders on minimising and extracting value from waste.
- 5.4.3 The draft report on waste infrastructure provides guidance on what the extensions could and should achieve in relation to waste management and material resource efficiency. In order to do this, the report (inter alia): forecasts waste arisings for the urban extensions; sets ambitious but practicable targets for residual waste levels, recycling levels and landfill diversion; reviews and assesses the role that best practice approaches have on waste generation; assesses the potential synergies for co-management of municipal, commercial and industrial waste; and advises on waste infrastructure and technological options. It is suggested that the urban extensions would represent 'front-runners' in the move towards zero waste, with the potential for many of the recommended targets and measures to be rolled out within the wider SWP area at a future stage.
- 5.4.4 Draft targets are proposed, outlined in the table and text below. These draft targets will need to be carefully considered before determining or taking steps to implement any such targets.

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Summary of draft waste management targets for consideration

	Year one of occupation	2020
Household waste	70% recovery (recycling and other recovery)	75% recovery (recycling and other recovery)
	Year 1	Year X
	 <p>100% collection capture rate for 7 key material streams (paper, food, plastic, aluminium, glass, wood and textiles) phased in over time</p>	
	200kg of residual waste per person per year	
Commercial and industrial waste	70% recovery (recycling and other recovery)	75% recovery (recycling and other recovery)
Construction and demolition waste	Site recycling: 85% Demolition recycling: 90% Diversion from landfill: 90%	

Draft proposed targets – Household Waste

- 5.4.5 Research shows that at least 80% of household waste can be recycled or composted. This, combined with the recycling rates of the best performing UK local authority (62%) and eco-town target of 70% have been the basis for the setting of a **70% recycling / recovery target** for both eco-developments in year one of occupation. A target of 75% recycling/recovery has been set for 2020.
- 5.4.6 A target **100% collection capture** rate is recommended for the urban extensions for the seven key material groups (paper, food, plastic, aluminium, glass, wood and textiles as defined by Defra in the Waste Strategy for England 2007). This is a government target that, it is recommended, should be set initially for the eco-developments, with the intention of making it county wide when the eco-development infrastructure has been tried and tested. Currently, there is a gap between county capture rates and the 100% target, therefore, a phased approach will be necessary.
- 5.4.7 In line with the proposed recycling target and forecast waste arisings; **200kg of residual waste per person** has been set as a working target for the proposed eco-towns. This compares with a UK national target of 225 kg per person per year for 2020, and an eco town target of 150kg per person per year for the same time period. The amount of household waste generated and not recycled in 2009/10 in Somerset was 275kg per person.

Draft proposed targets – Commercial and Industrial Waste

- 5.4.8 With pressure to provide a more integrated approach to resource management and convergence in policy between business and household wastes, it is ambitious yet realistic to set commercial and industrial waste targets in line with household waste targets. Therefore the study recommends that a target of **70% recycling/recovery** is set for commercial and industrial waste arising from the eco-developments in year one of occupation. A 75% target has been set for 2020.

Suggested Best Practice Measures

- 5.4.9 Taking into account best practice and innovative technologies, a series of measures have been recommended for potential inclusion within the eco-towns in order to assist in pushing waste up the hierarchy, with consequential benefits for lower carbon development. These are summarised below.

- 5.4.10 The following practical measures have the potential to facilitate **waste minimisation** within the eco-towns:
- Provision of composting facilities in conjunction with residential dwellings with garden space (external compost bin / sealed internal organics storage bin);
 - Provision of communal composting facility for flats / apartment schemes (subject to management);
 - Implementation of master composters' scheme;
 - Establishment of local / community hub for exchange of unwanted items.
- 5.4.11 The following measures are important in facilitating waste **minimisation and recycling** by building occupiers, while at the same time ensuring that wider design and environmental aspirations for the proposed eco-towns are fulfilled:
- Ensure adequate provision of dedicated internal storage for both waste and recyclates, allowing occupiers to separate at source (both residential and commercial buildings);
 - Ensure adequate provision of dedicated external storage for waste and recyclates;
 - All waste/recyclate storage areas should be well located in relation to the property to facilitate ease of use;
 - All waste / recyclate storage areas should be well designed so as not to detract from the visual appearance of the property or the wider streetscene.
- 5.4.12 Similarly, the means of collection of these materials should be given careful consideration at the design stage. Recommended measures should include:
- For individual dwellings, there should be bin collection points adjacent to the highway where receptacles can be easily collected by collection crews;
 - Communal bin stores should be accessible to collection crews;
 - Access roads should be designed with sufficient space to enable the access and manoeuvring of waste collection vehicles, preferably in forward gear;
 - Ensure early consultation with SWP when considering waste collection requirements. This will include consideration and adoption of Developer Guidance issued by the SWP.

