



# MAKING SPACE FOR WASTE

**Designing Waste Management in New Developments**

A Practical Guide for Developers and Local Authorities



## Preface

Historically, waste management has been considered at the end of the development process, once the roads and buildings have been constructed, which has resulted in a lack of storage space for residents and poor access for collection staff. This guide provides advice and guidance for those involved with new development, and we hope will ensure that in the future we design and build streets where waste can be stored conveniently, yet unnoticed and collected easily.

For 125 years, from its origins as the County Surveyors' Society (CSS), ADEPT (The Association of Directors of Environment, Economy, Planning and Transport), has been providing the leadership and expertise required to tackle some of the country's most pressing issues.

Working at the strategic level of Local Government, members of ADEPT are committed to creating places for people, where they want to live and work. Operating at the forefront of the sustainability challenge they find ways to secure the quality of life that we aspire to today and protect the interests of future generations. This guide is just one example of how ADEPT uses its extensive range of local authority technical and professional specialists to advise on, assist in and influence key agendas.

On a day to day basis, in their own authorities, members of ADEPT's Waste Panel ensure the appropriate management of waste from homes and businesses across the UK; from engaging the public with recycling programmes through to disposing of our waste efficiently and effectively.

Appropriate waste management is essential for the future of our environment. Effective waste collection systems which maximise the opportunity for recycling and composting make an important contribution to this. This guide demonstrates that it is possible to maximise the efficient use of the planet's limited resources through high quality waste collection and recycling whilst providing clean, safe and attractive environments to live and work in.

Alison Quant  
ADEPT President  
June 2010



## Foreword

This Waste Panel of ADEPT (The Association of Directors of Environment, Economy, Planning and Transport), commissioned this guidance to assist developers to integrate waste management into their designs. It builds on many existing examples of good practice and has been developed with the aim of improving the quality of life of communities by increasing the sustainability of waste management within the built environment.

This guide seeks to establish a homogenous baseline of standards governing the provision that is made for waste management within new residential, commercial and mixed use developments throughout England and Wales. It has been developed to be generic in scope so as to be applicable across all types of local authorities regardless of their specific geographical characteristics, be they chiefly urban, suburban or rural. Obviously individual local authorities accommodate differing levels of population density within diverse built environments and are therefore affected to differing extents by the issues which this guide seeks to address. However, all local authorities, regardless of such individual characteristics, are obliged to enhance sustainability, and through it quality of life, for their residents; waste management is a significant consideration in any approach to improving the sustainability of a community.

The guide seeks to inform the local planner or developer about when the provision of waste storage and collection infrastructure should be considered in the design process. When planning a new development there is a wide range of factors that need careful consideration

if it is to function well for residents, contractors and the local authorities who deliver waste management services to the development.

This guide aims to ensure that the waste management requirements of the local authority are clearly defined, which in turn will assist the developer when applying for planning permission for the proposed development.

Where the characteristics of a particular area require enhancements over and above, or in addition to, the standards set out in this guide, a system of signposting has been used to direct the reader to sources of further information.

My aspiration is that this guide will be adopted by local planning authorities across the country as Supplementary Planning Documents, having being subjected to all necessary procedural arrangements.

I would like to thank all of the contributors who gave their time to ensure this document will be of use to the relevant professionals and to commend the good work that pioneering local authorities continue to do which ultimately enable these best practice guides to be written. I would also like to thank Officers and Members of both Cambridgeshire County Council and Cornwall Council for the considerable support that has been provided during the production of the guide and to Rachael Bice for her excellent management of the project which has produced this important document.

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# Contents

<b>Preface</b>	<b>3</b>
<b>Foreword</b>	<b>4</b>
<b>List of contributors</b>	<b>5</b>
<b>Contents</b>	<b>6</b>
<b>Figures</b>	<b>9</b>
<b>Tables</b>	<b>10</b>
<b>Executive Summary</b>	<b>11</b>
<b>1 How To Use This Guide</b>	<b>12</b>
1.1 Trends In Waste And Recycling	13
1.2 Population And Housing	14
1.3 Waste And Design In New Developments	15
1.4 Impact On Placemaking And Sustainability	15
1.5 Purpose Of This Guide	16
1.6 Consultation	17
<b>2 Planning Your Development</b>	<b>18</b>
2.1 Introduction	18
2.2 Communications	18
2.3 Establishing A Waste And Recycling Collection Service	18
2.4 Basic Considerations - Storage Of Waste	19
2.5 Co-located And Integrated Waste Management And Recycling Options	20
2.6 Planning Obligation Parameters	21
2.7 Summary	21

<b>3</b>	<b>Residential Development Guidance</b>	<b>22</b>
3.1	Introduction	22
3.2	Understanding The Importance Of Collection Frequencies	22
3.3	Waste Storage In Residential Developments	22
3.4	Wider Storage Point Considerations	24
3.5	Residential Storage Of Waste; Design Considerations	25
3.6	Manual Transport Of Waste To And From Storage And Collection Points	33
3.7	Household Waste Recycling Centres	36
3.8	Bring Sites	36
3.9	Home Composting	38
<b>4</b>	<b>Commercial Development Guidance</b>	<b>40</b>
4.1	Commercial Developments	40
4.2	Cigarette Related Waste/litter	42
<b>5</b>	<b>Mixed Use Development Guidance</b>	<b>43</b>
5.1	Mixed Use Developments	43
<b>6</b>	<b>Waste Collection</b>	<b>44</b>
6.1	Introduction	44
6.2	Waste Collection Vehicle Routing	45
6.3	Factors To Address When Planning For Collection Vehicle Access	46
6.4	Types And Size Of Collection Vehicle(S)	48
6.5	Permeability And Flexibility	50



6.6	Detailed Streetscape Design Issues	50
6.7	Impact On Placemaking And Sustainability	55
6.8	Types Of Vehicles	57
6.9	Streetscape Design	58
<b>7</b>	<b>Waste Storage Containers And Infrastructure</b>	<b>58</b>
7.1	Introduction	58
7.2	Standard Containers And Receptacles	58
7.3	Communal Waste Storage Compounds	58
7.4	Subterranean Storage Systems	59
7.5	New Storage And Collection Technologies	60
7.6	Waste Compactors And Densification	60
<b>8</b>	<b>Policy And Planning Context</b>	<b>61</b>
8.1	Introduction	61
8.2	The Sustainable Communities Agenda	61
8.3	Waste Strategy For England 2007	62
8.4	Household Waste Recycling Act 2003	62
8.5	EU Waste Framework Directive (Directive 2000/98/EC)	62
8.6	Planning Policy Statement 1	63
8.7	Planning Policy Statement 10 (PPS 10)	63
8.8	Environmental Protection Act (1990)	64
8.9	Regional Spatial Strategies	64
8.10	Manual For Streets	64
8.11	Building For Life	64
8.12	Developer Contributions	65
8.13	Planning Obligations	65



<b>9</b>	<b>Waste Management In Context</b>	<b>67</b>
9.1	Introduction	67
9.2	Types Of Waste	67
9.3	National Waste Targets	68
9.4	Landfill Allowance Trading Scheme	69
<b>10</b>	<b>Glossary</b>	<b>70</b>
<b>11</b>	<b>Bibliography</b>	<b>72</b>
11.1	National Documents	72
11.2	Local Documents	73
<b>12</b>	<b>Developers Checklist</b>	<b>76</b>

## Figures

<b>Figure 1.1</b>	<b>Designing Waste Facilities Into New Developments: Design Process</b>	<b>12</b>
<b>Figure 1.2</b>	<b>UK Population Distribution (2008)</b>	<b>14</b>
<b>Figure 3.1</b>	<b>Example Of Wrap Iconography</b>	<b>37</b>
<b>Figure 8.1</b>	<b>Waste Hierarchy</b>	<b>62</b>
<b>Figure 9.1</b>	<b>Typical Household Waste Composition</b>	<b>67</b>



## Tables

<b>Table 3.1 – Appropriate Composting Types for Various Developments</b>	<b>39</b>
<b>Table 4.1 – Typical Provision for Waste Storage Capacity in Commercial Developments</b>	<b>41</b>
<b>Table 6.1 – Typical Vehicle Dimensions</b>	<b>57</b>
<b>Table 7.1 – Typical Container Dimensions</b>	<b>59</b>
<b>Table 9.1 – Waste streams collected by local authorities</b>	<b>68</b>
<b>Table 9.2 – EU Waste framework Directive targets</b>	<b>68</b>
<b>Table 9.3 – National Targets</b>	<b>69</b>

## Executive Summary

Our approach to waste has changed fundamentally over recent years. The drive to recycle has had implications for the streets in which we live, because what used to be considered waste is now diverted for reprocessing.

Considering the management of waste prior to construction has yet to become embedded into the planning process; this guide seeks to address this in order to prevent design that restricts efficient operations or causes waste to become a nuisance. Our research revealed that although a small number of local authorities have been engaging with developers and planners, this interaction was not the accepted standard approach. This guide offers a comprehensive explanation of how to go about planning new developments that incorporate the necessary infrastructure for waste to be managed efficiently and with minimal adverse impacts. It even suggests opportunities where waste facilities may become an enhancement.

Information has been included to explain the possible variation in service design and delivery and also the relevant legislation to enable understanding of the obligations that all local authorities must meet. This recognition of how waste management operations are conducted once the development is occupied is essential to enable appropriate design at the planning stage. Therefore, specific aspects of waste management are highlighted, such as the manual movement of material from the home to the storage point and from the storage point to the collection vehicle.

General principles for all developments are set out, followed by considerations specifically for residential, commercial and mixed developments. Detailed proposals that have not been considered elsewhere or are unique to this guide are:

- Design principles, as well as minimum standards for internal and external storage and collection points, not only for large developments but also for flats, high density and multiple occupancy dwellings.
- Guidance on the minimum contributions that should be made by developers for containers, storage compounds and household recycling centres relative to the size of the development.
- Principles of place-making and design on how to co-locate waste facilities alongside domestic properties as well as in commercial settings.
- Increased detail on the principles of design as well as standards for infrastructure to ensure good access for waste collection vehicles.
- Emphasis on the importance of early communication with all relevant departments of the local authority and proposals to fully involve all parties throughout the development process in dialogue. Support is provided by the developer's checklist, providing a simple point of reference.

The principles of place-making and design with the minimum standards in this document should enable any local authority to have a sound basis of information to develop for adoption as Supplementary Planning Guidance to support waste management in new developments.



# 1 How to use this Guide

This document has been designed to allow developers of the three principal types of development, namely residential, commercial and mixed use, to follow a step by step process when considering the design of waste facilities in new developments. The flow diagram below sets out the basic process. As with all planning processes there is a need for review and revision as the development design evolves. The initial design ideas will be developed through the specific requirements of the development stage. This is then refined in light of collection and storage arrangements which cut across all types of development and are dependent, to a greater or lesser extent, on the scale of the proposed development. At this point it is important to review and refine the original development plans so that waste management is now an integral part of the design and can be incorporated into the final planning application. To assist with this a “Developer’s Checklist” is provided at the end of this guide.

