



Managing Waste in New Developments

Supplementary Planning Document Bedfordshire and Luton Waste Local Plan 2005

April 2006





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Prepared by



on behalf of







Funded through the Department of Environment Food and Rural Affairs Local Authority Support Unit







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Mid Bedfordshire District Council	Environmental Services, 23 London Road, Biggleswade, Bedfordshire SG18 8ER	01767 313137 customer.services@midbeds.gov.uk www.midbeds.gov.uk
South Bedfordshire District Council	Environmental Services, The District Offices, High Street North, Dunstable, Bedfordshire, LU6 1LF	01582 472222 waste.team@southbeds.gov.uk www.southbeds.gov.uk
Luton Borough Council	Waste Management Luton Borough Council, Street Services, Central Depot, Kingsway, Luton. LU4 8AU	01582 546768 wastecustomerservice@luton.gov.uk mailto:www.luton.gov.uk
Environment Agency (EA) <i>Regulates waste</i> <i>management activity</i> <i>under the Environmental</i> <i>Protection Acts. Issues</i> <i>licences for waste</i> <i>management activities</i> <i>including transport,</i>	Adam Ireland, Planning Liaison Officer, Environment Agency, Bromholme Lane, Brampton, Cambs, PE28 4NE	01480 483962 Adam.Ireland@Envrionment- Agency.gov.uk www.environment-agency.gov.uk

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Bedfordshire



4.4 Checklist for preparing a waste audit

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- Appendix B: Waste Local Plan Policies
- Appendix C: Summary of Building Regulations
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SUMMARY OF SPD CONTENT

What is it?

This Supplementary Planning Document (SPD) provides guidance on reducing, recycling and recovering waste during demolition, construction and occupation of new developments. This is in line with policies W5 and W6 of the adopted Bedfordshire and Luton Waste Local Plan 2005.

SPDs sit alongside development plans and they are an important consideration when planning applications are decided.

What does this SPD aim to do?

- To offer practical guidance to those involved in the development process to reduce, reuse and recycle waste.
- To influence the design of new development:-
 - to allow an efficient and effective waste management service to be provided.
 - to enable all occupiers to have the best opportunities to reduce, reuse and recycle waste.
- To improve skills in sustainable waste management by raising awareness and applying best practice.

What are the benefits to business?

Helps businesses by,

- Reducing the amount of construction materials that have to be processed, purchased and transported leading to cost savings. Around 10% of the total costs of the project can be saved and the real costs of waste management are around 10 times the cost of disposal alone;
- Getting increased value from salvaged materials; and.
- Showing commitment to environmental policy goals and Corporate Social Responsibility.

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- Reducing the amount of waste going to landfill;
- Reducing the amount of greenhouse gas emissions; and.

Helping to reduce the likelihood of pollution incidents on site.





What are the benefits to residents and the environment?

Helps give residents opportunities to recycle.

Helps the environment by:

- Reducing the amount of waste going to landfill;
- Reducing the amount of greenhouse gas emissions; and.

Helping to reduce the likelihood of pollution incidents on site.

Planning & Design

Careful planning and design for waste management at the outset can save time and expense later. Planning and design of a development project will comprise two key elements;

- Ensuring that waste can be easily and effectively stored and collected when the development is built through careful layout and design of buildings, external spaces and roads; and
- Reducing waste and maximising recycling and re-use during the construction of a development.

Key Principles in Layout and Design

- Ensuring waste/recycling storage areas are well located and designed in relation to the property;
- Ensuring a means of getting waste containers from the rear of the property to the front or where that is not possible, to create a suitable storage area;
- Providing a collection point nearest to the highway at which bins/sacks can be easily collected by collection crews;
- Provide communal bin stores where necessary that are fit for purpose, well located and designed and accessible to the collection crews; and
- Well designed storage areas should avoid blocking views between occupied rooms and the street and should be integrated into the development.

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Basic requirements for waste storage are also set out in the <u>Building Regulations</u> <u>Approved Document H (2002 edition)</u> and further guidance is provided in BS5906:2005 Waste management in buildings - Code of practice.

Construction Waste

More efficient use of waste in construction will help make the best use of resources. This can be done through on site management on materials and through maximising the use of recycled content.

Key issues for on-site management are;

- Avoiding over-ordering materials.
- Prefabrication off site to reduce off-cuts and product surplus.
- Segregation of waste materials on site to aid recovery.
- Re-use and refurbishment of existing infrastructure and materials.
- On site crushing and recycling of demolition waste.

Key issues for maximising the use of recycled content are;

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- Selection of products and materials with good practice levels of recycled content. Achieving 10% recycled content based on the value of the materials is seen as good practice.
- Efficient design to minimise the use and waste of materials.
- Use of renewable resources from legal and sustainable sources (such as timber)

There are many organisations which publish guides on best practice in construction and these include;

- Construction Industry Research Information (CIRIA) <u>www.ciria.org</u>
- Waste Resources Action Programme (WRAP) <u>www.wrap.org.uk</u>
- Building research Establishment (BRE) <u>www.bre.co.uk</u>

More details on these and other organisations is provided in the full SPD Document

Planning Applications

Waste Audits

Under Policy W5 of the WLP "proposals that are likely to generate significant volumes of waste ... will be required to include a waste audit as part of the application."

A waste audit is:

A waste audit is a written document which shows how opportunities for the reduction, recycling and re-use of waste during the construction and occupation of the development will be taken account of.

When is a Waste Audit required?

Development	Waste Audit required?
Major developments	Yes
Minor developments	No, a voluntary waste statement can be submitted

What needs to be submitted?

Two checklists have been designed for major and minor development proposals which aim to raise awareness of waste issues as early as possible in the development process. These are to be submitted with planning applications.

For larger projects applicants may also wish to refer to The Department of Trade and Industry Voluntary Code of Practice – Site Waste Management Plans. www.dti.gov.uk/construction/sustain/site waste management.pdf





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1. INTRODUCTION

1.1 Aims and Objectives

1.1.1 Purpose of SPD

The overall aim of the supplementary planning document (SPD) is to provide specific guidance on sustainable waste management during demolition, construction and occupation of new developments, in accordance with policies W5 and W6 of the adopted Bedfordshire and Luton Waste Local Plan 2005 (Appendix B).

A number of key objectives have been identified which are set out below.

- To offer practical guidance to those involved in the development process to reduce, reuse and recycle waste.
- To influence the design of new development:-
 - to allow an efficient and effective waste management service to be provided.
 - to enable all occupiers to have the best opportunities to reduce, reuse and recycle waste.
- To improve skills in sustainable waste management by raising awareness and applying best practice.

1.1.2 Relationship to other legislation and guidance

The SPD is intended to provide additional guidance in respect of Policies W5 and W6. The use of land, the location and arrangement of buildings on a site, so that appropriate provision is made for waste management is a matter for planning. It is recognised however that there are other legislative controls on aspects of waste management in new development such as Building Regulations. National policy is also continually evolving on this topic. Other more detailed guidance on waste management practice also exists. The SPD does not seek to replicate, cut across or detrimentally affect these other provisions. It does however seek to provide consistent guidance which is relevant to Bedfordshire and Luton and to cross reference to these other sources of information where appropriate. Other sources of relevant guidance can be found in Appendix F

1.1.3 What are SPDs?

SPDs are planning documents which sit alongside development plans. They may contain guidance which expands upon policies in the development plans. Although not part of the development plan, they are an important consideration when planning applications are decided. This SPD provides additional detail and guidance about how





Policies W5 and W6 of the adopted Bedfordshire and Luton Waste Local Plan 2005 (WLP) are to be implemented.

1.2 Who is the SPD for?

This document is intended to assist in preparing, assessing and determining planning applications. It will therefore be relevant to the following;

- Applicants, developers (including agents and consultants), contractors.
- Borough and District Councils in their role as Local Planning Authority and Waste Collection Authority
- Borough and County Councils in their role as Waste Planning Authority and Waste Disposal Authority.
- Members of the public and other interested groups.
- Environment Agency.

1.3 Preparing the SPD

The SPD has been prepared by consultants, Entec UK Ltd under the guidance of the SPD Working Group, which comprises representatives from the planning and waste management functions of Bedfordshire County Council, Luton Borough Council and the District Councils. The work of the consultants has been funded through the Department of Environment Food and Rural Affairs Local Authority Support Unit.

An important element of preparing an SPD is community consultation. Key stakeholders were given an opportunity to contribute to the preparation of the document through a workshop event.

1.3.1 Sustainability Appraisal/Strategic Environmental Assessment (SEA)

The SPD is required to undergo a Sustainability Appraisal (SA), which includes the requirements of the SEA Directive (2001/42/EC). This process provides a framework for assessing the performance of the document against relevant social, economic and environmental objectives. The SA report for this SPD was published for public consultation alongside the draft SPD. The final SA report is published with the adopted SPD.

1.4 What is the status of the SPD?

The SPD has been formally adopted by Bedfordshire & Luton Councils. It will therefore be an important (material) consideration in planning decisions. The SPD will be implemented mainly through the District and Borough Councils development control system.

The Councils will shortly be beginning the process of reviewing the Waste Local Plan and preparing new style development plan documents under the new planning system. As part of this process Policies W5 and W6 of the currently adopted Waste Local Plan will need to be reviewed. Once these policies have been amended or replaced as part of the review there will be a need to revise and update the SPD to reflect those new policies.





1.5 Background to Policy

1.5.1 Sustainable Waste Management

Principles and policies for sustainable waste management relevant to this SPD are set out in the following policy documents at the national, regional and local level.