- 5.4.13 The report suggests the following planning mechanisms for ensuring that measures can be implemented in order to deliver the recommended waste targets:
- Introduction of design codes / SPG containing general principles to be adopted across the urban extensions as a whole;
 - Identification of specific infrastructure requirements within the design masterplan;
 - Introduction of a Community Infrastructure Levy tariff in respect of waste infrastructure;
 - Securing the delivery of development-specific measures via planning conditions / s.106 agreement.

5.5 Integrating energy from waste study – draft, May 2011

- 5.5.1 This report, undertaken by Parsons Brinckerhoff on behalf of SCC, reviews and updates evidence on opportunities for the integration of waste-to-energy into the proposed urban extensions. This forms part of the Waste to Resources Plan mentioned in section 5.4.
- 5.5.2 The energy from waste report includes (inter alia): an assessment of global best practice and potential application locally at the appropriate scale; consideration of the potential demand for heat within the study area; a review of potential technology options including Combined Heat and Power (CHP) and biogas generation through Anaerobic Digestion (AD); and an assessment of technology risks and the relative financial costs of schemes.
- 5.5.3 The report concludes the following:
- neither urban extension can deliver sufficient organic waste arisings to allow a viable self-supported AD facility;
 - district-scale catchment arisings would be the lowest capacity at which AD would be commercially viable;
 - there is clear potential to locate an AD facility at either location as part of an overall district heating scheme and integrated into a countywide waste strategy that identifies organic waste catchments and preferred locations for AD;
 - the key requirement is to ensure that district heating is provided for in the masterplan assumptions and subsequent planning consents;
 - there will remain a risk for a variety of reasons that AD does not get delivered at these locations and this highlights the importance of

ensuring that district heating is provided for – capable of being energised by a variety of methods; and

- there is scope for district heating to form part of the Core Strategy objectives for TDBC and SSDC; requiring robust development management policy for each authority setting out how this should be delivered against different scales and scenarios of development.

5.6 Site Waste Management Strategy – draft July 2011

5.6.1 This study was undertaken by Parsons Brinckerhoff on behalf of SCC and aims to deliver a site waste management strategy for the urban extensions planned for Yeovil and Taunton, to guide developers during the construction stages of the development. Again this forms part of the Waste to Resources planned mentioned in section 5.4.

5.6.2 The report seeks to evaluate current industry tools for estimating construction and demolition (C&D) waste. It provides an overview of all current techniques, their coverage and assesses their merit. Based on current benchmarking data, the report calculates waste arisings likely to be generated from the eco-developments at Yeovil and Taunton. It also considers the impact that future technological change, legislation and the effect best practice techniques will have on waste generation.

5.6.3 The report recommends a series of C&D targets for the eco-developments at Taunton and Yeovil, which include the following draft high level targets:

- Site recycling – 85%
- Demolition recycling – 90%
- Diversion from landfill – 90%

5.6.4 The report also recommends the use of a standardised approach to the preparation of Site Waste Management Plans for the urban extensions, and suggests that this represents a focal point for efficient and sustainable waste management practices during the construction period. It includes a recommended SWMP template, which builds on the expertise of WRAP⁶/BRE⁷ and allows for best practice waste management as standard.

⁶ Waste and Resources Action Programme

⁷ Building Research Establishment

SECTION 6

CONCLUSIONS AND RECOMMENDATIONS

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Overview

6.1.1 Effective planning is needed to encourage the use of unavoidable waste as a resource. With fossil fuel reserves declining, use of waste as an energy resource will become increasingly important. This can be considered alongside other measures to fulfil the role of waste in low carbon development. The Waste Core Strategy (WCS) will need to ensure that appropriate measures are included to facilitate the implementation of low carbon developments, both within the proposed urban extensions and throughout the wider county.