In parallel with the design guidance the document includes contextual information specifically with regard to the national planning and policy context and waste management.

The guide is structured to provide the specific guidance pertinent to an individual development type in easily referable sections, with supporting detail and signposts for further research towards the rear of the guide.

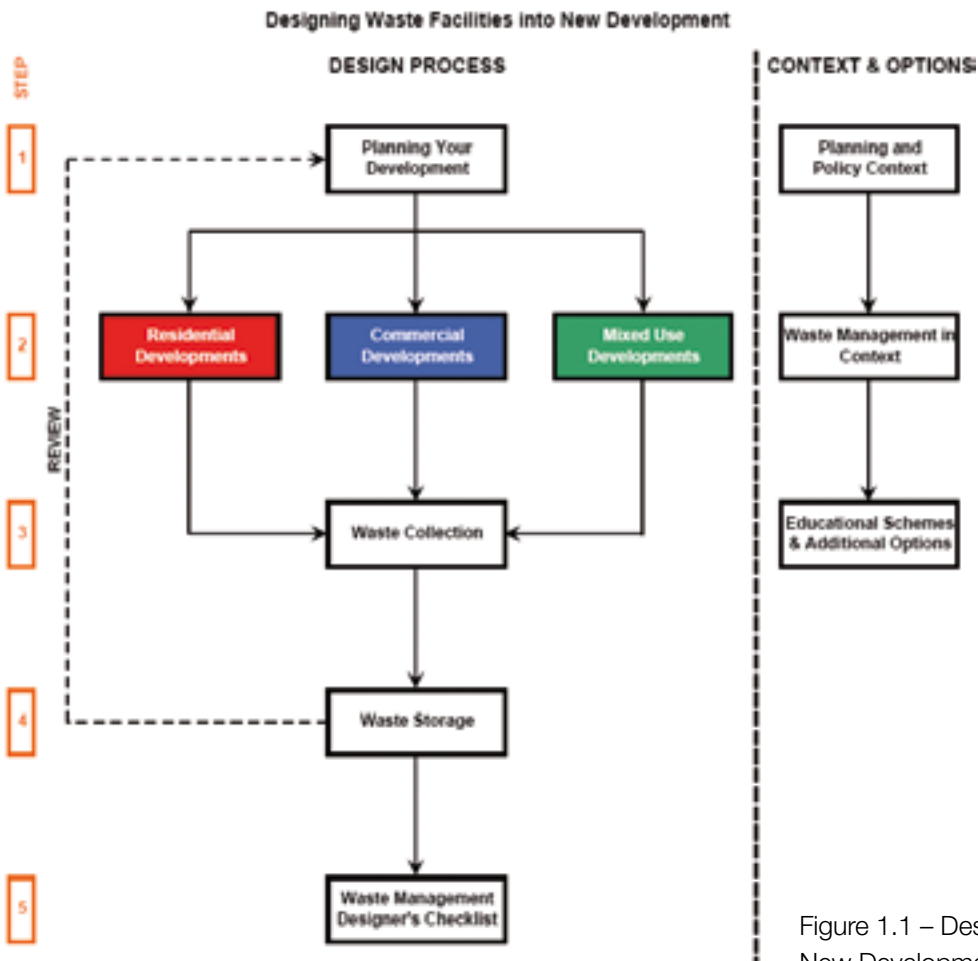


Figure 1.1 – Designing Waste Facilities into New Developments: Design Process

## 1.1 Trends in Waste and Recycling

The scope and level of provision of household waste recycling services has increased dramatically since the introduction of the first doorstep and bring bank schemes in the 1970s.

Heightened environmental awareness and legislative changes coupled with increased funding have favoured the enhancement of recycling service provision by the establishment of kerbside recycling schemes by many local authorities. Analysis of data from studies of household waste generation has charted the rise in this form of recycling and its effect on household waste disposal practices.

This expansion in the levels and scope of recycling services means growth in the infrastructure required to support such programmes. This can lead to an increase in the number of collections made from the household and accordingly an increase in the numbers of collection vehicles and waste storage containers required. Such intensification of activity has clear design implications for our communities in terms of traffic volume and the provision of waste storage capacity.

### 1.1.1 Growth in kerbside waste recycling infrastructure and waste generation rates

Between 2002 and 2008 the significant acceleration in the implementation of kerbside recycling collection services by Waste Collection Authorities (WCAs) has been driven primarily by legislative instruments. See Section 8 for the applicable legislation.

Predicted average household waste generation rates range from 13.8kg to 24.2kg per household per week (kg/hh/wk)<sup>1</sup>. Authorities with the lowest predicted waste generation rates are found in cities and larger urban areas where space is at a premium and where a far higher proportion of residents live in multi-occupancy buildings. Within this group of authorities, many of the inner London boroughs are predicted to have the lowest average household waste generation rates, reflecting the large proportion of multi-occupancy properties. Several of the largest waste producing authorities are in the semi-rural hinterland that borders the

larger conurbations. These can be characterised by greater affluence, higher levels of economic activity and larger property sizes. As a consequence, these areas are predicted to generate larger amounts of waste, particularly garden waste.

- Except for non-packaging paper waste, there was no consistent trend in average waste arisings rates during the period 2000 – 2008. Since 2004 there has been a year-on-year decline in the rate of non-packaging paper waste generation, a decline which continued in 2008.
- Excluding recycling and composting, efforts aimed at minimising and reusing waste have, to date, had minimal impact on overall waste arisings, and the effects are largely confined to packaging waste.
- Between 2000 and 2008, growth in kerbside recycling brought about a very substantial growth in waste recycling rates. For several waste categories, including glass packaging and non-packaging paper waste, recycling rates now exceed 80%. This has brought about a major diversion of packaging waste away from landfill. To a lesser extent, the growth in kerbside recycling has also diverted material away from complementary recycling options.
- Since 2004 there has been substantial growth in kerbside collection of compostable waste. Prior to 2004 fewer than 5% of households had access to a kerbside collection for compostable waste. This grew rapidly but has stabilised and, in 2008, 36.2% of households set out organic waste for kerbside collection, a rate which was only marginally greater than in 2006 and 2007. Although the growth in kerbside collection has undoubtedly attracted new recruits to waste composting, it has also diverted some material from other methods of waste composting<sup>2</sup>.

<sup>1&2</sup> Open University Household Waste Study: Key findings from 2008 – Defra 2008



### 1.1.2 Understanding Waste Growth at Local Authority Level - WR0121<sup>3</sup>

Although household waste represents only 10.7% of the UK's waste stream, it is a highly visible and politically sensitive issue, amounting to 28.5 million tonnes of waste in 2007/08. The past five years has witnessed a period of considerable upheaval for municipal waste policy. Historically, local authorities had to concern themselves with little more than the collection, planning and disposal of waste, and a relatively narrow range of regulations. Today, however, they have a radically broadened agenda with progressive statutory performance targets for recycling and composting, as well as responsibilities for diversion of waste from landfill, recovery from waste and waste minimisation. Growing volumes of waste, coupled with restrictions on the physical and environmental capacity of landfill as a disposal option, have led to increasing pressure from the EU and national government to shift away from landfill disposal to more sustainable waste management options. The 1999 EU Landfill Directive placed targets for the diversion of waste from landfill on member countries. In response, the government has introduced a raft of measures for local authorities in order to ensure compliance with these targets. These include:

- Statutory targets for recycling and composting and other performance measures under the Best Value Performance Indicators (BVPI) framework, which became the National Indicator Set (NIS) in April 2008;
- The introduction of the Landfill Allowance and Trading Scheme (LATS) in 2005, under which local authorities are set limits on the amounts of biodegradable municipal waste which can be sent to landfill;
- The 2003 Household Waste and Recycling Act which stipulates that all local authorities must provide for the kerbside collection of at least two recyclable materials; and
- A host of funding schemes and policy guidance to enable local authorities to meet these targets.

## 1.2 Population and Housing

In addition to the legislative drivers that are driving change in the way in which we treat household waste, a further key driver is the projected growth in the numbers of households requiring waste recycling and disposal services.

The most recent national statistics demonstrate that the estimated resident population of the United Kingdom was 61,383,000 in mid-2008, up by 408,000 (0.7%) on the previous year. This is equivalent to an average increase of approximately 1,100 people a day. Population growth has increased over recent decades; this latest increase compares with an average annual growth of 0.5% since 2001; 0.3% per year between 1991 and 2001 and 0.2% between 1981 and 1991.

Increases in births, decreases in deaths (i.e. increased longevity) and changes in the pattern of international migration into and out of the United Kingdom have all contributed to population change, and subsequent demand for housing.

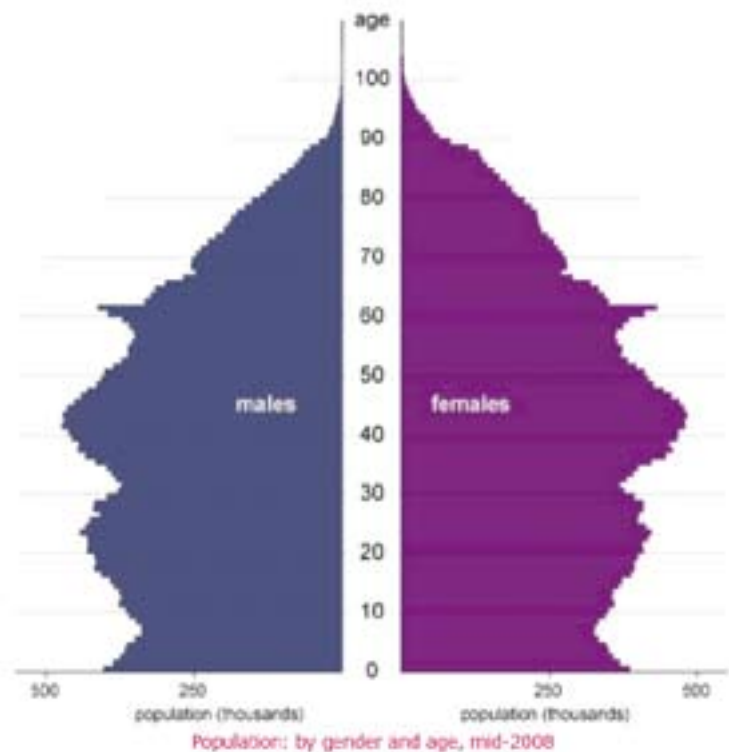


Figure 1.2 – UK Population distribution (2008)<sup>4</sup>

<sup>3</sup> WR0121 – Understanding Waste Growth at Local Authority Level by Resource Futures for WRAP (October 2009)

<sup>4</sup> Office for National Statistics <http://www.statistics.gov.uk/cci/nugget.asp?ID=6>

### 1.3 Waste and Design in New Developments

Waste collection services and associated infrastructure have a high visual public profile. Such visibility demands a greater degree of attention and should be focused on the design and operational practices of future facilities by developers. High-quality design of new and enhanced waste infrastructure will help to change public perceptions of waste management activities as “bad neighbours”, while at the site and building scale, there may be a place for iconic design of large new facilities such as waste to energy plants, recycling facilities and receptacles on streets.