1.5.2 National

National planning guidance on waste minimisation is principally contained in Planning Policy Statement 10 'Planning for Sustainable Waste Management' (PPS10) as well as the National Waste Strategy 'Waste Strategy 2000' (DETR) (as amended July 2005). Key objectives include;

- Driving waste management up the waste hierarchy (see Appendix F).
 - Providing a framework in which communities take more responsibility for their own waste.
 - Helping to implement the national waste strategy.
 - Securing recovery or disposal of waste without endangering human health and without harming the environment
 - Reflecting concerns and interests of communities, needs of waste collection authorities, waste disposal authorities and business.
 - Ensuring the design and layout of new development supports sustainable waste management.

In February 2006 the government published A Review of England's Waste Management Strategy – A consultation document: Department of the Environment Food and Rural Affairs. This refers to two policy instruments to secure improved resource efficiency and recovery of materials; Site Waste Management Plans (SWMPs) and the Code for Sustainable Homes.

SWMPs are referred to elsewhere in this document as a way of improving on site management of waste and the government will be consulting on the regulations to make SWMPs statutory.

The Code for Sustainable Homes issued for consultation in December 2005 and the final code is due to be launched by April 2006. The consultation supports the use of Site Waste Management Plans as well as helping the provision of recycling facilities within dwellings.

It is acknowledged that policy and regulations are changing rapidly in this field and that some of the standards set out in this SPD may in due course be covered by separate legislation. The SPD is however written in the context of current legislation and there is a recognition that it may need to be revised in due course as new legislation emerges. In addition current Building Regulations and the proposed Code for Sustainable Homes do not address all of the issues relevant to the layout and design of new development to encourage an effective and sustainable waste management service. As such this guidance is important in providing an overview of the planning requirements and cross referencing other relevant law, policy and guidance.

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1.5.3 Regional

The East of England Regional Waste Management Strategy supports collection and recycling schemes with a strong waste minimisation message, and encouraging waste minimisation and re-use in new developments. Waste minimisation and recycling/composting initiatives may generate a requirement for new development.

Policy 12 states that local authorities should include policies in their development plans which support in principle the infrastructure required to implement waste minimisation and recycling/composting initiatives. Policy 13 states that in order to maximise recycling/composting, Waste Disposal Authorities, Waste Collection Authorities and private sector waste management companies should introduce separate collection of recyclable and compostable materials as early as practicable.

Where practicable, municipal, commercial and industrial wastes should be sorted into similar types of material (for example, paper and card, plastics etc) in order to maximise their potential for recycling/composting. In the case of households this will entail the provision of facilities for the collection of separated wastes normally involving the provision to households of receptacles for organic waste, paper and dry recyclables.

The Draft East of England Plan contains several key principles;

- seeking to reduce the generation of waste;
- minimising the environmental impact of waste management;
- implementing the Best Practicable Environmental Option for each type of waste;
- viewing waste as a resource and maximising the reuse, recycling and composting of waste, whilst extracting value from the remainder securing safe treatment and disposal of hazardous and residual wastes;
- seeking to secure net regional and county/unitary self sufficiency in provision for waste management; and
- enlisting and encouraging community support and participation.

The Plan contains a policy "to ensure that all forms of new development are designed and constructed in such a way as to minimise the production of waste, maximise use of recycled materials, and to facilitate, by provision of adequate space and facilities, the ongoing recycling and recovery of such waste as may arise from the completed development and from surrounding areas where appropriate."

1.5.4 Local Level

The Bedfordshire and Luton Minerals and Waste Local Plan 2000-2015 requires management of wastes at source and the provision of facilities with new development. The LPA will require the provision of appropriate waste sorting, recovery and recycling facilities for development areas for 100 or more dwellings (Policy W6). Policies intend to ensure that waste management issues associated with both construction and operational phases of the proposal are considered at the design stage and that suitable measures are incorporated to minimise waste and facilitate recovery of resources from





waste. Policy W5 states the need for waste audits for proposals that are likely to generate a significant amount of waste through the development or operational phases.

The detailed policies are set out in Appendix B.

1.5.5 Links to Community Strategies

The Bedfordshire Community Strategy 2003-2013 states that inefficient use of resources generates large amounts of waste that have to be managed. Waste has traditionally been disposed of to landfill but this is not a long-term solution. There is a need to reduce the amount of waste produced through more efficient use of resources and a need to change the way we manage it. Sustainable waste management (reduce, reuse and recycle) practices offer solutions, but barriers to success still exist, such as the cost and ease of recycling for all communities. The key agencies involved in waste have come together to produce a sustainable waste strategy which aims to take waste management in Bedfordshire on to a more sustainable footing.

The Luton Community Strategy 2002-2012 seeks to reduce household waste, increase household recycling and increase re-use and recycling in businesses.

1.6 Bedfordshire and Luton Waste Local Plan

The SPD has been prepared in accordance with Policies W5 and W6 of the adopted Bedfordshire and Luton Waste Local Plan 2005. These policies are set out in detail in Appendix B.





2.1 What is a waste audit?

Bedfordshire

Under Policy W5 of the WLP "proposals that are likely to generate significant volumes of waste will be required to include a waste audit as part of the application."

A waste audit is a written document which shows how opportunities for the reduction, recycling and re-use of waste during the construction and occupation of the development will be taken account of.

It will often be appropriate for waste audits to form part of a wider sustainability statement to accompany planning applications. Some local authorities have Sustainability Checklists¹ for developers which include other topics such as energy, water, transport, design as well as waste. This SPD should be seen as complementary additional guidance to these checklists and can be used to enhance the waste element of a sustainability statement.

2.2 What are the benefits of a waste audit?

The process of waste auditing allows developers to consider how waste will be managed in new developments and hence how they can contribute to sustainable development. Good waste management practice has economic, environmental and social benefits². Some examples of this are listed below;

- Reduces the amount of primary construction materials that have to be processed, purchased and transported leading to cost savings. The costs of waste management can be around 10% of the total costs of the project and the real costs of waste management are around 10 times the cost of disposal alone.³
- Reduces the amount of waste going to landfill and reduces the amount of greenhouse gas emissions.

³ Environment Agency SITEwise campaign "Why Bother" 2003 (http://www.environment-agency.gov.uk/commondata/acrobat/1201_why_bother_652211.pdf)



¹ <u>South Bedfordshire District Council Sustainability Ticklist – A developers guide August 2005</u>

Luton Borough Council – Designing for Sustainability – Supplementary Planning Guidance January 2003

² The SPD Working Group comprises officers representing the planning and waste management services from Bedfordshire County Council, Luton Borough Council, Mid Bedfordshire District Council, South Bedfordshire District Council and Bedford Borough Council Demonstrating waste minimisation benefits in construction (C536) CIRIA 2001



- Efficient waste management will reduce the likelihood of pollution incidents on site.
- Increased value from salvaged materials.
- Demonstrates commitment to environmental policy goals and Corporate Social Responsibility.
- Helps give residents opportunities to recycle effectively.

2.3 Key principles of Waste Auditing

- Waste auditing is of value to all developments in helping to minimise waste generation in developments
- Only developments which generate "*significant volumes of waste*" as set out in Policy W5 will be required to submit a waste audit.
- Developers should liaise closely with Waste Collection Authorities and Planning Authorities before submitting their application.
- Waste audits should form part of the supporting information for a planning application.

2.4 When is it required?

The principles of sustainable waste management practice should apply to <u>all</u> <u>developments</u>. This includes new buildings and engineering operations, change of use, refurbishment and conversion. It is recognised however that waste auditing will only be required for new developments. It is also true that the larger developments will tend to have greater implications for using resources and generating waste. However the cumulative impact of a large number of small developments can also be significant.

2.4.1 Thresholds

The requirement for waste audits should be realistic and should be appropriately related to the scale of development proposed. It is therefore appropriate to set thresholds at which the waste audit requirement should apply. In line with the policy the Councils consider that this should be related to the volumes of waste likely to be produced during construction and occupation. The volume of waste will relate broadly to the scale of development although more waste may be generated from using previously developed land or buildings. In order to provide practical guidance which is easy to implement, the thresholds relate to those currently recognised within the planning system. This assumes that larger developments will generate significant quantities of waste. There may be exceptions to this general rule and where applicants are able to demonstrate that the level of waste generated is not significant, a full waste audit may not be required. The Councils would expect the applicant to provide information regarding the estimated quantities of waste likely to be produced and a

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justification as to why this is not considered significant.

Many of the detailed requirements for new development will, of course, be similar for both small and large developments e.g. space requirements for waste storage in new dwellings. In some cases different issues may be raised by larger developments such as the provision of or contributions towards centralised facilities which may be required. It is therefore important that waste audits are tailored to reflect these different elements.

Developments have therefore been categorised into four groups as follows;

2.4.2 Major developments requiring Environmental Impact Assessment (EIA)

Certain major developments (see definition below) which have significant environmental effects are required to undergo an EIA under the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999. These regulations set out in more detail the types of development and circumstances where EIA is required.

Under the EIA Regulations and accompanying government guidance⁴ the effects of a development on waste is a relevant consideration.

2.4.3 Major developments

This category includes developments which fall into the definition of "major" development used by the ODPM and set out in the General Development Procedure Order (GDPO) 1995 (i.e. > or = 10 dwellings or other developments over 0.5 Ha or $1000M^2$ gross floorspace). These are considered to generate significant volumes of waste during their lifetime.

2.4.4 Minor developments

This category includes developments which fall below the GDPO definition set out above. This includes individual domestic extensions, and other minor engineering or construction works, new dwellings, and smaller industrial, commercial, leisure and retail buildings, car parks, new roads and other infrastructure.