6.1.2 It will be important to ensure that the key issues identified within this Topic Paper are embedded within sections and policies of the waste LDF. Equally, where responsibilities lie with the District and Borough planning authorities rather than Somerset County Council, the latter will need to engage in appropriate dialogue with the relevant authorities.

6.2 Main conclusions

6.2.1 The following list provides a summary of the key issues that have emerged from this topic paper of general relevance to waste management and low carbon development, and which will inform the subsequent recommendations made in respect of i) the content of the WCS and ii) issues for discussion with the District and Borough planning authorities and / or the Somerset Waste Partnership.

6.2.2 The key issues emerging in respect of waste management and low carbon development are as follows:

- Waste management has an important role to play in the move towards low carbon development. Approximately 3% of the UK's greenhouse gas emissions come from waste and around 89% of emissions from waste come from landfill sites where biodegradable wastes decompose;
- There is a broad synergy between moving waste up the 'waste hierarchy' and achieving a reduction in carbon emissions;
- The Government is pursuing a transition towards a 'zero waste' economy where nothing is actually wasted and all resources are fully valued;

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- The recent review of national waste policy (June 2011) seeks to prioritise efforts to manage waste in line with the waste hierarchy and to reduce the carbon impact of waste;
- Measures to promote sustainable waste management and low carbon development are of relevance to all stages of a development's lifecycle;
- There is strong emphasis within Government policy on communities taking responsibility for their own waste, and, in turn, accruing the benefits associated with more sustainable waste management measures;
- The reduction / minimisation of construction and demolition waste provides a significant opportunity to implement the 'top rung' of the waste hierarchy, namely waste prevention;
- Local initiatives to recycle waste (such as SWP's successful SORT-IT initiative) are supported from a carbon perspective, regardless of whether there is local provision for the recycling of waste;
- Consideration needs to be given to the means by which the management of commercial and industrial waste can be 'driven up' the waste hierarchy in parallel with municipal waste;
- While energy recovery represents a more carbon efficient method of dealing with residual waste than landfill, and recent Government policy exhibits clear evidence of a convergence between energy and waste policy, it should be considered commensurate with its position in the waste hierarchy;
- Disposal occupies the lowest position in the waste hierarchy, having the greatest potential for carbon emissions, and so is the least desirable option for managing waste; and
- Particular opportunities to pursue the integration of sustainable waste management with low carbon development are presented by the urban extensions planned for Taunton and Yeovil.

6.2.3 In addition, the following conclusions have emerged from the content of a series of studies recently undertaken in relation to a range of low carbon, decentralised energy and waste planning issues:

- There is merit in considering the establishment of a low carbon infrastructure fund to raise the necessary funding for renewable energy infrastructure such as heat pipework;
- More detailed feasibility work is needed in relation to the integration of EfW into new developments;
- Further research should be undertaken to understand the potential for integration of anaerobic digestion facilities in new

development in Somerset, particularly in the context of existing contractual obligations linked with the district's municipal waste and the demand for feedstock elsewhere in the county;

- Somerset County Council should promote initiatives for the separation of organic waste and the generation of secondary recovered fuel to maximise EfW potential;
- Local authorities in Somerset should support the establishment of a virgin wood and waste wood supply chain to facilitate easy adoption of biomass;
- A combination of decentralised energy, on-site energy efficiency and reduction measures and building integrated renewables is likely to represent an effective approach to renewable energy supply in Taunton Deane and Sedgemoor (and potentially elsewhere in the county) ;
- Some potential may exist to link EfW to new build development in Taunton Deane and Sedgemoor, and similarly to the proposed urban extension in Yeovil, with the greatest potential achieved if EfW plants and their potential customers can be located in close proximity to each other;
- Appropriate links need to be made between waste planning policy and the District and Borough planning authorities' Local Development Documents.