To help deliver this the Department of Environment, Farming and Rural Affairs (Defra) in partnership with the Commission for Architecture and the Built Environment (CABE) have produced guidance on the design of new waste facilities<sup>5</sup>. This guidance supports local authorities in making decisions and covers the various types of waste facilities; from small community and municipal sites such as composting units on housing estates to larger sites such as Combined Heat and Power (CHP) facilities. The guide outlines key design principles, the design process, best practice in design and how best to consult the public. In a similar vein, the Mayor of London has also produced guidance on the design of waste facilities<sup>6</sup>. This guidance considers four scenarios of development and the opportunities available to best integrate these facilities into the urban context sensitively.

In parallel with this, waste management technology is constantly changing and will continue to change and improve, so design policies should not be overly prescriptive. Rather than attempting to stipulate which waste management techniques or technologies should be used to deal with specific waste streams in an area, local development frameworks should look to identify the range of waste management facilities that would be appropriately located on the proposed site or area.

New neighbourhoods and major urban extensions provide a key opportunity for implementing waste management infrastructure and this should be recognised at the planning stage. Waste management infrastructure should be an integral element of any original masterplan. By having clearly stated objectives from the outset, waste management requirements can inform the detailed design discussions between the plot developers, architects and local planning team.

Many local authorities have produced sustainable design codes and streetscape design plans which make consideration of waste collection and storage an intrinsic part of the design. In addition, regional and local waste planning guidance provides a useful avenue for exploring principles to be supported at a neighbourhood scale. Making space for waste management should be integral to the design of all buildings; for example there may be internal space requirements for interim storage and external space for bulking up, segregation or pre-treatment prior to collection of waste materials for off-site treatment.

In residential buildings, dedicated external covered space may be required and designs should consider how waste will get from the kitchen (or point of arising) to the collection point and where space for source segregation might be available and most conveniently located.

### 1.4 Impact on Placemaking and Sustainability

‘Placemaking’ is the process of creating spaces that have a distinctive character and react to their local environment and the needs of their local community.

The fundamentals of this concept can be summarised as being based around several principle interrelated concerns. These include:

<sup>5</sup> Designing waste facilities: a key guide to modern waste design – Defra 2008

<sup>6</sup> Rubbish In Resources Out – design ideas for waste facilities in London – GLA 2008



- Structuring developments around a considered street network, incorporating different street and space character types, providing an appropriate setting for different land use types and sizes and responding to the existing retained or surrounding context. Streets may vary in size and character from wide boulevards to narrow mews, and public spaces from large squares to small internal communal courtyards within blocks.
- That the configuration of buildings should be the starting point in determining the character of such streets and spaces.
- That the dominance of static and moving vehicles should be reduced in most streets and spaces and greater priority and provision made for pedestrians, cyclists and social uses.
- That adequate thought should be given to the design, management and maintenance of the public realm in order to avoid unforeseen misuse that may diminish its use or enjoyment by the public.

Planning Policy Statement 10<sup>7</sup> refers to design and layout in new developments being able to help secure opportunities for sustainable waste management. Conversely, when considering how the treatment of waste is incorporated into a new development, it is important not to underestimate how its poor planning and design can have a detrimental effect on the quality, character and function of that space. Potential risks include:

- That the overall layout of buildings, blocks and the public spaces within and between may be compromised, owing to unnecessarily conservative requirements for waste vehicle access requirements or the influence of 'carrying distances' between properties, storage and collection points.
- That access requirements for large waste collection vehicles result in an unsightly streetscape that fails to accommodate walking, cycling and the social use of street and spaces

- That the public realm is cluttered with unsightly and inappropriately located bins or containers.
- That ineffective and inconvenient waste management arrangements lead to a deterioration in environmental quality as residents and/or operatives cease to respect arrangements.

Consequently, Manual for Streets<sup>8</sup> advises that Planning Authorities should ensure that new developments make sufficient provision for waste management and promote design and layouts that secure the integration of waste management facilities without adverse impact on the street scene.

Placemaking concerns are therefore addressed throughout this document.

## 1.5 Purpose of this Guide

These guidelines on the provision of suitable waste management facilities in new developments are intended to encourage sensitive waste management practices that should enhance the overall quality of the environment, and minimise adverse environmental impacts resulting from the handling, storage, processing, transportation and disposal of waste.

<sup>7</sup> Planning Policy Statement 10: Planning for Sustainable Waste Management (2006) Communities and Local Government [www.communities.gov.uk](http://www.communities.gov.uk)

<sup>8</sup> Manual for Streets – Department of Transport, 2007



In order to capitalise on this potential, it is essential that there is “joined-up” working within local authorities, between the waste management and planning divisions in particular, which are generally located in separate areas of responsibility within the authority. One means of making clear a local authority’s intentions with respect to these new provisions, and indeed the specific way in which they will be locally interpreted, is through the production of supplementary planning guidance.

Supplementary planning guidance is used to guide developers as to local expectations for developments and could be a way to ensure that consideration is given to the storage and separation of different wastes at the household level. An advantage of using supplementary planning guidance is that it clearly sets out the local expectations with respect to waste.

## 1.6 Consultation

This guide has been developed in consultation with key stakeholder groups that can impact upon the manner and means by which waste and recycling services are provided to the public. These groups include;

- Housing developers
- Planning authorities
- Waste management industry
- Design authorities
- Highways authorities

This process of “consulted development” is intended to result in a practical working document that is capable of achieving its aims within a real world environment.



## 2 Planning Your Development

### 2.1 Introduction

The developer or its agents should study the information provided within this guide at the start of development planning. This guide seeks to present a baseline of information for the developer to assist the development planning process to ensure effective design for waste management is allowed for in any new residential, commercial or mixed use project.

### 2.2 Communications

The importance of early communication between the developer or its agents and the appropriate departments of the local authority is viewed as pivotal to ensuring that a residential or mixed use scheme is planned with appropriate emphasis on waste management provision.

The developer should initiate dialogue with council representatives in order to gain an understanding of existing and planned future council policies and practices that will impact on the fundamental design of a development. Contact with the following departments is likely to be required:

- Environmental Services – waste and recycling collection policies.
- Planning Services – planning constraints, policies.
- Highways – vehicle access provision.
- Trading Standards – food waste collections.

Early contact with the above council departments is recommended to ensure that applicants are aware of the locally specific waste issues that need to be addressed in their planning application so that the correct details are incorporated in the submission and not subsequent to it.

If planning obligations are considered necessary to allow a particular development proposal to go ahead then the planning officer will raise this with the applicant as soon as possible. Pre-application discussions are strongly encouraged but where

these do not occur negotiations will take place as soon as possible after the planning application has been submitted.

The case officer will be the main point of contact for negotiations. The case officer will enter into negotiations with the developer over the need for a planning obligation and the matters it should address. The case officer will normally conduct all negotiations unless a legal representative is needed to discuss a point of law.

### 2.3 Establishing a Waste and Recycling Collection Service

The provision of an effective waste disposal and recycling service, to a development, is a crucial aspect of delivering a modern desirable place in which people live, work and spend leisure time.

The responsibility for, and operation of, waste collection services lies with second tier (district/ borough council) and unitary authorities in England and these bodies form the respective Waste Collection Authority (WCA). The level and type of the services provided by the WCA will be governed by the particular collection and recyclable material sorting policies of the respective local authority. Consequently, for residential and mixed use developments, it is vitally important that the developer makes early contact with representatives of the local WCA, to understand the existing arrangements and likely future developments of the waste and recycling collection system and the related waste facility provision requirements.



<sup>9</sup> Code for Sustainable Homes - A step-change in sustainable home building practice –DCLG 2006

<sup>10</sup> BS 5906:2005 Waste Management in Buildings – Code of Practice

The situation for commercial developments and the non-residential aspects of mixed use developments maybe different and local commercial collection arrangements must also be considered.

## 2.4 Basic Considerations - Storage of Waste

When masterplanning new developments, designers should give consideration to the need to provide waste storage in appropriate areas, including internal, external and communal locations.

### 2.4.1 Internal temporary storage

*Internal storage capacity is required at the point of arising within properties to accommodate small amounts of materials as they accumulate during the day.*

Most occupants are likely to require such facilities to minimise the need to make repeated trips to longer term storage facilities (likely to be located outside of the property). Integrating these from the outset into the design of cabinets and fittings in the kitchen and other appropriate areas can make more efficient use of space and is likely to prove less obtrusive than leaving householders to acquire free standing bins at a later date.<sup>9</sup>

### 2.4.2 External storage

*A point in which to keep larger volumes of materials in-between collections in suitable containers may be needed.*

Typically, to reduce odour and other potential nuisance, this will be located externally from the main property – either within private grounds or communal areas. In establishing the best location for such facilities, a balance will generally need to be struck between maintaining a distance convenient to property owners and aesthetic or functional impact of the facility on the broader streetscape.<sup>10</sup>

### 2.4.3 A defined collection space

*On collection days, a space that residents can transport waste to (from the normal storage point where this is separate) for removal by waste service providers.*



This facility will need to be sited at a distance that is accessible both to occupiers and waste operatives. As with formal storage points, this location will need to be balanced with the aesthetic or functional impact of the facility on the broader streetscape. Ideally, to reduce clutter and enhance the quality of the public realm the point of formal storage and the waste collection point should be located together. Where this is not feasible the carrying distance of bins for both residents and service providers respectively will require careful consideration.

Designated storage and collection points should be identified in both outline and detailed planning application drawings. Local Planning Authorities should require that drawings showing building accesses, storage and collection points, and the corresponding distance between these and the proposed collection vehicle route are included in the Design and Access Statements submitted with the application.

<sup>11</sup> Rubbish in Resources Out – design ideas for waste facilities in London



## 2.5 Co-located and Integrated Waste Management and Recycling Options

The developer may wish to consider the possibilities presented by waste recovery and recycling systems that may be co-located within a large residential and/or mixed use development, to collect and/or process the waste and/or recyclates produced by the domestic and commercial residents.

It is easier to make space for new facilities in new developments rather than to try and retrofit the infrastructure necessary to collect or process wastes produced therein. This is now happening through mixed use developments in which new residential schemes are more closely linked with industrial and commercial estates, recognising the synergies between waste production, resource recovery and reprocessing businesses and helping to reduce carbon emissions.

Sensitive and innovative design also makes it possible to reduce the perception that waste facilities are always bad neighbour developments.

When conceptualising the basic infrastructure of a new development, developers may wish to consider waste from not only the containment and collection perspective but also from that of waste processing. Increasingly new build commercial and residential developments are being required (or it is considered to be good practice) to consider the inclusion of co-located waste processing facilities. Such facilities are most desirable where the output of the waste processing results in the capacity to generate power, for example anaerobic digestion or gasification. The principle being, in these cases, that heat and power generated from the co-located facility can be used to supply some or all of the power and heating requirements of the new development.