2.4.5 Waste Audit Checklist

The level of detail required for a waste audit will vary according to which category the development falls into. This is based around the checklist in Section 6 which also indicates the recommended levels of information for each category of development.

In the case of **minor** developments, applicants can submit an optional Waste Audit which addresses the key issues in the Waste Audit checklist.

In the case of **major** developments, applicants are expected to complete a waste audit statement as a component of a design statement prepared with a planning application.

For major developments requiring EIA, the waste audit should form part of the

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Circular 02/99 Environmental Impact Assessment



⁴ EIA – A guide to procedures



Environmental Statement, and the applicant is expected to provide both an overall strategy for waste management in the development as well as a more detailed audit. The latter could, in the case of outline planning applications, be dealt with through the submission of reserved matters.

Category	Type of development	Waste Audit required
Minor Developments	Less than 9 dwellings or less than 1000M ^{2 or} 0.5Ha of other development.	Waste Audits are voluntary
Major developments	10 or more than 10 dwellings or more than 1000M ² ^{or} 0.5Ha of other development.	Waste audit statement required as part of design statement prepared with planning application.
EIA Developments	Developments requiring an Environmental Impact Assessment.	Waste audit should be a component of the Environmental Statement and should include an overall strategy for waste management for the development.

Table 1. Summary of thresholds for waste audits







2.5 How should it be carried out?

The diagram below illustrates the relationship preparing the planning application and the waste auditing process.



2.5.1 Before submitting a planning application?

On larger development sites it is now common practice to prepare Development Briefs and/or Master Plans which may in themselves be adopted as Supplementary Planning Documents. Waste management should be an essential element in preparing a Development Brief. Although it is not appropriate to go into detail in these documents, it





will be possible to set out overall design principles for waste management. A full waste audit is unlikely to be necessary at this stage however some assessment does need to be carried out to feed into the Development Brief/Master Plan

In all cases developers are urged to enter into pre-application discussion with the Local Planning Authority regarding their proposals and the implications for waste management. Developers are also advised at this stage to discuss their proposals with the relevant Waste Collection Authority (contact details are provided at the beginning of this document).

2.5.2 Planning applications

Applicants/developers will be required to prepare and submit a Waste Audit to accompany their planning application. This must address the key criteria set out in Policy W5.

- a) "Anticipated nature and volumes of waste that the development will generate."
- Where appropriate the steps to be taken to ensure the maximum amount of waste arising from the development on previously developed land is incorporated within the new development." – This should include addressing the potential for on site processing and re-use of recovered materials and demolition waste.
- c) Steps to be taken to ensure effective segregation of wastes at source including, as appropriate, the provision of waste sorting, storage and recovery and recycling facilities – This may include the on-site segregation of waste during the construction phase and measures for its re-use, recycling or recovery. It should also address the provision of facilities to enable recycling and re-use within new development once they are occupied e.g. storage space, bring sites.
- d) Any other steps to be taken to manage waste that cannot be incorporated within the development or that arises once development is complete – Even with effective on site management there may be residual wastes which cannot be dealt with. Measures should be set out as to how this waste is to be management e.g. removal to off site recycling facility.

A checklist is provided in Section 6 to assist in preparing a waste audit. Further guidance is also set out in the DTI voluntary code of practice⁵. This is a voluntary code of practice and as such approval of SWMPs is not required by the planning authority. However, developers may use them to address the construction phase of the required Waste Audit.

2.5.3 What if the application is for outline planning permission?

Where the details of the application are undecided, an outline Waste Audit should be submitted although this may only deal with broad principles of waste management in

⁵ DTI Voluntary Code of Practice for Construction Contractors and Clients Site Waste Management Plans 2004

http://www.dti.gov.uk/construction/sustain/site waste management.pdf





the development. It should contain a commitment to achieving high standards. A more detailed audit covering tonnages, methods and timescales should be submitted as part of the reserved matters applications.

2.6 What happens if a Waste Audit is not submitted?

It is not appropriate to defer the submission of Waste Audits through the use of planning conditions (except in the case of outline planning applications). The waste audit is important for decision makers to be able to take waste issues into account.

Local Planning Authorities are able to refuse planning applications if insufficient information is provided to allow them to determine the effects of the development. This could also apply to waste audit information where the Local Planning Authority consider that the applicant has failed to comply with Policy W5 or W6 of the adopted Waste Local Plan. In practice where relevant waste information is not submitted Local Planning Authorities will request that this is submitted prior to determining the application.

2.7 How can the requirements of a waste audit be controlled, monitored and enforced?

2.7.1 Use of planning conditions and legal agreements

Ensuring that the requirements of a waste audit are carried out is a key concern. Planning conditions can be imposed to require waste audits or particular key requirements to be adhered to. Some potential standard conditions are set out below in Appendix D.

In the case of waste audits during the construction phase, it may assist monitoring and enforcement if a requirement is imposed for periodic reports to be submitted on how the audit is being complied with. For large scale developments, planning obligations⁶ may be a better approach.

Planning obligations will also be required where a financial contribution towards provision of facilities on or off site has been agreed.

2.7.2 Enforcement

Local Planning Authorities have a number of powers available to them to enforce planning control. These would apply equally to non-compliance with requirements relating to waste management in new development. For example it is possible to serve a Breach of Condition notice where there is clear evidence that a planning condition has not been complied with.

Some local planning authorities have Enforcement Policy Statements or guides7

⁷ <u>Bedford Borough Council – Enforcement Policy Statement</u>



⁶ Planning obligations are either agreements (usually between the local planning authority and developer) or unilateral undertakings by the developer, designed to make development acceptable in planning terms. They are used where planning conditions are not appropriate. They must meet the test set out In Circular 05/2005 Planning Obligations ODPM



(examples are given in the footnote) which set out their approach to planning enforcement.

Details of relevant local authority contacts for enforcement are provided at the beginning of this document

Mid Beds District Council – Enforcement Guide





3.1 Introduction

Careful planning and design at the outset can ensure that opportunities for sustainable waste management are secured. There needs to be an opportunity for consultation on the design of any new development with regard to waste and recycling facilities. This ensures that any introduced facilities are compatible with the collection systems operated by the Council and its operators. In order to achieve this objective, all premises should provide adequate storage facilities to contain waste, enable easy access for kerbside collections and secure sites for community recycling e.g. bring sites.

Good waste management practice should be considered at the earliest stages of the design process and details included on drawings submitted to the Council when applying for planning permission. There are a number of tools available to developers and planning authorities to facilitate the design process including development briefs, master plans, sustainability checklists, design guides and design coding. Further advice on using these techniques is provided elsewhere⁸. However, it is important that waste management is seen as an essential consideration alongside all other design factors for new development. The guidance in this section is intended to complement guidance on residential design⁹ which Local Planning Authorities may have prepared.

Planning and design of a development project will comprise two key elements in terms of waste management;

- Enabling efficient and effective waste storage and collection when the development is built through appropriate layout and design of buildings, external spaces and roads.
- Reducing waste and maximising recycling and re-use during the construction of a development.

These two key elements are dealt with in the following sections.

3.2 Waste storage and Collection

3.2.1 Introduction

Recycling and recovery of waste is much more effective when various types of waste are kept separate at their point of origin. As a rule, once waste streams become mixed, they will be difficult or impossible to separate, and opportunities for recovery will be significantly reduced.

⁹ For example <u>Design Guide for Residential Areas in Mid Bedfordshire</u> March 2005



⁸ See CABE <u>www.cabe.org.uk</u>, ODPM <u>www.odpm.gov.uk</u> Urban design in the Planning System



The local authorities in Bedfordshire and Luton have therefore developed systems to enable source segregation of household wastes. These systems for operate in the kerbside collection rounds and also by provision of a network of fixed deposit points for (bottle banks etc.). We have also established seven major household waste recycling centres.

Together, these systems have enabled us to dramatically improve household waste recycling, in Bedfordshire going from around 6% in 1999 to around 30% in 2005, and in Luton rising from 8% to 25%. We are continuously developing and improving our collection systems so that we can achieve even higher rates in the future.

With this in mind, the aim of this guidance is to provide advice to developers and architects when planning and designing the layout of new development, modernisation or change of use. New developments should be flexible enough to accommodate different collection systems and the potential for future changes.

3.3 Household Waste Storage

General

Basic requirements for solid waste storage are set out in The <u>Building Regulations</u> (<u>Amendment</u>) 2001 <u>Approved Document H (2002 edition</u>) (Part H6). Section 46 and 47 of the Environmental Protection Act provides guidance regarding the storage of recyclable waste. For information, the key requirements of this guidance are set out in Appendix C.

Further guidance is also provided in BS5906:2005 Waste Management in Buildings Code of practice.

As advised in BS 5906:2005, developers should liaise closely with the Waste Collection Authorities over the particular requirements of the different types of storage and collection systems that are in place or planned for the future.

3.3.1 Waste Storage within the Home

The success and achievement of both nationally set County Council and District Council waste diversion targets is increasingly reliant upon dealing with household waste at source. This starts at the point of manufacture and the retailer but also requires major involvement on behalf of home owners.

Although waste storage within the home is outside the scope of the planning system, sorting and segregating materials at home is essential to the success of recycling and re-use schemes in the community. It is good practice for new residential developments to provide adequate storage space in their designs, for the appropriate in-house storage of recyclables.

This matter is also cover by The Building (Amendment) Regulations 2001: Solid Waste Storage Requirements (Part H6, 2002 Edition) and is again summarised in Appendix C.

The emerging ODPM Code for Sustainable Homes includes the provision for storage space for recycling within new homes.