6.2.4 With specific regard to the proposed urban extensions:

- While it is unlikely that either urban extension can deliver sufficient organic waste arisings to allow a viable self-supported AD facility, there is clear potential to locate an AD facility at either location as part of an overall district heating scheme;
- In view of the above, the key requirement is to ensure that district heating is provided for in the masterplan assumptions and subsequent planning consents in respect of the urban extensions;
- Further research into the installation of biomass district heating and energy recovery from waste (for example, through anaerobic digestion) as part of the development of Yeovil's urban extension is recommended;
- Consideration should be given to imposing a series of targets for recycling and residual waste within the proposed urban extensions in excess of those within the wider SWP area, with the potential for subsequent roll-out within the county at a future stage;

- There is potential for innovative waste management practices to be 'designed in' to the urban extensions from the outset;
- Consideration should be given to imposing specific targets for C&D waste for the proposed urban extensions; and
- A standardised approach to the preparation of Site Waste Management Plans, incorporating best practice, is recommended for the urban extensions.

6.3 Issues for WCS Policy

6.3.1 The following paragraphs provide a brief overview of those issues of relevance to securing low carbon forms of development when planning for sustainable waste management within the emerging WCS. The first paragraphs relate to ways in which the implementation of the waste hierarchy can be facilitated via planning policy, whilst the later paragraphs tackle issues specifically related to the delivery of schemes.

Waste Prevention

6.3.2 The minimisation of construction waste is a key opportunity to achieve waste prevention, which sits at the top of the 'waste hierarchy'. A clear, documented process is needed in order to plan effectively for waste prevention and the sustainable management of waste generated during the design and construction phases of new development. While there is a statutory duty under the Site Waste Management Regulations 2008 for the preparation of Site Waste Management Plans (SWMPs) in respect of larger development schemes (in excess of £300,000 in value), many proposals will fall outside of this threshold. Consideration should be given to planning policy measures that could be implemented in respect of requirements for predicting and auditing construction waste on such smaller projects.

6.3.3 While the above issues can be identified at a strategic level within the WCS, there will be a requirement for the policy provisions to cascade through relevant district authorities' LDFs, on the basis that , aside from 'county matters', the majority of relevant developments are determined at a local level.

Reuse and Recycling

- 6.3.4 New developments (both residential and commercial / industrial) should be planned to accommodate sufficient internal and external storage space for the separation and storage of recyclable materials to facilitate recycling. New developments should also be planned with adequate circulation space for RCVs. These mechanisms need to be embedded within relevant planning policy at district level, for which the WCS should provide the strategic planning policy context.
- 6.3.5 Appropriate policy mechanisms need to be embedded at the local level in order to secure the provision of adequate coverage of communal facilities and 'Recycling on the Go' facilities. In respect of the former, due consideration should be given to need, having regard to the coverage of kerbside recycling schemes. This could be achieved through requirements for, and appropriate provision within, design coding for new development.
- 6.3.6 Waste planning policy should provide an appropriate planning policy framework to encourage the development of local waste reprocessing capacity to minimise the requirement for waste to be transported outside of the county. In doing so, consideration will need to be given to the markets for the recycled products. Any such facilities will need to be subject to high standards of design and located having regard to amenity and transportation considerations.
- 6.3.7 Waste planning policy should also provide an appropriate planning policy framework in order to facilitate the provision of facilities that will maximise the reuse and recycling of waste (e.g. MRFs, transfer stations etc) so long as they are appropriately located having regard to amenity and transportation considerations and subject to high standards of design.

Recovery of Waste

- 6.3.8 The WCS should include policies that facilitate the development of appropriate energy recovery facility(s) in order to fulfil the county's shortfall in facilities for residual waste treatment (particularly in respect of C&I waste) and divert materials from landfill. The policy framework will need to be framed having regard to the principles of the waste hierarchy and the requirement for measures higher up the hierarchy to take precedence. Any such facilities will need to be subject to high standards of design and located having regard to amenity and transportation considerations.

Disposal of Waste

- 6.3.9 The WCS should be shaped to discourage the provision of additional landfill development, in accordance with the principles contained within the waste hierarchy, unless exceptional circumstances apply. Under such circumstances it would be important to ensure that need was demonstrated, having regard to other preferable means of dealing with inert wastes (higher up the hierarchy).