### 2.5.1 Conceptualised Co-location Scenario

This scenario is for a small decentralised anaerobic digestion plant on an inner-city site, forming part of a new development of commercial and residential units.

The anaerobic digestion (AD) plant would be at ground and basement level in the centre of the site, located below an urban garden accessed by the residential development at first floor level. The ground floor of the development that surrounds the AD plant contains retail and commercial units. Biodegradable waste arrives at this facility in refuse collection vehicles (RCVs) having been pre-sorted at a remote station or separately collected through food waste collection schemes.

The small scale of this proposal makes it suitable for inclusion in inner-city developments providing commercial and residential accommodation. It could similarly be fitted into sites with limited access and street frontage as a stand-alone building. This scenario considers an anaerobic digestion plant built at ground and basement level at the core of a larger development. Around its perimeter is wrapped a building with commercial units at street level and several floors of residential units above. The height of the new building is determined by the scale of the surrounding streets.

This scenario demonstrates that it is possible to conceal a plant within a development, an approach which has advantages in areas where planning and contextual issues are more sensitive. The plant is visible on the street only through double shutter doors, and, with a modest transport flow, has a low impact on the street.<sup>11</sup>

## 2.6 Planning Obligation Parameters

By following this guidance and through appropriate consultation with the local planning authority prior to making a planning application it is envisaged that developers will not need to make ‘contributions’ for compensatory measures to mitigate the waste aspects of the development. However, if this is not the case developers requesting planning permission for residential and mixed use developments may be required to provide financial contributions for the provision of waste management and recycling facilities that would serve the residents of the proposed development. Parameters governing the circumstances in which planning obligations may be sought and the nature of such obligations are laid out below.

On developments of greater than 400 dwellings (both on one site and including phased developments where there is more than one developer involved) – to secure local recycling facilities to collect the range of materials as required by the authority, within 400 metres of new dwellings. The developer will be expected to:

- Provide a suitable area of land (approx. 75m<sup>2</sup>: 15m x 5m) within the development and build a recycling bring centre to a specification supplied by the authority.
- To purchase and supply suitable recycling containers to meet specifications supplied by the authority, for use on the constructed bring site.
- A suitable financial bond will be required to cover defects occurring on the site for a period of five years from the date of completion. After this time, the authority will adopt the site.
- The authority will undertake responsibilities for routine inspection and cleaning services on the completion of the facility; at a frequency to be decided by the Authority.

On developments less than 400 dwellings (both on one site and including phased developments where there is more than one developer involved) – to secure a financial contribution on a per dwelling basis to:

- Local recycling facilities to collect materials as required by the authority.
- Major recycling facilities e.g. household waste recycling centres; construction and/or maintenance.
- Enhancement of recycling containers and recycling points.
- Upgrading of existing recycling points.
- Procurement of new/additional recycling containers.

## 2.7 Summary

By considering waste management at the outset of the design process and by engaging early with the local planning authority developers can ensure that their proposals stand the highest chance of obtaining planning permission. By considering the infrastructure requirements of the development and its potential impacts on the local environment at the design stage, developers can reduce the likelihood of significant developer obligations being placed on them.



## 3 Residential Development Guidance

### 3.1 Introduction

As outlined in Section 2, waste management needs to be considered as an integral part of the development. Starting at the point of arising, the quantity of waste and recyclables storage capacity that is required by any particular dwelling is defined by a number of parameters, which include;

- Material segregation and streaming policy of the respective WCA;
- Material collection frequencies of the respective WCA;
- Volume of waste generated by the dwelling, (occupancy levels); and
- Availability/ability to treat waste on site e.g. composting.

It is of great importance that the developer makes available sufficient area to accommodate the storage requirements of the waste service, both within individual dwellings/plots and in communal areas.

### 3.2 Understanding the Importance of Collection Frequencies

An effective waste collection strategy is a critical component to ensuring stakeholder buy-in to any waste and recycling process. WCA authorities have developed collection strategies that are designed to address particular local factors that may influence the structure of their service provision. The strategy should outline how, where and with what frequency waste is collected. Frequency and collection configuration are equally important in terms of the amount of storage space required. Above all, waste collection points must be conveniently located and designed to maximise participation in recycling. Such strategies may be prepared at the city or neighbourhood scale as appropriate.

Currently around 60% of England's waste collection authorities operate what could be termed a

'traditional' collection method where once a week (sometimes more), a truck collects bags or bins from households, with the majority of these expecting some form of householder separation of recyclable material from the rest of the household waste. Around 140 authorities, however, have introduced alternate weekly collections (AWC); this is a blanket term covering a range of collection methods based around the principle that the authority picks up recyclable materials one week and residual waste the next. Such collection schemes have frequently been characterised as being 'fortnightly' where in fact, in all cases, materials are collected every week, it is just different materials (either recyclables or residual waste) that are collected. AWC schemes encourage householders to sort their waste into recyclable and residual waste. In some areas authorities have reduced the size of bins for residual waste, meaning that householders have to sort their waste carefully to minimise residual waste, thereby maximising (or encouraging) more recycling. Many councils use AWC as a tool which has the dual impacts of incentivising the householder to recycle whilst minimising the costs of waste collection.

The Household Waste Recycling Act 2003 requires all waste collection authorities to introduce collection of at least two types of recyclable waste from households by 2010. Since 2005, authorities have also had the power to issue fixed-penalty notices to householders who breach rules on how waste is to be presented for collection, including what may be put in bins.

### 3.3 Waste Storage in Residential Developments

It is now commonplace for householders to separate all waste and recyclable materials at source, and legislation such as the EU Waste Framework Directive is going to increase this requirement. Once sorted waste (including recyclables) must be stored off the highway (storage of waste is not permitted on the public highway or footway). Storage may be in a purpose built refuse store (or other appropriate screened location), or in a bulk containerised system held within the boundary of the site. The storage location should be accessible with the minimum of travel

<sup>12</sup> Building Regulations 2000 – Drainage and Waste Disposal – May 2006

distance from the kerbside in order to reduce the potential for spillage during collection. As required by the Waste Collection Authority dedicated waste streams (e.g. compostable, recycling and residual waste) should be presented onto the kerbside (or other agreed location) for collection on the appropriate collection day(s).

### 3.3.1 Residential Developments

*As a general guide, in all residential dwellings, provision should be made for the internal and external storage of the waste streams as listed below. The developer should investigate the specific waste storage infrastructure required by dialogue with the respective WCA (see 2.2 above).*

- Compostable waste; which may include food, cardboard, grass cuttings, wood shavings, leaves, plants and cuttings.
- Dry recyclables; clean recyclable items such as glass, plastics, metals and paper.
- Residual waste; items which cannot currently be composted or recycled.

All residential dwellings will need to be provided with suitable containment and storage systems which enable the householder to effectively separate and store dry recyclables, compostable/green waste, food waste and residual waste in accordance with the requirements of the local WCA. Where the provision of individual dwelling external bins is not appropriate, alternative arrangements must be made. Requirements will vary across property types, but it is essential that in all cases, developments satisfy Building Regulations requirements<sup>12</sup>.



<sup>13</sup> RECAP Partnership: Waste Management Design Guide

<sup>14</sup> Planning Policy Statement 1: Delivering Sustainable Development – DCLG, 2005

However, it should be noted that individual waste collection authorities may have specific additional requirements which should be verified at the outset of the design process.

### 3.3.2 Internal (in dwelling) storage capacity

*To allow domestic residents to effectively segregate waste at source, adequate internal storage area(s) should be provided. Dedicated internal storage for recyclable household waste should be made available where there is no (or insufficient) dedicated external storage capacity for recyclable material. At least, three internal storage bins should be provided, which meet the following three criteria:*

- All bins to be located in an adequate internal space;
- No individual bin to be smaller than 15 litres; and
- A minimum total capacity of 60 litres.

It is advised that the developer consults with the local waste collection authority regarding frequency of collections, however as a design basis, the developer must provide adequate waste storage to accommodate a minimum fortnightly residual waste collection cycle where:

- Recyclable household waste is sorted post collection, at least a single 30 litre bin is provided in an adequate internal space;
- Materials are sorted prior to collection, at least three separate bins are provided with a minimum of 30 litres total capacity. Every bin must have a capacity of at least 7 litres and be located in an adequate internal space; or
- An automated waste collection system which collects at least 3 different types of recyclable waste.



In cases where there is not a WCA operated recycling collection scheme but there is adequate external storage capacity for houses and flats, there must be at least 3 identifiably different internal storage bins for recyclable waste, located in an adequate internal space:

- with a minimum total capacity of 30 litres, and
- where every bin has at least 7 litres capacity.

The developer should provide recycling scheme containers equal to or greater than the above volumes with adequate internal space to accommodate storage; such internal space allocation should be convenient to the kitchen or utility room to encourage the householder to recycle materials at source and help minimise waste production.

If the collection authority provides containers with a smaller volume, or if a local authority scheme does not exist, the developer must comply with the requirements of BS 5906 (2005) Waste Management in Buildings; Code of Practice.

### 3.3.3 External Storage Capacity

*The key principles to allow well designed, effective and efficient external waste storage and collection areas are ensuring that:*

- Waste storage areas are appropriately located and designed to minimise their visual impact and that they are integrated into the design of the property;
- Waste storage facilities do not obstruct sight lines for pedestrians, drivers and cyclists;
- Waste containers can be moved easily from the rear of the property to the front or where that is not possible, to create a suitable storage area; and
- A collection point is provided near to the carriageway at which bins/sacks can be easily accessible to both collection crews and residents. This will be particularly relevant to communal properties or those developments that have access roads that are unsuitable for use by standard collection vehicles.

<sup>15</sup> BS 5906:2005 Waste Management in Buildings – Code of Practice.

Adequate external storage space requires provision of three external bins for waste with:

- A minimum total capacity of 180 litres;
- No bin smaller than 40 litres; and
- All bins should be located within 30m of an external door.

External storage spaces and collection points must be on hard standings and, if covered, of sufficient height to permit opening of bin lids. It may be part of the public footway/pavement provided that this is of at least the standard width of 1.8 metres. The householder is responsible for moving bins/recycling boxes from the storage space to the collection point, and for safety reasons there should be no steps, kerbs or other obstructions along the route.

Where communal bin stores are necessary they should be located so that they permit safe use by residents and collection crews. The RECAP Waste Management Design Guide<sup>13</sup> also provides detailed design guidance on the infrastructure associated with the installation of communal waste stores.

## 3.4 Wider Storage Point Considerations

Inappropriate waste storage in new developments can impact on the appearance and environmental quality of the adjoining public realm. All design of waste storage facilities should be integrated into the initial design process for the whole public realm to give identity and enhance the sense of place. This coordination of design for all elements of the street scene will help to avoid clutter and confusion.

All standards and requirements proposed in this guide meet or exceed relevant British Standards and Code for Sustainable Homes requirements.