3.3.2 Design

Urban design guidance requires that buildings and open spaces should be positioned and designed to reinforce natural surveillance over public and shared semi-private spaces from occupied buildings. Bin spaces located on the street-elevation of buildings must therefore be designed and sited to avoid blocking the natural surveillance between the occupied rooms of homes and the street.

Opportunities should be taken to integrate the design of external bin storage with the building facade, or as an element of the semi-private outdoor space between the building and the street. Whilst the visual impact of communal bin spaces on public areas needs to be taken into account, they need to be located to allow good access, and in a position which does not create an isolated space hidden from the view of overlooking buildings. The location of communal bin areas within a shared private courtyard with vehicle access enables the area to be out of sight from public view, whilst retaining a degree of natural surveillance from overlooking dwellings.

3.3.3 External Household Waste Storage



BS5906 Waste management in buildings, Code of practice also provides further guidance on this matter.

Individual properties without communal bin-stores

Managing Waste in New Developments Supplementary Planning Document



Now



All new building developments for which communal bin-stores are not planned should provide adequate external space (footprint) for the accommodation of refuse and recyclables, stored in the containers designated by the Waste Collection Authority. A minimum footprint size of 0.75m x 2.04m should be provided per property. This amount of space allows for the storage of three 240 litre wheeled containers.

All containers will be required to be placed in designated areas by residents, but it is the responsibility of the developer to clearly dedicate the area for the correct purpose using signs or markings as necessary. This area should meet the dimension criteria stated above and be within 2 metres of each property's boundary.

These areas should be designed in such a way as to discourage residents using the space for alternative purposes, such as parking.

The maximum distance that the Waste Authority is required to carry waste from the storage points to the waste collection point is set in the Building Regulations at 25m.

Developments with communal bin-stores

All new building developments for which communal bin-stores are planned should provide adequate external space (footprint) for the accommodation of refuse and recyclables to be stored in the containers as designated by the WCA. A total of 180 litres of waste storage space should be provided per dwelling of two bedrooms or less, with 240 litres provided per dwelling of more than two bedrooms.





The dimensions of typical wheeled bin containers are as follows. Bin stores should be designed with these dimensions in mind.

Container Volume (I)	Container Height (mm)	Container Width (mm)	Container Depth (mm)
140	1070	480	550
240	1070	590	740
360	1090	600	880
660	1190	1220	770
1100	1470	1380	1090







Height

3.3.4 Composting



The Waste Hierarchy places waste reduction as the most important method for dealing with household waste. Composting the organic element of municipal waste ensures recycling takes place at the source. It is regarded as more sustainable to prevent material entering the waste system than to deal with it once it has entered, as long as it is diverted in an appropriate and legal manner. For example, the burning of household and most garden waste is not encouraged and in many cases is illegal. Often, composting is perceived negatively by occupants, therefore educational support for composting should be provided from the outset to increase residents' awareness of waste as an environmental issue.

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Best Practice Example: EcoTeams in Nottinghamshire Organisation: Global Action Plan Location: Broxtowe, Nottinghamshire

Theme: Recycling

This project will develop the scope and cost effectiveness of a successful pilot project currently running in Rushcliffe that has helped households to cut their waste by an average of 50 per cent. Residents from three areas of Nottinghamshire will adopt measures at home that will result in improved rates of waste recycling, reuse and composting. At regular meetings households will be provided with expert guidance, advice, motivation and practical ideas. Participants' raised awareness will lead to measured and sustained reductions in waste sent to landfill.

Properties provided with private gardens should be designed to incorporate an area suitable for the placement of one or more home composting unit. Exact dimensions of composting units are available from the appropriate WCAs. Alternatively, residents could be provided with a dedicated sealable storage bin for interior use.

Best Practice Example: Rockingham Estate, Southwark, London

Residents expressed an interest in starting gardening, composting and recycling schemes. The estate is a mix of high and low rise flats. Six large collection bins have been placed around the estate. This was promoted through the local free paper, posters and leaflets through people's doors.

Residents cultivate using the compost on allotment plots at the base of the tower block.

Multi-occupancy residents should be provided with shared composting facilities in communal gardens. However, in this case appropriate funding must be available for future maintenance and management.

3.3.5 Access for Collection

Road layout

In response to developments over a number of years which have given undue prominence to the accommodation of motor vehicles, current best practice guidance requires urban designers to consider the design of new residential development as a





process of place-making. The design of new developments should be based on a network of spaces rather than a hierarchy of roads.

The over-riding principles used in the design of movement networks in new development should be in accordance with the advice set out in (DETR, Places, Streets and Movement - A companion guide to Design Bulletin 32). The best contemporary designs seek to strike a balance between the practical requirements of car and service vehicle access and the creation of an attractive and high quality environment for all residents and visitors.



Wherever possible the vehicle movement network should be designed to avoid the need to reverse. This can easily be achieved by designing a connected network of streets which allow forward access by a full size refuse collection vehicle (RCV) throughout the development, by avoiding the use of cul-de-sacs.

Where it is not practicable to avoid cul-de-sacs or other 'dead-ends' within the layout, developers should design access routes and site turning circles to ensure that RCVs should not be expected to reverse a distance in excess of 15 metres in order to gain





access to either bin-stores or specified locations for the placement of household waste containers. Where reversing areas are necessary care should be taken to integrate them within the street-design – a dedicated 'turning-head' should be avoided.

The construction of all access roads for refuse collection vehicles should be in accordance with the Design Manual for Roads and Bridges or any local interpretation of highway standards. In particular, roads and access routes should have suitable foundations and be made of a hard-wearing surface to withstand the carriage of a full size RCV. All manholes, gully gratings and other road features which are likely to carry the weight of the vehicle should also be built to a standard which can withstand refuse RCVs.

The Councils accept that there may not be comprehensive vehicular access to some properties and the nearest collection point is via pedestrian routes. In such situations a suitable area for waste collection should be provided so that collection crews do not have to transport waste more than 10 metres to the RCV. If greater distances are proposed, developers should discuss this with the relevant waste collection authority.

RCVs differ in size and shape depending upon the manufacturer, the chosen chassis, the compaction body and other specification elements so developers should always check with the relevant Waste Collection Authority as to the specification of the authority's collection vehicles. As a guide the appropriate dimensions of a typical RCV are illustrated below:



Medium Refuse Vehicle (3 axle)	
Approximate Length	9.0m
Approximate Width	2.5m
Approximate Body Height	3.8m
Min Body Ground Clearance	0.3m

Collection Point

Wherever possible, housing layouts should be designed to minimise the need to reverse RCVs. However where this is not practicable, developers should design access routes and site turning circles to ensure that Refuse Collection Vehicles should not be expected to reverse a distance in excess of 15 metres in order to gain access to either bin-stores or specified locations for the placement of household waste containers.

Waste Collection Authorities may also apply standard distances between the collection point and the public highway such that containers can be collected easily by collection crews. Advice on this matter should be sought directly from the relevant Waste Collection Authority. More information on this topic is also available in BS5906:2005 Waste management in buildings, Code of practice.





<u>Clearance</u>

Structures which cross the public highway should be designed in accordance with the Design Manual for Roads and Bridges suitable to an adoptable standard. Where private highways are proposed (and not anticipated to be adopted), consideration should be given to using the same standards.

<u>Kerbs</u>

Drop-kerbs should be provided within 10m of the location of the dedicated storage areas for containers. The top of the drop kerb shall be no more than 12mm above the highway surface. The pulling area should be free from permanent obstructions and have a suitable surface.

Provision for people with reduced mobility

As with all other services, it is important that waste management is accessible to those with reduced mobility including the elderly and disabled.

Waste Collection Authorities usually offer assisted collection services, by arrangement for people with restricted mobility whereby the waste is collected direct from the property.

The key issue for waste management is to ensure that residents are able to transport their waste easily to the collection point, therefore paths should be level or gently sloping and of adequate width. Basic requirements are set out in the Building Regulations.

3.3.6 Centralised Facilities

Bring sites/Deposit Points

For residential developments where the proposed number of dwellings exceeds 100 (both on one site and including phased developments where there is more than one developer involved), the developer may be required to provide a bring site or to pay a financial contribution to the authority for the upgrade of one or more existing local bring sites.



The extent to which a bring site is required, or a financial contribution¹⁰ is sought, will depend on an assessment of

whether the development creates or increases the need for such facilities and the existing provision in the local area. Developers should discuss these issues with the Local Planning Authority and Waste Collection Authority prior to submitting a planning application.

¹⁰ Any financial contribution sought should meet the test set out in Circular 05/2005 Planning Obligations





Major strategic developments would normally be required to make provision for one bring site for every 750 dwellings. The council will provide the containers for this facility but the developer should designate a 15m long by 5m wide area for them. Alternatively, consideration may be given to the provision of underground recycling banks where small posting units reduce the visual impact of more traditional recycling banks and have the advantage that they can be used by those with restricted mobility. For underground facilities, the void space required would have to be completely clear of services and cables. To prevent damage to overhead services during lifting and emptying of containers, no overhead services should be located within a horizontal distance of 5m from the kerb line and have a minimum overhead clearance of 10m from ground level. In addition, the distance between the centre line of the bin installation and the roadside should not exceed 2.5m to facilitate the lifting and emptying operation. If a shorter distance is proposed, developers should discuss this with the relevant waste collection authority.

Community Bring Sites will be in addition to the waste and recycling facilities accommodated for individual dwellings.

The criteria described in the 'Access for Collection' section of this document should be considered when designing the access to this designated area.