Specific requirements for assessing development proposals

- 6.3.10 It is recommended that considerations relating to low carbon development are incorporated within appropriate development management policies within the WCS, for the purposes of considering waste planning applications determined by SCC. Such considerations could include:
- Requirement to demonstrate the proposal's potential for driving waste up the hierarchy, thus reducing carbon emissions generated by landfill;
 - Requirement to demonstrate how the potential for the generation of emissions via the transportation of waste and materials has been minimised via location;
 - Requirement to demonstrate how the proposal intends to minimise the generation of construction and demolition waste;
 - Requirement to demonstrate how potential carbon emissions have been minimised via sustainable building design and layout;
 - Requirement to capitalise on potential opportunities for provision of power and or heat to adjacent developments.

Policy provision for the promotion of decentralised energy and associated measures

- 6.3.11 The conclusions of the studies described in Section 5 suggest that there is considerable merit in pursuing measures aimed at facilitating decentralised energy, when planning for new developments within the Somerset area, particularly in relation to the urban extensions. The WCS should include within its policy framework criteria designed to achieve these objectives, in order to ensure appropriate alignment between waste management policies and the delivery of low carbon objectives, the positive relationship of which has been illustrated throughout this report. Reference should be made to the potential positive role of innovative technologies in delivering these objectives.

Potential use of Community Infrastructure Levy for delivering low carbon infrastructure

- 6.3.12 Further consideration should be given to the establishment of a low carbon infrastructure fund, paid into by developers, for the installation of renewable energy infrastructure and/or other relevant measures. Potentially the most appropriate mechanism for implementing this would be through the Community Infrastructure Levy (CIL) which was introduced through the Planning Act 2008 and defined in more detail in regulations published in April 2010. Waste planning policy needs to ensure that an appropriate strategic framework is in place to facilitate further investigation of, and implementation of such a levy at the district level if deemed appropriate and establish how to balance the use of any such mechanism against more conventional measures (such as Section 106 and conditions).

6.4 Issues for discussion with District and Borough planning authorities

- 6.4.1 The following list provides a summary of issues that will need to be addressed via discussions / collaboration with the relevant district and borough local planning authorities. These include issues that might be best addressed through the individual authorities' Local Development Frameworks (LDFs) and, specifically, particular Local Development Documents (LDDs) within them.
- Discussion regarding best means of delivering funding mechanisms to facilitate low carbon energy supply and the extent to which a standardised approach might be agreed countywide or whether this is a matter for lower tier authorities to pursue, for example via CIL, individually;
 - Inclusion of appropriate local policy provisions (potentially via Development Management policies) in respect of Site Waste Management Plans, in particular for those developments that fall below the thresholds required by the SWMP Regulations 2008.
 - Inclusion of appropriate local policy provisions to ensure that new developments (both residential and commercial / industrial) are planned to accommodate sufficient internal and external storage space for the separation and storage of recyclable materials, and adequate circulation space for RCVs, in order to facilitate recycling. Review how best to endorse, adopt and promote the Developer Guidance issued by the Somerset Waste Partnership.

SECTION 6 CONCLUSIONS / RECOMMENDATIONS

- Inclusion of specific measures designed to facilitate low carbon / sustainable waste management practices within LDDs at district level, to include potentially:
 - Policy provisions in respect of implementing CIL for renewable energy infrastructure at local level;
 - Inclusion of district heating as part of the Plan Objectives in relevant LDFs being prepared in Somerset.
- Discussion of the most appropriate policy mechanisms by which to secure measures designed to plan for zero waste in the proposed urban extensions. This could involve the preparation of bespoke policy requirements within relevant LDDs for South Somerset and Taunton Deane respectively, or alternatively the incorporation of relevant design standards and developer requirements within SPD or Design Code documents as appropriate.
- Discussion of potential role of s.106 agreements and/or the Community Infrastructure Levy and/or other mechanisms in securing communal waste facilities and 'Recycling on the Go' facilities in connection with new developments;
- Discussion about increased provision of 'Recycling on the Go' facilities by the waste collection authorities;
- Liaison to ensure that relevant authorities provide continued support for kerbside sorting and collection schemes.