### 3.5 Residential Storage of Waste; Design Considerations

The concern to develop a greater sense of ‘place’ in new developments, advocated by PPS1<sup>14</sup> and ‘Manual for Streets’, has promoted the development of less vehicle dominated streets in which the arrangement of buildings, not the carriageway, is the starting point for designers. Road designs have been encouraged to be more sympathetic to the surrounding context, utilising tighter, non-standard geometry and unobtrusive ‘passive’ traffic-calming features based on townscape measures (such as kinks in the street or shared surface tables that form part of broader public spaces). Rear access lanes and communal courtyard areas (often accessed by tightly defined built gateways) and shallow front gardens or threshold areas have also become more prevalent – both to facilitate more tightly defined and enclosed public spaces and encourage greater ‘permeability’ through the street network for pedestrians and cyclists. These trends all provide challenges to the design of waste services.

#### 3.5.1 Specific Residential Storage Issues

The storage of waste is a key element of the environmental performance of residential dwellings and is addressed both directly and indirectly in several categories under the Code for Sustainable Homes (CfSH).

Different waste storage solutions are likely to be appropriate for different property types depending on their location, required storage capacity,

availability of space and access arrangements as well as the nature of the waste collection services to the property. Waste storage capacity requirements for the various different property types and sizes are defined in relevant British Standards<sup>15</sup> and the CfSH. Only locational requirements and detailed design requirements from these documents are addressed here.

Regardless of property type, the following principles should be observed in all residential developments, including residential components of mixed use schemes:

- The footprint of storage or collection areas should be sufficient to accommodate the predicted accumulation (given the collection frequency) of the container types required by the respective WCA.
- The design of any new store for waste must not require waste bins to be left on the footway as this is contrary to local byelaws and reduces the effective width for pedestrians, causes difficulties for wheelchairs and pushchairs and poses a hazard for blind and partially sighted people;
- All storage areas should include features that screen containers from public view.
- All storage must be accessible to disabled people, particularly wheelchair users, and sited on hard level surfaces.



- Smaller external storage and collection areas that occupiers are not able to stand within, will require a clear turning circle area of at least 1.5m diameter to enable residents or waste operatives to turn and manipulate bins.
- Within both larger walk-in external storage areas and internal storage areas within buildings, a clear turning circle of at least 1.5m diameter should be provided for the manipulation of containers. The area should be considerably increased if there are more than four large wheeled bins.
- If substantial on-street parking is anticipated along streets then communal collection points are preferable, as parked vehicles can obstruct service provider operatives in transporting waste between collection points and collection vehicles.
- Developers will need to agree with the Planning Authority and WCAs or private collection contractors, the responsibility for cleansing of storage and collection areas as well as the means of escape and fire-fighting arrangements.
- Where facilities are secured, access arrangements will need to be agreed. Further information on this issue can be found in Section 8.4 of BS5906:2005.
- Internal storage facilities will need to consider the prevention and mitigation of fire risks.



### 3.5.1.1 Houses (detached, semi or terraced)

A number of design options exist for houses; which is most appropriate is likely to vary with the types of dwellings and the size of external private areas. To prevent the potential removal by occupiers of waste storage areas that do not form part of the fabric of the main building, consideration should be given to the use of Article 4 directions under the General Permitted Development Order to remove permitted development rights.

#### Within garages

Where adequate storage space to meet the required capacity can be provided within garages, and suitable passage maintained through it to the point of collection, storage within garages may prove permissible. However, designers should be aware of the tendency for occupiers to use such space for other purposes where insufficient space for these is provided. As such it is recommended that storage of waste in garages be accepted only where an additional floor area of 2m<sup>2</sup> for other uses can also be provided.

#### Integrated door-side units or screens

External purpose built cabinets beside front doors or side accesses to properties have long been a favoured solution for architects of balancing the need for a discreet external storage area with proximity to the dwelling. Access to the facility only requires for residents to step outside their front door. The storage facilities may also serve to house utilities or other servicing equipment or provide storage for deliveries. Where security, fire safety and heat retention measures can be guaranteed, convenience may be further increased via the



provision of an internal access hatch from within the property to obviate the need for residents to go outside at all when depositing arisings. However, as with storage space within garages, developers should be aware of the tendency for residents to use such space for other purposes, which may lead to bins being left in inappropriate exposed external locations instead. As such some WCAs may not be willing to consider such facilities as designated storage spaces.

An alternative to the above is the construction of unenclosed walls, fences or other structures at the front, side or rear of the property to screen waste. This can be particularly effective when used by driveways.

Where properties are terraced, the increasing tendency for only modest front gardens or thresholds and narrow overall property widths can make door-side storage with cabinets problematic, should designers wish to retain substantive ground floor window area. However, the use of screens is also problematic as most standard two-wheeled containers are tall enough to obscure views out of front windows. One possible solution to this is to consider raising the ground floor of the building such that residents retain an aspect over the screened area. However, careful consideration would need to be given to the Disability Discrimination Act and access requirements for occupiers, both to containers and the properties themselves.



In some circumstances it may be appropriate to locate storage areas further away from the main property at the end of driveway or (subject to appropriate carrying distances and access to the collection point) the rear of garden. Either walled and roofed compounds or screened areas can be appropriate for these purposes.



Private mini-compounds accessible from communal courtyards at the rear of the property

Where waste collection vehicle access to a property is from its rear (for instance, via an internal courtyard) garden end storage compounds with dual accesses (one from within the garden, the other from public areas outside) may be considered to remove the need for substantive movement of the container when putting it out for collection. To put containers out for collection occupiers would need to take responsibility for opening the public access to allow for the collection to take place. However, the need for adequate security, both to prevent vandalism of the compound or illegal access to gardens, requires careful consideration.



### 3.5.1.2 Flats and apartments

Providing locations for storage and collection in blocks of flats often poses a challenge for designers. In most instances it will not be practical or desirable to provide individual storage or collection points for each flat or apartment, either on the floor of the flat or at ground level on the street. Careful thought needs to be given to how to transport waste from individual properties to collection points as there is scope for carrying distances to be substantial and, for all but ground floor properties, for these to require the negotiation of large changes in level.

A number of options to overcome these challenges exist:

#### Chute System

This system consists of the provision of chutes, located either within individual properties or (more typically) communal areas into which bagged waste can be directly deposited. Typically, these deposit waste into ground level sound-proofed bins (to avoid noise disturbance) where it either directly accumulates for collection or is sorted (and often compacted) by caretakers. BS5906:2005 recognises chutes as a potential option for multi-occupancy developments of four storeys or more but suggests caretaker schemes (see below) are preferable. Where used BS5906:2005 suggests that chutes should be spaced at not more than 60m intervals on the assumption that occupiers should not be required to carry waste a distance of over 30m.

Chutes have the advantage of making more efficient use of space by removing the need for individual or communal storage facilities on different floors of the building. The transporting of waste to collection points is also simplified, as this is deposited directly to a single collection point. However, arrangements for the management and monitoring of deposit areas (e.g. changing of bins as these are filled and transfer to compactors) are important to ensure the effective operation of the system. In the past, some chute systems have generated substantial noise, though this is addressed in most modern systems through better

design and location of the chute itself and sound-proofing of receiving bins.

In newly built properties a dual chute systems should be designed to accommodate both refuse and recyclables. A number of design options exist for this.

In most existing residential buildings, chutes are designed for residents to dispose of refuse only, so alternative provision may need to be made for recyclables via one of the options below.



### Case Study

Existing chutes at a high rise residential estate (Hallfield Estate) in Paddington were successfully converted into recycling collection chutes. Since installation in November 2006, recycling rates on the estate have tripled and Westminster City Council is considering introducing the scheme across the Borough. The chute system allows residents to segregate recyclable materials from residual waste and accepts all recyclable material types collected by the council as mixed dry recyclables. Deposited materials fall into a soundproof bin which significantly reduces noise nuisance<sup>16</sup>.



Communal storage facilities for each floor

This option involves the installation of communal waste and recycling containers in communal areas on each floor of a building. Material from these containers is then taken to a central bulking area on the ground floor of the building by caretakers, concierges or (where agreement can be reached to do so) waste operatives. This system may be used in combination with a chute disposal system, with the chute used for the transfer of refuse and recyclables. However, as discussed above, in new properties there ought not to be any obstacle to chutes accommodating multiple waste streams.

This system is less discreet and space efficient than a dedicated chute system. It would also involve substantially greater management on the part of caretakers, with attendant issues for the safe transport by them of waste to bulking areas. However, it offers advantages over externally located bring site/communal facilities.

General considerations for communal storage facilities systems include:

- Safe handling arrangement for caretakers when transporting waste. This may require the provision of a powered trolley or other transport device;
- Conditions within freehold, lease or tenancy agreements to prescribe the areas in which waste can be deposited;
- Monitoring to ensure occupants are adhering to such conditions and that no risk to safety or

access was subsequently being caused through the depositing of waste in dangerous areas; and

- Cleansing of collection areas.

## Case Study

Although not widely used by local authorities there are currently two schemes like this known to be operating in the London Boroughs of Islington and in Hammersmith and Fulham. Both are trials of dry recycling collections that the local authorities have launched in partnership with local New Deal for Communities. In theory, these schemes could also be used for food waste collections although odours and leakage of liquids would need to be closely monitored and controlled.

In both Islington and Hammersmith and Fulham, residents of flats are provided with single use bags to store their recycling within the home and transport it to the recycling containers. Caretakers use a trolley to transport recyclable materials to the ground floor where they load recycling into large recycling banks ready for collection by a vehicle<sup>17</sup>.

Collections by caretakers from individual properties

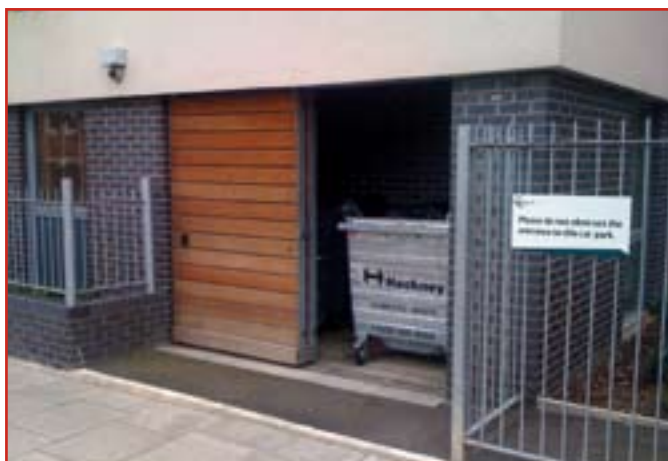
This option involves the collection of waste by caretakers from defined temporary storage areas outside of individual properties. Refuse and recycling may be left in single use bags or reusable containers. BS5906:2005 recommends such a system (referred to as a 'concierge' system) as best practice for multi-occupancy buildings of 3 storeys and above. This option has the advantage of increased convenience for residents over other systems due to the potential for storage points to be located directly at door-side. However, there are also substantial potential drawbacks regarding safety, management, and efficient use of space.