3.3.7 Household Waste Recycling Centres (HWRC)

For residential developments where the proposed number of dwellings exceeds 100, a financial contribution may also be sought towards the provision or upgrading of a HWRC.

As with bring sites, the question of whether a contribution is required will depend on the location and capacity of existing facilities and whether the development would increase the need for such a facility within the area. HWRCs tend to serve relatively large catchment areas and



it is therefore unlikely that a need for a new HWRC would be created solely for one development, except potentially in the case of major urban expansion areas.

It may however be appropriate for contributions from several developers to be pooled to fund a new facility. Draft policy guidance and approaches to developer contributions to be secured to be secured through S106 agreements is currently under preparation.

3.3.8 Commercial developments

Commercial premises are required, by law (Environmental Protection Act, Sections 46 & 47), to enter into a commercial waste agreement with a registered waste carrier for the collection, transportation and disposal of their waste. This carrier can be the local council but could also be one of the registered private firms operating in the area.

Developers should design multiple storage units that enable the storage of all wastes within the confines of the premises in suitably designed and enclosed facilities. As a general rule, every development should provide with adequate space in which to store separate containers for waste and recyclable material. The provision of a space for a compactor, and cardboard baler if necessary, should be considered in order to reduce the volume of waste to be stored and collected.





In most planning applications, space should be allocated for the storage of dry recyclable material. In designing storage space, consideration will need to be given to any specific requirements for separate storage that may be required by other legislation. For example, the Animal By Products Regulations 2005 require separate storage for raw meat and fish from other former foodstuffs.



All refuse should be contained in containers or as detailed within the Council's contract or in the specified container/sack of the chosen registered waste carrier's contract. Storage areas for waste and recyclable material should be clearly designated for this use only, by signage, and where appropriate, with floor markings.

In all cases, safe and convenient access should be provided for refuse collection vehicles taking account of advice on collection points given above. Where it is proposed to locate bulk waste storage containers in a basement area, inaccessible to a standard refuse collection vehicle, a suitable ground floor collection area must be indicated. In addition, a written statement must be attached.

Developers should design access routes so that Refuse Collection Vehicles should not be expected to reverse a distance in excess of 15 metres in order to gain access to either bin-stores or individual commercial units.

Premises visited by large numbers of members of the public, especially supermarket and other retail developments, may be expected to provide community recycling facilities for the segregation of waste, and other waste collection facilities for re-useable items.. Whether such provision is necessary will depend on the level of existing provision within the local area. Developers should therefore discuss this with the Waste Collection Authority prior to submitting their planning application.

In all cases, careful consideration will need to be given to the impact of waste storage and recycling facilities on the local environment and nearby residential properties. Access by large vehicles, may be a particular issue in environmentally sensitive locations such as Conservation Areas close to listed buildings or near to residential properties. In all instances consideration must be given to the sensitivity of location, the requirements for a vehicular crossover, and the likely constraints of headroom and turning space.

3.3.9 Mixed Developments

In instances where developments consist of both commercial and residential premises (mixed developments) there should be a clear separation between the areas designated for commercial waste and those designated for residential waste. This will





ensure that commercial waste does not enter the domestic waste stream.

Further guidance on this is provided in BS 5906:2005 Waste management in buildings. Code of practice.

3.3.10 Best practice examples

The following are examples of developments where waste management considerations have been incorporated into developments in the planning and design stage, often as part of a wider sustainability strategy.

The Wixams, Elstow, Bedfordshire

A development of 4500 homes, 1 million square feet of employment space, a railway station, shops, schools and leisure facilities.

A sustainability and energy strategy has been submitted setting out the principles for managing construction and demolition waste, provision of storage space in new dwellings, bring facilities, provision of information to new occupiers on recycling.

http://www.elstowgardenvillages.co.uk/index.asp?PageID=1

PROJECT: BEYOND THE BLACK BOX Organisation: The Recycling Consortium

Location: Bristol, Avon Theme: Recycling

The project aims to tackle waste streams and communities not currently served by the city wide multi material kerbside collection scheme. The three major strands of the project are to improve the use of mini recycling centres at multi occupancy buildings, improve the use of plastics bring banks in the city and promote and support home composting. The project will take a community development approach to engaging the public, including looking at providing incentives to recycling at multi occupancy buildings.

www.recyclingconsortium.org.uk

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Upton, Northampton – Design Codes

The development area of Upton is part of the much larger South West District of Northampton which lies between the existing town edge and new employment areas off junction 15A of the M1 motorway. The scheme, which will form a sustainable urban extension to the town, will include up to 1,200 new energy-efficient homes along with a range of facilities including a primary school, neighbourhood shops, a country park, playing fields, an interpretation centre and a local centre.

The developer will have to adhere to stringent environmental and building design standards in order to comply with the published *design codes* for Upton included in the development is provision for local sustainable and recycled materials to be used, storage space within the houses for recyclables. The codes enforce the requirements for built in waste management.

www.englishpartnerships.co.uk

BedZED, the Beddington Zero Energy Development, Beddington, Sutton

BedZED is an environmentally-friendly, energy-efficient mix of housing and work space

BedZED encourages recycling household and domestic waste at the source. The development incorporates a three bin system in both domestic kitchens and external bin stores. The BedZED specification sets a target of a 60% recycling rate. The average household disposes of about 1 tonne of waste per year. With a 60% recycling space a BedZED family will dispose of 0.4 tonnes of waste per year and recycle 0.6 tonnes.

http://www.bedzed.org.uk/





4. CONSTRUCTION AND DEMOLITION

4.1 Construction and demolition waste in Bedfordshire and Luton



In Bedfordshire and Luton in 1998/9 295,268 tonnes of construction and demolition waste was landfilled¹¹.

The recycling and recovery of C & D waste has improved in recent years as a result of the Landfill Tax and Aggregates Tax which have made it more commercially viable to undertaken recycling. As a result it is likely that developers and construction firms are already implementing some of the requirements of the SPD.

Indeed there is considerable guidance already available on minimising construction and demolition waste, examples of which are set out below. Rather than reproduce or re-state such guidance the SPD highlights some key issues and makes reference to other sources of guidance where they exist.

4.2 Making efficient use of resources

There are considered to be two aspects to the efficient use of resources – site waste management and the use of recycled content.

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¹¹ Waste Strategy for Luton and Bedfordshire 2001



A checklist is provided in Section 6 outlining the factors to consider during the construction phase of the development however more detailed guidance is provided elsewhere. Some examples of relevant guidance to which applicants should be referred is listed below.

4.2.1 Relevant guidance

The references provided below are intended to point applicants, agents, developers and contractors towards sources of information on construction and demolition waste management. The Councils are not recommending any particular approach however would expect applicants to show that they have used relevant sources of guidance which may include those listed below in preparing Waste Audits.

The Construction Industry Research Information (CIRIA) has published a number of best practice and guidance documents on minimising construction waste. A list of these can be viewed on the CIRIA website <u>http://www.ciria.org/cwr/projects_ciria.htm</u>

The Institution of Civil Engineers has published "<u>Planning for resource sustainable</u> <u>communities: Waste Management and Infrastructure -Code of Practice</u>". This document is designed to introduce the steps that should be considered for sustainable waste management in a community. The document provides a guide on the roles of those involved with the development, and sets 10 Sustainable Design Principles for consideration. The document also provides cross-references to other guidance and supporting tools which complement this Code.

In addition the Institute of Civil Engineers (ICE) working with the EnviroCentre and London Remade have also produced a <u>Demolition Protocol</u>. This document provides guidance on the on facilitating better resource use in construction through the planning system. In particular this refers to the potential adoption by planning authorities of





requirements for developers to provide information on the Demolition Recovery Index (DRI) and the New Build Recovery Index (NBRI).

Demolition Recovery Index (DRI) – an agreed demolition methodology which results in a requirement for audits to identify how much material can be recovered; material segregation practices and demonstration, through certificates and receipts, that material has been sold on to a material re-processor.

New Build Recovery Index (NBRI) – identification of how much demolition recyclate can be specified in the new build, followed by conditions/agreements on what is actually specified.

The DRI and NBRI are then used to give the development a scoring level based on the level of materials recovery.

The Waste Resources Action Programme (WRAP) has produced guidance and tools to assist developers seeking to incorporate materials with recycled content into construction projects. A list of this guidance can be viewed through the following link http://www.wrap.org.uk/publications/. Of particular relevance is <u>Opportunities to use recycled materials in housebuilding – A reference guide</u>. Software tools enable developers to estimate recycled content with minimum effort and identify Quick Wins These resources are available free of charge. Further details can be found at www.wrap.org.uk.

The Building Research Establishment (BRE) has developed the <u>SMARTWaste (Site</u> <u>Methodology to Audit, Reduce and Target Waste)</u> system provides a web-based, integrated, practical approach to evaluating waste and its generation. It can be applied to any waste generating activity, and has already been adapted and used for the construction, demolition and refurbishment industries. SMARTWaste can be used to identify the sources and types of waste, measure the quantities of waste and evaluate the causes.

The Building Research Establishments Environmental Assessment Method (BREEAM) has been used to assess the environmental performance of both new and existing buildings. It is regarded by the UK's construction and property sectors as the measure of best practice in environmental design and management. BREEAM (and EcoHomes for housing) can be used to specify the sustainability performance of their buildings in a way that is quick, comprehensive and visible in the marketplace. Further guidance is provided on the BREEAM website. <u>http://www.breeam.org.uk/</u>

In managing construction and demolition waste consideration should be given to environmental impacts and any consent which may be required. The Environment Agency provides a range of <u>guidance</u> for the construction sector including advice on waste management.

4.2.2 Good Practice on Recycled Content

The following section offers guidance on good practice to encourage developers to increase the recycled content of building materials used. It is based on guidance from the Waste Resources Action Programmes (WRAP) <u>www.wrap.org.uk</u>.





The use of construction products and materials with above average recycled content can make a significant contribution towards diversion from landfill. To deliver measurable performance good practice suggests that at least 10% of the total value of materials used in the construction project should be derived from recycled and re-used content in the products and materials selected¹². The developer should also be able to demonstrate that they have identified and implemented effective opportunities to increase the value of materials derived from recycled and re-used content, and quantify any improvements made. It is acknowledged that the level of recycled content which can be achieved may vary according to the nature of the specific development. There may for example be variations between greenfield and brownfield sites due to the extent of opportunity to demolish buildings and re-use material on site.

Meeting this good practice target does not require the evaluation of every single product. A developer can concentrate on those building elements (e.g. walls, floors) and products (e.g. concrete, blocks, boards) that contribute most significantly in exceeding the threshold requirement. On any project, typically there are 5-10 changes (or "Quick Wins") – usually simple product substitutions – that deliver most of the potential to increase recycled content without increasing risk or cost of materials. These include certain brands of available mainstream manufactured products (such as blocks) which offer above-average recycled content, as well as materials which have been recycled on-site such as crushed brick used for hardcore.

4.3 Best Practice Examples

The following are intended to provide some examples of good practice. They are not intended to set out particular requirements which would be expected of developers as these would need to be assessed on a case by case basis. However it is hoped that they will provide an idea of what can be achieved.

The % recycled content by value for the project overall is then calculated as this summation divided by the total cost of products/materials used on the project.



¹² The value of materials derived from recycled/re-used content may be calculated using the following summation: Σ_A (quantity of product A) X (as delivered unit cost of product A, excluding installation cost) x (% recycled/re-used content by mass of product A).



Luxury Housing development, Laing Homes

Key features

- Contractual controls the project environmental plan incorporated waste minimisation and sub-contractors' obligations.
- Waste amounts recorded and different waste streams kept separate for easier re-use and recovery
- Re-use of materials from demolition.
- Efficient storage of re-usable products, e.g. timber pallets returned for re-use.
- Staff training and awareness.
- Use of standard dimensions to reduce potential for waste.

Facts and figures

- Recovery of 500 000 roofing tiles from demolished buildings for re-use.
- Re-use of 40 000 tonnes of demolition spoil as sub-base.
- Total cost savings of £525 000 (3.5% of project costs).
- $\pounds480\ 000\ saved$ from re-use of roofing tiles and demolition concrete.
- Waste disposal costs reduced by £600/housing unit mainly from rigorous segregation of different wastes rather than waste reduction.

GG493 Saving money and raw materials by reducing waste in construction: case studies Envirowise

Terraced House, Taylor Woodrow 2004

The study is based on a Taylor Woodrow 3-bed, 2-storey terraced house built in 2004. With a plan area of $87m^2$, this is a standard brick and block design. A 16% use of recycled content was achieved.

The analysis used real prices and information on materials availability and suitability, assembled by a group led by Costain and Taylor Woodrow, working with their supply chains.

Source: WRAP Case study

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East Thames Housing Association, Apartment Blocks

Project details

Bedfordshire

This scheme comprises 200 apartments for private and social housing, arranged in four high-rise blocks facing a new basin alongside an existing canal. The substructures include deep bored piles and sheet piling. The facade is lightweight render cladding with full-height glazing and an external glass and steel balcony. A 22% use of recycled content was achieved.

The study was based on package cost data to identify material costs. Quantities had to be measured from construction drawings to enable full analysis.

The analysis included products used in the substructures and external works.

Source - WRAP Case Study

Housing development, Great Bow Yard, Langport, Somerset, South West Eco Homes

Recycled materials 50% by volume and materials from sustainable sources As well as using recycled materials, sourced locally where possible, both wings will be designed so that materials can be recycled again at the end of the life of the buildings. Materials which require little maintenance and with longlife spans will also be chosen. Unnecessary waste generally will be kept to a minimum - in the design and construction and also during occupation where recycling and compost bins will be incorporated into the scheme.



Source: South West EcoHomes http://www.swecohomes.co.uk

- A. Reclaimed local roof tiles
- B. Reclaimed local bricks for gable ends
- C. Timber balconies & cladding from sustainable
- sources D. Rubble and hardcore from site used in relandscaping of external areas
- E. Recycled aggregate used for substructure
- F. Timber louvres, cladding & decks from sustainabl sources
- G. Recycled steelwork used for structure







4.4 Checklist for preparing a waste audit

The following section sets out two checklists which can be used together with this guidance to provide information to the local planning authority on waste management in new development. The first checklist may be used with minor developments and is voluntary for such proposals. It is intended to help developers who may wish to consider the impact of their development on waste management.

The second list is designed for major developments, where waste audits are required. Again the checklist is intended to assist developers in complying with the requirements of the Waste Audit policy, W5.

For schemes over £200,000 in value the DTI recommend preparing a Site Waste Management Plan for construction and demolition waste.

The DTI Voluntary Code of Practice – Site Waste Management Plans can be downloaded here:

http://www.dti.gov.uk/construction/sustain/site waste management.pdf

The Site Waste Management Plan Checklist can be downloaded here: <u>http://www.dti.gov.uk/construction/sustain/SWMPchecklist.doc</u>

The Site Waste Management Plan Data sheet can be downloaded here: <u>http://www.dti.gov.uk/construction/sustain/SWMPdatasheet.doc</u>

In respect of waste management once the development is completed developers should seek advice from the Waste Collection Authority on local collection arrangements and requirements.





Waste in New Development - Voluntary Checklist for minor developments¹³

	Tick if Yes	If Yes what action do you propose to take, If No, why have you chosen not to provide for this?
Does your development;		
 Provide for adequate space outside the new building(s) for storing waste? 		
 Provide separate garden space for composting? 		
 Allow for convenient and safe access for collection vehicles? 		
 Give consideration to the needs of residents who have reduced mobility (e.g. elderly or disabled people) 		
Can you reduce over-ordering of materials so that site wastage is reduced?		
Are you able to make use of secondary and recycled materials?		
Can you re-use of materials on site wherever possible, including re-using demolition waste, in foundations, access roads and paths?		
Have you provided for separating waste material on site to aid re-use/recycling?		
Have you considered on-site re-processing of materials, wherever possible?		
Have you considered sending waste off-site for re- processing?		
Have you considered how and where any residual waste would be disposed of?		
Have measures been put in place for dealing with hazardous waste ¹⁴ arising on site?		

¹⁴ Hazardous Waste - Certain wastes are classified as **hazardous** - a very broad term for a wide range of substances that present different levels of risk. Some present a serious and immediate threat to the population and the environment, for example those which are toxic, could cause cancer or infectious disease. Others, such as fluorescent tubes or cathode ray tubes in televisions, pose little immediate threat but may cause long term damage over a period of time. The list of hazardous wastes is defined in the European Waste Catalogue. For further information contact the Environment Agency. Click <u>here</u>



¹³ Developments less than 10 dwellings or less than 1000m² or 0.5Ha of other development.



Waste in New Development - Checklist for major developments¹⁵

	Tick if Yes	If Yes what action do you intend to take, If No, why is this not provided for?
Does the development;		
 Provide for adequate space outside the new building(s) for storing waste? 		
 Provide separate garden space for composting? 		
 Allow for convenient and safe access for collection vehicles? 		
 Provide for or contribute towards centralised facilities such as "bring sites" where appropriate 		
 Give consideration to the needs of residents who have reduced mobility (e.g. elderly or disabled people)? 		
 Include measures to make potential occupiers/residents of waste facilities aware of waste/recycling facilities in the development.? 		
Canl you reduce over-ordering of materials so that site wastage is reduced?		
Are you able to use secondary and recycled materials?		
Have likely waste arisings been assessed? (how much, when and type)		
Have targets been set for reducing waste from the project?		
Can you re-use materials on site where possible, including re-using of demolition waste, in foundations, access roads and paths?		
Have you provided for separating waste material on site to aid re-use/recycling?		
Have you considered on-site re-processing of		

¹⁵ Developments of 10 or more dwellings or more than 1000m² or 0.5Ha of other development.





materials, wherever possible?	
Have you considered sending waste off-site for re-processing?	
Have you considered how and where any residual waste would be disposed of?	
Is there a process set out for monitoring waste minimisation measures?	
Is there an arrangement in place to report on the waste audit?	
Have measures been put in place for dealing with hazardous waste ¹⁶ arising on site?	
Are there measures in place to explain to site staff about good waste management practice?	
Are you aware of Duty of Care procedures, and any necessary consents required from the Environment Agency or Local Authority for managing wastes on site?	