For fire safety and accessibility reasons, points must not obstruct passages and steps should be taken to ensure that refuse cannot spread beyond the defined location. In most instances, this is likely to require the provision of discreetly designed physically enclosed storage space, accessible both to residents and caretakers. However, subject to agreement with fire safety and building control officers, it may be acceptable for refuse to be left in areas defined by floor markings only. This is only likely to be acceptable where collection by caretakers occurs daily or every two days and where the time during which it is permissible to leave waste in the area can be limited to a window of a few hours.

The same general considerations as for the communal option above would also apply.

### 3.5.1.3 Surface level communal storage/collection points.



Communal storage points are based on occupiers transporting their own recycling or food waste to communal collection containers (normally wheelie-bins) located near their property in ground floor spaces accessible to collection vehicles. All such spaces should be screened to some extent and preferably located in an enclosed and covered compound. Sites involving dedicated smaller bins for individual occupiers (rather than communal wheelie-bins) will prove considerably less space efficient and so are unlikely to be appropriate in most circumstances.

Communal points have a number of potential advantages, including:

- Minimising visual impact, both by avoiding the need for multiple waste containers belonging to individual properties to be put out on the street and allowing residual containers to be designed into a single, discreet facility;
- Reducing the extent of areas to which collection vehicles require access, so potentially reducing the negative impact on townscape quality that can result from accommodating such large vehicles; and
- Increasing operational efficiency for service providers by locating waste from a number of properties in a single location in a fewer number of containers.

Ground floor communal storage areas sites may be appropriate in a number of circumstances:

#### Multi-storey apartment developments

The options discussed in Section 3.5.1.2 above are likely to prove most suitable for upper stories of apartment developments given the considerable distances between individual apartments and the ground floor. However, for ground and, potentially, first storey properties (where direct access to ground floor is provided) surface communal sites may prove appropriate.

#### Perimeter residential or mixed use development blocks with rear access courtyards

It is increasingly common for developments to be based on perimeter blocks established around a rear communal courtyard (though this may itself be subdivided to some level). Such blocks may



contain a mixture of individual low-rise dwellings, flats and mixed-use premises. Courtyards may have either a single access (making them effective cul-de-sacs) or multiple accesses (providing a through route). Where it is practical to achieve access for waste collection vehicles and operatives and suitable carrying distances for property owners can be maintained, it may be appropriate to locate one or more communal sites within or around such internal courtyards. Where access for collection vehicles into courtyard areas is not desirable or possible, communal sites may be located around the edge of the perimeter block, either directly within its bounding edge or within accesses to the courtyard interior at a reasonable carry distance for the householder (See Section 3.6). It is simplest to design such facilities to have a single entrance that can be used by both occupiers and operatives. This is most readily achieved by locating the facility on one side of an access way into the courtyard, while endeavouring to ensure that there is no need to cross the car park or a roadway. Occasionally it may be more practical to locate the facility within the vary edge of the perimeter block such that it has two accesses – one onto the bounding street, and the other into the courtyard. In such circumstances strong security measures for the door facing onto the street will be required, as the secluded access made possible into the courtyard



could otherwise lead to security or antisocial behaviour issues.

Where, for reasons of carrying distance for residents, it is not practical to transfer waste to the edge of block communal sites, but the developer wishes to avoid the need for collection vehicle access within the courtyard, transfer by caretakers

of waste from an internal communal site within the courtyard, to a 'near entry' collection point on the edge of the block (accessible to the large collection vehicle) may be an option. The substantial management involved in such arrangements should be considered, as should the reduced space efficiency of having two effective collection locations.

#### Developments fronting onto external courtyards or squares

In some instances it may be practical to provide communal collection facilities in such spaces. Many of the same considerations as for rear access courtyards within perimeter blocks would apply.

#### Developments fronting onto streets where substantial on-street parking is proposed

Unbroken lines of parked vehicles can obstruct service provider operatives in transporting waste between collection points and collection vehicles. Where substantial lengths of unbroken parking are proposed on a street fronted onto by a development, provision of communal storage areas is to be preferred. This may be achieved via one of the two options discussed above. Where it is proposed to do so via a 'near-entry' facility within the edge of a perimeter block (rather than in a rear or front access communal courtyard or square) a suitable gap in adjoining kerb-side parking should be provided to permit the movement of bins from the storage point to the collection vehicle.

#### 3.5.1.4 Communal storage facility design consideration

Regardless of the type of scheme, a number of general design considerations exist when designing communal storage facilities:

##### Screening or covered compound

Wheelie bins are seldom-attractive features in public spaces. As such all communal storage areas will require screening to avoid undermining overall quality of place.

<sup>19</sup> Wembley example from [http://www.envacgroup.com/web/wembley\\_new\\_city\\_4.aspx](http://www.envacgroup.com/web/wembley_new_city_4.aspx)



In most instances, to achieve this the creation of roofed and gated compounds will be preferable for security and cleansing reasons. Underground storage chambers with surface depositing chutes provide a yet more discreet solution. (See section 7.4.) The provision of more informally screened areas may be acceptable; materials ranging from brick walls and wooden or metal fences or rails, to planted hedges or bespoke willow screens may all prove suitable for such purposes.

#### Safety and anti-social behaviour

In the past, poor location and poor overall design has led to communal bring sites becoming the source of anti-social behaviour or being perceived as unsafe to occupants. As well as being a source of concern, this can effect the operation of the agreed waste collection arrangements (with knock on ramifications for overall environmental quality) as residents become reluctant to use such facilities.

To avoid such risks, all such facilities should be located in over-looked positions close to areas of activity – though this consideration must be balanced with the need to avoid undermining overall quality of place through discreet design. Combination with other communal facilities (such as bike shelters) should also be considered to provide additional activity where good odour controls can be achieved.

Storage areas should typically be configured as secure gated compounds (also see section 3.5.1.1 above regarding screened areas). Gate controls will be particularly important where facilities are not located within an overtly private courtyard or where near access facilities within the perimeter block edge that are accessible both from external streets and the courtyard interior are proposed (see section 3.5.1.3 above). Developers should be mindful of the need to confirm acceptability in principle at an early stage with WCAs when assessing the feasibility of gate controls, as not all will be willing to service such facilities given the potential complexities for operatives. Where acceptable, magnetic swipe card systems are likely to prove most secure and convenient for all parties.

Where not gated, designers should be careful to avoid creating potential concealed areas within compounds or screened areas which may encourage anti-social behaviour.

Lastly the potential nuisance to residents from noise created when waste (particularly glass) is deposited into containers should also be considered when selecting locations for facilities. Subterranean chambers are a potential means of mitigating this concern (see section 7.4).

#### Working area within storage space

Whether covered and gated or simply screened, adequate working space will need to be provided within the storage area for the manipulation of bins by residents and operatives. It should be possible to access a given bin with only limited rearrangement of others within the space itself. It should not be necessary to remove other bins from the area for these purposes. Wider accesses (gated where appropriate) that permit more than a single bin to pass at a time should be considered in order to facilitate ease of working for operatives and encourage all bins to be returned to the area after collection. Exceptionally, some additional bulking up space may also be required for collection operatives or caretakers. Where a roof is provided to the collection area, the ceiling height must be of sufficient height to allow for opening of bin lids.

#### Working area outside of compound

Adequate working area should be available within proximity of the storage area to accommodate waste collection vehicles and an appropriate working area around these for the passage and loading of bins. Information on distances that operatives can be expected to transport bins can be found in Section 6 where information on working areas around vehicles can also be found.

#### Odour and cleansing

Like other storage or collection areas, communal facilities can result in odour. However, this tendency can be exacerbated by the greater quantities of waste accumulated and stored. Inevitably, spillage of waste will occur from time to time, adding to the problem. Good container selection will go some way to addressing the issue (see Section 7). Where the area is to be enclosed in a roofed building, British



Standards require that adequate ventilation must also be provided within the compound. Whether covered or simply screened, an impermeable surface with surface drains should be provided to assist cleansing. Staining of surfaces is likely to be an issue in the areas immediately surrounding the facility, therefore darker paving materials and non-porous paving with a smooth texture should be selected. These are easier to clean and will help conceal any residual staining.

#### Signage and illumination

Communal bin stores must include signs and/or illumination and information for visually impaired people, specified in accordance with BS 8300:2009.

Adequate signage must be provided to indicate to the user the nature of the waste or recycled material stream that should be stored in any particular container. Signage should be permanently mounted on the internal wall of the waste storage compound adjacent to the location of the respective container.

Signage should be compliant with the WRAP standard iconography (see Section 3.8.1)

#### 3.5.2 Communal storage facilities utilising subterranean chambers

Communal facilities utilising underground chambers for the storage of waste is a further potential alternative to screened areas or covered compounds. This is an unobtrusive method of large capacity waste storage as the majority of the unit is located below ground and out of sight. Problems from waste odours and noise from waste deposit are reduced due to the contained nature of the system (see Section 7.4 for additional information). Typically underground units consist of a pre-fabricated concrete casing into which fits a large steel container. This is all concealed beneath a flat-walk platform onto which a 'street furniture' receiver unit is mounted.

#### 3.5.3 Communal storage facilities utilising vacuum ducts

An alternative system of communal underground waste storage and collection is through vacuum ducts, which avoid the need for vehicular collection and virtually eliminate refuse storage problems.

Such systems benefit the waste contractor, local authority, the householder, and the streetscape as it is convenient to use, lessens the number of journeys undertaken by refuse collection vehicles around the complex, and results in less clutter on the street.

The type of system can also be retrofitted to existing housing developments as has occurred in historic areas of Barcelona and Vitoria in Spain.

### Case Study

The UK's first underground vacuum waste management system was opened in the Wembley City housing development in north west London in December 2008. It uses three inlets, situated in the courtyards of the housing developments, for residents to deposit dry recyclable, organic and residual waste into separate colour coded containers. The system can be designed so that access points are also available internally mounted on walls. The waste is then sucked through underground pipes to a central bulking point where it is stored in airtight containers, which can then be sent on for further reprocessing by the waste contractor.<sup>18</sup>



### 3.6 Manual transport of waste to and from storage and collection points

One of the most fundamental constraints on the location of storage and collection facilities is the distance over which it is acceptable for occupiers or waste operatives to transport waste or containers. Further information can be found in Section 3.6.3 below.



<sup>18</sup> BS 5906:2005 Waste management in Buildings; Code Of Practice  
<sup>20</sup> Manual for Streets – Department of Transport, 2007

Various carrying distances for different types of movements, and with different types of containers, are specified in British Standards. The Code for Sustainable Homes requires many of these to be met for accreditation purposes. Many WCAs will reflect these standards in their own requirements though it is advisable to consult these carefully, as it is not unknown for them to differ, whilst guidance produced by different departments within a local authority (for instance the WCA and the Planning Authority) may also not always be in accord. Early engagement with the various departments of the local authority will assist in determining the local requirements.

Appropriate carrying distances are important for a number of purposes. These include:



1. Health and safety in manual handling for waste operatives, occupants and caretakers when moving potential heavy bins.
  - Waste operatives: Operatives (employed either by the WCA or a private contractor) will need to move containers from the collection point to their vehicle, the carrying distance for this varying depending on how close the two points are.
  - Occupiers: Under a typical collection system, occupiers are likely to be required to move bins between a formal storage points and a point of collection, though in some instances it may be possible to combine the two, such that waste is transferred directly from the point of arising within the premises to a container at the point of collection.

- Caretakers: In some instances, caretakers may be employed by a management body to move waste or containers on occupants' behalf. This is most likely to occur in multi-occupancy high rise buildings or denser low rise urban blocks where maximum carry distances between storage and collection points cannot be met (or it is considered undesirable to do so for other design purposes). In the latter instance, mechanical aids may be required for health and safety purposes.
2. The efficient and equitable operation of collection services. Excessive carry distances may slow progress of rounds and/or lead to an imbalance in workloads of different crews.
  3. Maintenance of occupants' participation in the disposal arrangements. Above a certain distance, occupants are likely to consider journeys between particular storage or collection facilities as inconvenient. This may result in reduced participation in the collection arrangements with depositing of waste in inappropriate areas, which in turn may affect the management and cleanliness of public areas and the efficiency of collection services.

Below, various carrying requirements for occupiers and waste operatives between different locations and, where appropriate, with different bin sizes are recommended. Wherever they exist, these are taken from British Standards.

### 3.6.1 Residential occupiers

- Occupiers are responsible for moving containers from the storage area to designated collection area (where the two are separate). Only where a caretaker is employed by a management company to discharge this duty in their place can this responsibility be shifted. In such instances, formalisation of these arrangements with WCAs through planning conditions should be made.
- Step and kerb free access between the storage and collection points should be provided for the carrying or wheeling of containers from one to the other. Up to three steps may be permissible for containers up to 250 litres, but no relaxation will be acceptable for any larger size.

<sup>21</sup> RECAP 'Waste Management Design Guide' recommends a distance of at least 20m distance from the nearest dwelling.

- Gradients over which containers must traverse should not exceed 1:12.
- Occupiers should not be required to carry or wheel containers from the storage point through the property on collection days (though where storage is within garages this is acceptable, provided that the movement is through the garage itself only).
- Storage points (including those within garages) should not be more than 30m (including any vertical distance) from a principle external door.
- Designated collection points should not be more than 30m distance from the storage point.
- There are no restrictions on carrying distances to 'bring' sites. Use will be optional for residents, their purpose being for the voluntary depositing of recycle streams that cannot be collected from the home via a standard WCA kerbside service.

### 3.6.2 Residential caretakers

Carry distances for caretakers should normally be as per those for residential waste operatives (see section 3.6.3). However, subject to appropriate risk assessments caretakers may potentially move containers much greater distances.

In principle, unnecessary movement of heavy loads should be avoided in the first instance by design. As such, when proposing the use of caretakers for waste collection in residential developments, developers should think carefully about whether broader design objectives necessitate the measure on balance. This will be particularly pertinent where the use of caretakers is being proposed to allow carrying distances to collection points to be increased for general layout and placemaking reasons.

Where the use of caretakers to move bins is still considered appropriate, developers should be able to predict the type and number of containers that caretakers would need to move based on the container types and capacities specified by the WCA for different dwelling types (see Section 7 for further information) and the proposed distance to

collection point. From this it should be considered whether the workload, carrying and lifting requirements are appropriate for the proposed workforce from a health and safety perspective, with particular reference to the Manual Handling Regulations. If not, then a range of potential options could be considered, these include:

- Using a greater number of employees such that the workload and effort is split;
- Providing mechanical assistance to employees by way of powered trolleys or small vehicles, with such lift mechanisms as may be required to reduce repeated lifting of heavy loads; and
- Reducing the overall distance that caretakers will need to move containers through a fundamental redesign on proposals.

### 3.6.3 Waste collection authority operatives

There is discrepancy between Manual for Streets and the relevant British Standard<sup>19</sup> on the proximity that collection vehicles should be able to achieve to collection points. This effectively establishes the distance over which operatives will need to traverse containers.



<sup>22</sup> BS 8300:2009 Design of buildings and their approaches to meet the needs of disabled people



- Manual for Streets<sup>20</sup> recommends that collection vehicles should be able to get within 25m of collection points. It explicitly notes its discrepancy with the relevant British Standard on this issue.
- BS 5906:2005 recommends that waste operatives should not be expected to move two-wheeled containers more than 15m between collection point and vehicle, and four-wheeled containers no more than 10m.
- Though where early consultation with WCAs take place they may be willing to consider distances that exceed the above, labour considerations are likely to make acceptance of these less likely than with private contractors.
- The collectors should not be required to move wheeled waste storage containers over surfaces that may hinder the smooth passage of the container.

#### 3.6.4 Private Waste Operatives

Like caretakers, it should be generally assumed that the same carry distances as recommended for WCA employed operatives will apply to private contractors. Subject to an appropriate ergonomic assessment under Health and Safety regulations and the provision of suitable mechanical aids (if deemed necessary) private contractors may agree to carry waste distances substantially beyond these. This will be a concern for future occupiers of premises to negotiate when appointing a contractor. However, developers should seek to reduce any necessary carrying distance by allowing as close as possible access for collection vehicles to the premises.

### 3.7 Household Waste Recycling Centres



<sup>23</sup> Home composting bins are further described in section 7 of this guide.

Household Waste Recycling Centres (HWRCs) are a vital component in the waste service portfolio of all local authorities. HWRCs provide capacity for the householder to recycle and dispose of excess household waste which is not suitable for removal via the kerbside service. Under the Environmental Protection Act 1990 it is incumbent on local authorities to provide such sites to allow for the disposal and recycling of household waste on a no cost basis.

For residential and mixed use developments a financial contribution may be sought towards the provision of, or upgrading of relevant HWRC facilities (see section 2.6). The local authority may also require the developer to make suitable land available for provision of waste recycling facilities.

The level at which provision of contributions by developers will be set, in the form of finance or land, will be assessed on a cost per dwelling basis and will be set at a level that the respective local planning authority deems appropriate.

The level of contribution that 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 be appropriate for contributions from several developers to be pooled to fund a new facility.

Contributions will be secured through Section 106 agreements or other requisite legal agreements. Such development obligations should form a key component of the project inception discussions held with the local authority.

### 3.8 Bring Sites

Recycling bring sites constitute another key element within a local authority's waste services portfolio. Bring sites provide general recycling opportunities to the public over and above those that which are generally supplied at kerbside. Bring sites will generally accommodate a broader range of recycling streams and allow for greater storage capacity than household containers.

Bring site provision is of particular importance where kerbside collection of recyclables is not possible or there is restricted ability to provide for the storage or collection of recyclable material in the home. Bring site facilities should be suitably located so as to be easily and conveniently accessible to all site users but should also be located away from the nearest dwelling to reduce disturbance to residents<sup>21</sup>. They should also be located clear of views and landmark buildings in the local neighbourhood.

Communal bin stores must also include signs and/or illumination and information for visually impaired people, specified in accordance with BS 8300:2009<sup>22</sup>.



Bring sites must also be accessible to service vehicles by adoptable highways, and situated so as to avoid damage to overhead services during collection, particularly when lifting underground facilities.

### 3.8.1 Design Considerations

A key design consideration is the avoidance of standardised, anonymous streetscape elements in favour of comprehensive streetscape treatments that recognise and enhance the sense of place.

The bring site facilities should be simple in design with suitable signage. The Waste and Resources Action Programme (WRAP) has developed a set of recycling iconography that is considered to be best practice.



Figure 3.1 – Example of WRAP iconography

The WRAP iconography can be accessed at the website given below, where feasible colours should co-ordinate with other street furniture in the area.

An on-line guide to signage is available at: [http://www.recyclenowpartners.org.uk/local\\_authorities/quick\\_start\\_tool/creating\\_site.html](http://www.recyclenowpartners.org.uk/local_authorities/quick_start_tool/creating_site.html)

Design considerations for bring sites are broadly as per those for general ground-floor communal storage areas which are discussed in Section 3.5.1.3. Collection vehicle access considerations for bring sites are addressed in Section 6. The key requirements from the sections are summarised below.

- Bring sites should consist of a recommended minimum area of 15m long by 5m wide area.
- The local specification of standard surface containers for bring sites should be provided by the WCA. These are likely to consist of large 'banks'. Alternatively, to reduce visual impact and for ease of screening, developers may wish to procure their own surface or subterranean containers.
- Surface containers should be sited so they are screened from view from public areas within individual or shared cabinets or placement behind a wall or screen (with suitable holes for depositing of waste). In either instance, consideration should be given to correct re-positioning of containers following removal for emptying.



- Collection vehicles are likely to be heavy goods vehicles, with containers being taken from site for emptying. Loading of containers will be from the side of the vehicle and adequate access arrangements for this from the public highway will need to be made. A hard standing area should be provided for collection vehicles with adequate headroom beneath trees, overhanging buildings or overhead telecom or power lines for loading of the containers.
- Arrangements for regular cleansing should be made to prevent the potentially hazardous accumulation of inappropriate waste left outside the containers as this may provide a potential fuel source for arson or unintentional ignition, attract scavenging rodents or deter people wanting to recycle.
- A hard-standing area should be provided for containers with provision of drainage via a trapped gully.
- Darker impermeable ground surfaces should be used around containers for ease of cleansing and concealment of residual stains.
- Signing and/or illumination and information for visually impaired people should be provided in accordance with BS 8300:2009

### 3.8.2 Location of Bring Sites

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, level of financial contribution 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 (see section 2.6 Planning Obligation Parameters).

Developers of major strategic developments would normally be required to make provision for one bring site for every 400 dwellings. The developer will be expected to provide the containers for this facility and 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 WCA. Community bring sites will be in addition to the waste and recycling facilities accommodated for individual dwellings.

## 3.9 Home composting

The composting process converts organic waste to a product that can be used as a soil conditioner or fertiliser. Composting is an option for treatment and recycling of garden and other organic waste at source or at communal facilities. The scale and type of composting operation within a residential setting



can vary considerably from small scale garden composting to larger community composting schemes. Consideration should be given to the provision of composting facilities in developments with gardens and home composting bins<sup>23</sup> should be provided in all new dwellings where space is not restricted. When considering home composting areas they should be carefully designed as part of the garden and not merely placed in a convenient area, which maybe inappropriate; a 2m x 1m area

<sup>24</sup> Aardvark Recycling - <http://www.lcrn.org.uk/our-network/member/78>

Table 3.1 – Appropriate Composting Types for Various Developments

Development Type		Composting System Type		
		Mound	Bin	Wormery
Residential	Flats			✓
	Terraced		✓	✓
	Semi-Detached		✓	✓
	Detached	✓	✓	✓
Commercial			✓	✓
Mixed Use			✓	✓

should be provided with a suitable sized composter and adequate drainage considered. Householders should have easy access to the composting area from the kitchen or utility room.