¹⁶ Hazardous Waste - Certain wastes are classified as **hazardous** - a very broad term for a wide range of substances that present different levels of risk. Some present a serious and immediate threat to the population and the environment, for example those which are toxic, could cause cancer or infectious disease. Others, such as fluorescent tubes or cathode ray tubes in televisions, pose little immediate threat but may cause long term damage over a period of time. The list of hazardous wastes is defined in the European Waste Catalogue. For further information contact the Environment Agency. Click <u>here</u>



Datasheet

Type of waste arising	Quantity (M ³)				
	Re-used/recycled on site	Reused off site	Recycled for use off site	Disposal to recycling facility	Disposal to landfill
e.g. Inert					





Appendix A: Glossary

Table 4.1 Glossary of Terms & Abbreviations

Aggregates Tax		An environmental tax on the commercial exploitation of aggregate in the United Kingdom.
Bin stores		Designated areas for bins
Bring Sites		Bottle banks, Paper Banks etc
Community Strategy		Establishes a long-term vision for the area, taking into account wider regional and national visions for better quality of life
Corporate Social Responsibility		How companies manage the business processes to produce an overall positive impact on society.
Design Coding		A product derived from the consideration of relevant issues at a variety of different scales, ranging from the architecture of individual buildings to the layout of blocks and structure of public spaces. Design coding is focussed at an urban scale on the delivery of good quality and well designed places.
Design Guides		Guidance which sets out the design principles and guidelines to be followed by those involved in development.
Development Briefs		A planning brief may be required if the development plan and any existing supplementary planning guidance do not cover adequately site-specific issues which need to be addressed prior to the submission of a planning application
Enforcement		Powers under the Local Government Planning and Development Act where by councils can take enforcement action where development is in breach of planning laws and is therefore, considered to be unauthorised.
Environment Agency	EA	The body responsible for regulating waste management and pollution control in England and Wales.
Environmental Impact Assessment	EIA	A procedure for considering the potential environmental effects of land use change. EIA helps to inform decision making and enables decisions on land use change to be taken with full knowledge of the likely environmental consequences.

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	Bedfordshire	
General	GDPO	Article 3(2) of the General Development Procedure Order
Procedure Order		application for planning authonities the power to direct that an application for planning permission must be accompanied by such details as are specified. This power is provided to allow authorities to determine development in sensitive areas, such as that affecting Ancient Monuments or Listed Buildings, where the granting of an outline consent would be inappropriate.
Greenhouse gas		The gaseous components of the atmosphere that contribute to the greenhouse effect.
Household waste recycling centres		Places for the public to take items of household waste that are not suitable for collection by the household waste collection service. There are currently five in Bedfordshire.
Landfill Tax		A tax paid on top of normal landfill fees by businesses and Local Authorities who want to dispose of waste using a landfill site. It is designed to encourage businesses to produce less waste and to use alternative forms of waste management.
Local Planning Authority		Responsible for development control and forward/policy planning functions
Master Plans		Document that describes, in narrative and with maps, an overall development concept including both present property uses as well as future land development plans.
Refuse collection vehicles	RCV	A specific type of vehicle used for the collection of domestic waste including compaction.
SEA Directive		The assessment of the effects of certain plans and programmes on the environment, known as the 'strategic environmental assessment' or SEA Directive.
Stakeholders		Individuals, groups or organisations that are affected by and/or have an interest in a particular issue.
Standard conditions		Conditions that can be used by local authorities consistently
Strategic Environmental Assessment	SEA	A process for testing that environmental concerns are integrated into the policy appraisal of development plan preparation.
Supplementary Planning Document	SPD	Provide supplementary information in respect of the policies in Development Plan Documents. They do not form part of the Development Plan and are not subject to independent examination.
Sustainability Appraisal	SA	A tool for appraising policies to ensure they reflect sustainable development objectives (i.e. social, environmental and economic factors) and required in the Act to be undertaken for all local development documents.
Sustainable Checklists		A list against which sustainable elements of a development can be checked.

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LUTON Bedfordshire	
Sustainable Waste Management	Using material resources efficiently to cut down on the amount of waste produced. And, where waste is generated, dealing with it in a way that actively contributes to the economic, social and environmental goals of sustainable development.
Waste Audit	A formal, structured process used to quantify the amount and types of waste being generated by an organisation. Information from audits will help identify current waste practices and how they can be improved
Waste Collection Authority Waste Disposal Authority	Authority responsible for the collection of household and preparation of Waste Recycling Plans. Authority responsible for the disposal of local authority collected waste, and the disposal of waste delivered to Civic Amenity Sites or Household Waste Recycling Centres.
Waste diversion targets Waste Planning Authority	National targets set by the government for the diversion of waste from landfill. Bedfordshire County Council and Luton Borough Council





Appendix B

Waste Local Plan policies

Policy number	Topic	
W 5	. Management of wastes at source: Waste Audits	
Proposals that are likely to generate significant volumes of waste through the development or operational phases will be required to include a waste audit as part of the application. This audit should demonstrate that in both construction and operational phases of a proposed development, waste will be minimised as far as possible and that such waste as is generated will be managed in an appropriate manner in accordance with the Waste Hierarchy. In particular, the waste audit should include the following information:		
 a) the anticipated nature and volumes of waste that the development will generate; 		
b) where waste incor	 b) where appropriate, the steps to be taken to ensure the maximum amount of waste arising from development on previously developed land is incorporated within the new development; 	
c) the st inclue and r	eps to be taken to ensure effective segregation of wastes at source ling, as appropriate, the provision of waste sorting, storage, recovery ecycling facilities;	
d) any o incor is cor	ther steps to be taken to manage the waste that cannot be porated within the new development or that arises once development nplete.	
Before granting planning permission, the LPA will need to be satisfied that the measures identified in the waste audit represent appropriate waste management solutions in light of the Waste Hierarchy. Where appropriate, the LPA may require additional waste management measures in order to facilitate the movement of waste management up the Hierarchy.		

Now!



Policy number	Торіс	
W 6.	Management of wastes at source: Provision of facilities with new development	
The LPA will require the provision of appropriate waste sorting, recovery and recycling facilities for the following developments:		
a)	development areas for 100 or more dwellings;	
b)	 new development, redevelopment or refurbishment of shopping centres or facilities where the floor space of existing and new development amounts to 500m² or more; 	
C)	major transport, leisure, recreation, tourist or community facilities;	
d	 appropriate smaller developments which frequently attract a significant number of people (e.g. community or shopping schemes). 	

These policies apply to all forms of development, not just those minerals and waste developments classified as 'county matters'. As such, the policies will often fall to be implemented by District and Borough LPA's, rather than the MPA / WPA. The policies are intended to ensure that waste management issues associated with both construction and operational phases of the proposal are considered at the design stage, and that suitable measures are incorporated to;

- a) minimise generation of waste, and;
- b) facilitate recovery of resources from waste.

Construction Phase

The construction industry can contribute to national and local targets to reduce the quantity of waste sent for landfill disposal, through sustainable design and construction. During the construction process, waste can be:

- Minimised: CIRIA (Construction Industry Research and Information Association) have published a number of guides on how to minimise waste at the design and site levels. They have commissioned research that shows that on average 10% of raw materials delivered to construction sites are wasted;
- ii) Re-used: where a site is being redeveloped, low-grade waste from the demolition of existing structures can replace primary aggregates for general fill, backfill to drains, road sub bases, paths and car parking areas.
 'Architectural' items such as bricks tiles, slates, doors and windows can be re-used to blend new development in with existing features;
- iii) **Segregated:** source segregation is a key element in sustainable waste management, as it enables specific wastes to be directed to the most

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efficient recovery or disposal route. Some waste recycling contractors offer preferential rates where waste has been segregated at source;

iv) Recycled: Recycled aggregates are construction materials that have been processed either on or off site for re-use in the construction process. Secondary aggregates are mainly lower-grade materials such as colliery waste, power station ash, 'glasphalt' and china clay sand. These materials have the potential to contribute significantly to the overall supply of aggregates. The specification of recycled or secondary aggregates in construction can make a significant contribution towards national sustainable development policy in terms of waste management and minerals supply, particularly by enhancing demand for recycled materials and thus 'closing the loop' of resource recovery.

CIRIA also publish guidance on aggregate recycling and other construction issues (www.ciria.org.uk). The MPA supports construction waste minimisation, re-use and recycling as appropriate methods of conserving natural resources which accords with the concept of sustainability.

Aggregate recycling is another way that the minerals and construction industries can comply with the proximity principle, especially if the aggregate is re-used on-site, thus eliminating the need for the transportation of demolition wastes and primary aggregates. All development proposals will be required to demonstrate that waste minimisation, re-use and the use of recycled and/or secondary aggregate in the construction process has been considered.

Operational Phase

Bedfordshire

The way in which development is designed can greatly influence the amount of waste arising that will be sent to landfill by, among other things, ensuring that different waste types are separated at source and may therefore be managed more effectively than would be possible for a mixed waste stream. Waste management issues should be considered in all development likely to generate significant quantities of waste, but the measures to be taken in a particular development will need to be appropriate to its scale. On a small scale, this could mean the provision of a composting unit and the space to store three dustbins outside a house, together with appropriate interior design measures to facilitate segregation of wastes in the home. On a larger scale, appropriate measures could include provision of community 'bring sites', facilities to aid source separation of wastes in industrial units, and waste minimisation projects on new housing and industrial estates. Such facilities will generally be more effective and have least potential for negative amenity impact when built-in at the design stage.

The circumstances in which provision of the larger and more centralised facilities, such as community bring sites, would be appropriate will vary with the particular context of a development proposal, including its size, the quantities of waste anticipated and the existing level of waste management infrastructure provision in the locality. The planning authorities will gauge the adequacy of waste management proposals in light of these factors, and will require the provision of appropriate centralised waste sorting, recovery and recycling facilities for proposals that meet or exceed the thresholds of policy W 6. Provision of such facilities and, where necessary, appropriate ongoing management arrangements will be secured by use of planning conditions and/or

NOW

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planning obligations. The planning and waste disposal / collection authorities will work together to provide more detailed guidance regarding the nature, design and ongoing management of appropriate facilities.

Developers may find it useful to address the provision of waste related facilities as part of wider sustainability considerations, such as energy efficiency and water use. Developers are encouraged to conduct pre-application discussions with the planning authorities regarding these matters.

The WPA will work in partnership with the LPAs, WCAs and WDA to produce more detailed guidance regarding the implementation of policy W 6.





Appendix C: Summary of Building Regulations

The following table is a summary of the main provisions of The Building (Amendment) Regulations 2001 : Solid Waste Storage Requirements (Part H6, 2002 Edition) as they may relate to new developments.

Торіс	Guidance
Domestic Developments	
Waste/Recycling storage capacity	 0.25M³ per dwelling or such other capacity as may be agreed with the Waste Collection Authority Low rise developments (less than 4 floors) An area of 1.2m x 1.2m for waste/recyclable storage High Rise developments –Dwellings above the 4th floor may have a single container for non-recyclable waste with separate storage for waste that cannot be recycled. Alternatively storage compounds should be provided.
Siting	Storage areas should be sited such that householders do not have to carry refuse more than 30m (i.e. within 30m of the dwelling) Waste storage containers should be within 25m of the waste collection point specified by the Waste Collection Authority Slopes should not exceed 1:12 between the container store and the collection point Steps should be avoided. Collection point should be reasonably accessible to refuse collection vehicles. Waste storage areas should be away from windows and ventilators and preferably in shade or shelter. They should not interfere with pedestrian or vehicle access to buildings
Design	A clear space of 150,mm should be provided between and around containers. Enclosures, compounds or storage rooms should be a minimum of 2M high, ventilated ,have a paved impervious floor and be secured to prevent access by vermin
Non Domestic Developments	The Waste Collection Authority should be consulted with regard to the volume and nature of waste to be stored, the method, location and access to waste storage areas, hygiene arrangements and fire hazards.





Appendix D: Potential Standard Planning Conditions

1.1.1 Potential standard conditions

The conditions shown below are suggested as a guidance as to how the requirements of Policy W5 and W6 might be implemented through planning permissions. Not all of these conditions will be appropriate for all developments and their suitability should be assessed on a case by case basis.

Compliance with the Waste Audit

The development hereby permitted shall be undertaken in accordance with the approved Waste Audit (Ref)

Reason: to ensure that the development conforms with the waste audit requirements in accordance with objectives of Policies W5 and W6 of the Bedfordshire and Luton Waste Local Plan 2005.

Location of facilities/storage areas

Prior to the occupation of the development hereby permitted the areas allocated on Plan/Drawing No. to be used for the storage of waste/recyclate/compostable material shall be laid out in accordance with the details set out in the approved Waste Audit and shall not be used for any other purpose.

Reason: to ensure that dedicated storage areas for waste materials are provided and maintained as such. To accord with objectives of Policies W5 and W6 of the Bedfordshire and Luton Waste Local Plan 2005).

Monitoring reports

Prior to occupation of the development hereby permitted a statement shall be submitted to the Local Planning Authority demonstrating how the measures contained in the Waste Audit (ref...) have been implemented. The development hereby permitted shall not be occupied until the statement has been approved in writing by the Local Planning Authority

Reason: to ensure compliance with the Waste Audit and to facilitate monitoring of waste arisings from the development and implementation of ongoing waste management measures in accordance with objectives of Policies W5 and W6 of the Bedfordshire and Luton Waste Local Plan 2005.

NB –The condition could be modified to require occupiers of individual buildings/parts of the development not to be able to occupy until the monitoring report has been signed off. In the case of residential development a phased programme of reporting linked to completion/occupation of specified numbers of properties may be more appropriate.

Reserved matters condition for outline planning applications

Before the development hereby permitted is commenced a detailed Waste Audit addressing any the construction and subsequent occupation of the development has been submitted and approved in writing by the Local Planning Authority. The Detailed Waste Audit must be in accordance with the approved Outline Waste Audit (ref...). The Detailed Waste Audit must include details of;





1) The anticipated nature and volumes of waste that the development will generate.

2) Measures to maximise the re-use on-site of waste arising from demolition/engineering/landscaping.

3) Steps to be taken to ensure effective segregation of wastes at source during demolition and subsequent construction of the development including, as appropriate, the provision of waste sorting, storage and recovery and recycling facilities

4)) Any other steps to be taken to minimize the generation of waste throughout any required demolition and during construction of the development

5) Provision within the proposed development to encourage occupiers to manage their waste effectively and sustainably. This may include provision for waste and recycling storage areas, road and development layouts which allow waste and recyclables to be collected effectively, provision of community recycling facilities..

6) Provision for monitoring the implementation of steps (1) - 5)

7) A timetable for implementing steps (1) - 6)

Reason: To ensure that waste is managed sustainably during the development in accordance with objectives of Policies W5 and W6 of the Bedfordshire and Luton Waste Local Plan 2005.





Appendix E Sources of Advice and Guidance



Bedfordshire Waste Exchange www.bedfordshire-waste-exchange.co.uk

The Bedfordshire Waste Exchange is a free service which aims to reduce the amount of waste going to landfill in Bedfordshire and Luton by enabling businesses, organisations, schools, playgroups and individuals to use materials which others no longer need. This means that businesses are able to dispose of unwanted materials for little or no cost whilst others are able to obtain cheap or free raw materials.



Bedfordshire Green Business Network www.gbn-bedfordshire.org.uk

The Bedfordshire Green Business Network is a well-established group of local companies and public sector agencies which recognise the increasing need to understand and act upon emerging environmental legislation in order to minimise any associated pressures and threats to their business.

The network provides member companies with access to environmental information, process and resource efficiency methods, and other improvement ideas designed to increase profitability and market share.

Bedfordshire and Luton Sustainable Business Partnership www.blsbp.co.uk

The Bedfordshire & Luton Sustainable Business Partnership (BLSBP) is an active strategic partnership that draws upon a rich mix of skills to support its work. Members of the **Partnership** have all demonstrated their commitment to encourage and stimulate the relationship between business and the environment.





BLSBP was established in 1999 in order to regenerate the local economy through strategic support for **projects** that promote the principles of Sustainable Business. We were one of the first Sustainable Business Partnerships in the UK and still well placed to carry out our increasingly important strategic role.

Bedfordshire Environmental Training Initiative

(www.blsbp.co.uk/local projects/beti)

BETI enables small to medium sized businesses in the Bedfordshire area to access high quality environmental awareness training and also have the ability to cascade that training to their employees. BETI will be the first step in understanding how we can be more effective in our business by minimising the impact on the environment given the opportunities and improvements that arise.



Building Research Establishment (BRE) (www.bre.co.uk)

BRE provides a complete range of consultancy, testing and commissioned research services covering all aspects of the built environment, and associated industries. They contribute to the development of national and international standards and codes for construction and fire safety.



Construction Industry Research Information (CIRIA) www.ciria.org.uk

CIRIA presents a way by which the many different stakeholders in the modern built environment can work together to identify, codify, publish and promote the emerging best practice in the industry. In this way, CIRIA continually seeks to raise the standard of excellence in the broad construction sector beyond the "lowest admissible acceptability" for designers and constructors set by the framework of legislation, statutory regulations and codes of practice.

wrap

Waste and Resources Action Programme www.wrap.org.uk

WRAP (the Waste & Resources Action Programme) was established in 2001 in response to the UK Government's Waste Strategy 2000 to promote sustainable waste





management.

Why specify recycled in construction procurement? Reconstruct Resource Sheets



Environment Agency www.environment-agency.gov.uk

The leading public body for protecting and improving the environment in England and Wales. They are responsible for ensuring waste produced in England and Wales is correctly disposed of. We work with industry, local authorities and Government to ensure that hazardous waste is dealt with so that it does not pose a threat to human health or the environment. They encourage reuse and recycling and support the development of facilities to deal with hazardous waste.

Sustainable Construction Position Statement 2004

Sustainable Construction – Practical Guidance for developers and Planners

www.sustainable-construction.org.uk

This DTI funded Partners In Innovation project has brought together those tasked with promoting and controlling development and those who deliver development to consider a practical set of measures that could be requested and delivered on different types of sites. We have explored the planning mechanisms available to ensure the measures are adopted in future development and have produced a training package for planners, RDAs, local authorities and developers covering the measures they should be promoting/adopting and the actions they can take to make sure they are implemented.



low value and waste construction and landscape materials information exchange

SalvoMIE www.salvomie.co.uk

SalvoMIE is a national materials information exchange for the construction and landscaping sectors.



Construction Skills www.constructionskills.net

Construction Skills is the Sector Skills Council for construction representing every part of the construction industry, from architects to bricklayers, in every part of the UK. And





we cover every part of the skills agenda - from grants to college places. We understand what the industry wants and needs; we tell that directly to government, and we have the power to get things done.



Constructing Excellence www.constructingexcellence.org.uk

Constructing Excellence aims to achieve a step change in construction productivity by tackling the market failures in the sector and selling the business case for continuous improvement. Through focused programmes in Innovation, Best Practice Knowledge, Productivity and Engagement, Constructing Excellence has developed a strategy to deliver the process, product and cultural changes that are needed to drive major productivity improvements in the sector.



Envirowise www.envirowise.gov.uk

Envirowise offers UK businesses free, independent, confidential advice and support on practical ways to increase profits, minimise waste and reduce environmental impact.







Appendix F: The Waste Hierarchy¹⁷



- the most effective environmental solution is often to reduce the generation of waste – reduction
- products and materials can sometimes be used again, for the same or a different purpose – re-use
- resources can often be recovered from waste *recycling and composting*
- value can also be recovered by generating energy from waste *energy* recovery
- only if none of the above offer an appropriate solution should waste be disposed of.

¹⁷ Extract from Planning Policy Statement 10: Planning for Sustainable Waste Management ODPM July 2005