For multi-unit residential developments of five dwellings or more, communal composting facilities could be considered, where composting can be incorporated into the landscaping plan for the development. Community compost sites where the community has responsibility for maintenance and for conveying waste to the sites are encouraged. However, proposals for such sites must identify a clear source of year-on-year funding and a suitable community body to take responsibility for long term maintenance. Likely sources of local community involvement are through Land Share, allotment schemes and the grounds maintenance department at the local authority.

### 3.9.1 Home composting types

Home composting provides a good opportunity for the householder to take responsibility for the organic fraction of their household and garden waste. There are many ways to compost waste at home. Some methods need a garden, and others can be used by apartment dwellers. Generally the chosen method will depend on room available, type of waste used and the time available for the creation of the compost.

#### Compost mound

A compost mound doesn't require a bin – organic waste is piled onto a mound. It can look unsightly and takes up a lot of room so is best suited to large gardens where there are screening opportunities, for example behind a shed or large shrub.

#### Compost bins

This can be any simple container that holds garden and kitchen waste whilst it breaks down. Containers come in many shapes and sizes and many WCAs provide composting bins at subsidised prices for local residents. This method is most suited for dwellings with small gardens or limited outdoor space.

Ideally the compost bins should be sited on bare soil in a reasonably sunny position to allow for better aeration and drainage and to improve access for beneficial microbes and insects.



#### 'Wormery' compost bins

'Wormeries' take cooked and uncooked vegetable and fruit scraps and some small amounts of meat scraps. They produce fine compost and a liquid plant feed that can be used to feed pot plants and hanging baskets. This form of composting is suitable for properties without access to a garden.



## Compost turning units

This is purpose built compost structure with three holding units placed side by side. While the compost is 'cooking' in one area, waste is added to the empty unit next door. The units are turned or stirred every week or so, which speeds up the composting process. Again this system is only suitable where properties have gardens.

### 3.9.2 Community composting

Community composting schemes involve the pooling of garden waste by members of a local community. Typically this operation is carried out on a small scale at locations such as allotments or parish playing fields. Householders bring their garden waste to these sites where it is composted by volunteers. The participants may then take away the resulting compost for use in their own homes.

### 3.9.3 Centralised composting

Centralised composting schemes can utilise waste that has been bought in from a variety of sources such as garden waste delivered by householders to Household Waste Recycling Centres, these schemes are usually commercially operated by specialist companies.

## Case Study

London Community Recycling Network's Aardvark Project is an example of a local based compost recycling initiative serving the local community. Aardvark Recycling is a social enterprise delivering a range of reuse and recycling services to disadvantaged households. These include doorstep collections of dry recyclables and food waste as well as a furniture reuse scheme in partnership with local furniture reuse organisations. Future services include a vegetable box scheme and reusable nappy laundry service. Aardvark also offers a comprehensive recycling service to small and medium-sized businesses that are looking to improve their environmental performance. Aardvark operates its own in-vessel composting units to compost the food waste it collects from households and businesses, with the compost made available for free to interested parties<sup>24</sup>.



# 4 Commercial Development Guidance

## 4.1 Commercial Developments

Waste in commercial developments is less easily categorised than household waste. One businesses' waste will be different to the next and may be collected by a different collection contractor. Therefore, in commercial, industrial and retail developments the bin provision and storage requirements will need to reflect the collection frequency and specific requirements of the selected contractors. All waste must be containerised and stored off the public highway.

Operators of commercial premises are required by law to enter into a commercial waste agreement with a registered waste carrier for the disposal of their waste. The provision of space for recyclable material in commercial developments is likely to result in lower commercial waste collection charges, as well as providing a practical demonstration of the occupant's concern for environmental issues.

### 4.1.1 Further Considerations for Commercial Developments

All developments must provide adequate storage space for composting, recycling and waste. The provision of a compactor or baler should be considered; compacting waste before collection can significantly reduce the storage space required and the frequency of collections. Compaction also offers a secure containment of waste.

Commercial waste compaction and containment methods should be discussed with the chosen waste contractor to ensure compatibility.

Providing space for recyclable material not only encourages recycling, but also could reduce collection costs for commercial tenants.

Typically the provision of waste storage capacity requirements for each of the likely commercial uses is given in the table below.

<sup>24</sup> Statutory Instrument 2006 No. 3368 The Smoke-free (Premises and Enforcement) Regulations 2006  
26 LATS – Landfill Allowance Trading Scheme. A scheme designed to reduce the landfilling of biodegradable municipal waste. Each local authority has an allocated number of LATS allowances and heavy fines are imposed for exceeding the allowance. Additional information from <http://www.defra.gov.uk/environment/waste/localauth/lats/index.htm>



Table 4.1 – Typical Provision for Waste Storage Capacity in Commercial Developments

Typical Provision for Waste Storage Capacity in Commercial Developments	
Development type	Litres of waste storage for every 1,000m <sup>2</sup> gross floor space
Offices	2,600
Retail	5,000
Restaurants and fast-food outlets	10,000
Hotels	7,500

#### 4.1.2 Compaction

Compactors may be required for the following types of development. Where compactors are provided, separate provision must also be made for the storage and collection of dry recyclable materials.

- Large residential developments
- Offices
- Light Industrial
- Retail
- Restaurants/Fast food outlets

#### 4.1.3 Waste Storage for Commercial Developments

Commercial containers (wheeled bins and compactor skips) must be stored within the external or internal space of commercial premises. Ideally this will take place within the building itself. However, where adequate screening of views from public areas and any over-looking sensitive uses (e.g. residential properties on higher floors) has been provided, storage in private yards will be acceptable. Such screening should consist of a fence or other boundary treatment to a minimum 1.8m in height or that of the highest container as stored and seen from sensitive public vantage points.



Loading of commercial containers should take place within the private yard of the commercial premises. However, subject to no major disturbance to access for other vehicles and no need to reversing onto the public highway (for instance to reverse onto a skip for loading), it may be acceptable for the collection vehicle itself to remain outside but immediately adjoining the yard in public areas, with containers being loaded from the yard edge. This will avoid the need for large areas of space (redundant for other purposes) within the yard.

The different requirements for internal or external loading are discussed further below.

#### External loading within yards

Sufficient space should be provided within yards such that collection vehicles can enter and exit in forward gear. Developers should be mindful of the space required to meet this requirement and should consider shared service yards wherever practical to reduce this. Where compactor skips have been provided, sufficient space will be required within the yard to allow vehicles, having entered in forward gear, to turn then reverse onto the skip for loading.



#### 4.1.4 Carrying Distances

Carrying requirements for staff employed by commercial operations should normally be the same as those for residential waste operatives (see section 3.6). In principle, unnecessary movement of heavy loads should be avoided in the first instance by design. As such, developers should think carefully about whether broader design objectives necessitate the measure on balance. This will be particularly pertinent where the use of staff is likely to require carrying distances to collection points to be increased for general layout and placemaking reasons. Developers should also bear in mind the potential additional financial and management burdens of employing staff to perform such tasks.

Where the use of staff to move bins is still considered appropriate, developers should be able to predict the type and number of containers that would need to move based on the container types and capacities specified by the collection contractor (or WCA) for different dwelling types (see Section 7 for further information) and the proposed distance to collection point. From this it should be considered whether the workload, carrying and lifting requirements are appropriate for the proposed workforce from a health and safety perspective, with particular reference to the Manual Handling Regulations. If not, then a range of potential options could be considered, these include:

- Using a greater number of employees such that the workload and effort is split.
- Providing mechanical assistance to employees by way of powered trolleys or small vehicles, with such lift mechanisms as may be required to reduce repeated lifting of heavy loads.
- Reducing the overall distance that caretakers will need to move containers through a fundamental redesign on proposals.

#### 4.1.5 Waste Operatives

Like staff, it should be generally assumed that the same carry distances as recommended for WCA employed operatives will apply to private contractors. However, subject to an appropriate ergonomic assessment under Health and Safety

regulations and (where necessary) the provision of suitable mechanical aids (see section 3 above) private contractors may be prepared to carry waste distances substantially beyond these. This will be a concern for future occupiers of premises to negotiate when appointing a contractor. However, developers should seek to reduce any necessary carrying distance by allowing as close as possible access for collection vehicles to the premises (see Section 6 for more information).

## 4.2 Cigarette related waste/litter

Smoking related litter must be addressed and managed by businesses. If smoking related litter is deposited on private land (i.e. business premises) the clearance is the responsibility of the business. If this waste is deposited as litter on public land the authority have a duty to clear the waste during street cleansing. Where a litter problem can be clearly traced back to a business, enforcement action can be taken. This can be used to compel the business to clear up the litter and implement measures to prevent land from becoming defaced. This situation can be applied to designated smoking areas, frequently located outside the business on public land i.e. pavements outside doorways.

Developers are advised to consider the provision of containers for cigarette related litter into building plans. These containers should be in the designated smoking areas outside the building. This waste has become more prevalent after the implementation of the smoking ban in public places<sup>25</sup> for example public houses, leisure centres and restaurants. Cigarette waste containers should be designed to incorporate the following requirements:

- Sufficient amount of containers for staff, clients and customers;
- In a convenient location and easily identifiable (signs);
- Ensure bins are sited to be readily emptied on a regular basis;
- Secured to a wall or the ground and secure against weather and wildlife;

<sup>27</sup> Manual for Streets – Department of Transport, 2007

- Locations for smoking and cigarette waste disposal containers should not be sited near windows, where an inconvenience may be experienced inside the building; and
- Consideration of potential for fire hazard from improper management of cigarette waste.

## 5 Mixed Use Development Guidance

### 5.1 Mixed Use Developments

If a development is of a mixed nature (e.g. commercial and residential) separate storage facilities and collection arrangements must be made and 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. The primary reason for this is that commercial waste that enters the municipal waste stream becomes the responsibility of the local waste disposal authority and will impact on their performance targets, particularly with regard to LATS.<sup>26</sup>

Given the need to separate the domestic and commercial waste streams and the different collection infrastructures that are likely to be in place for each stream, developers are suggested to read the more detailed guidance for each kind of development elsewhere in this Guide.

The likely commercial occupants of mixed use developments are discussed in Section 4, where the provision of waste capacity requirements for each of the likely commercial uses can be seen in Table 4.1.

#### 5.1.1 Additional considerations for mixed use developments

Each separate use should have its own independent store for waste and recyclable material.

- Residential units will normally be expected to have independent storage.

- Smaller sack compactors are not suitable for mixed developments.
- A metal floor plate is recommended, particularly where waste is being compacted, to protect the floor surface and minimise damage.
- For static compactors, floor mounted guide rails are required so that the container lines up with the compactor when it is being returned to the site.
- An appropriate heavy-duty stop barrier is required at the rear of the allocated location for a skip or portable compactor.

Where mixed developments are proposed, access to commercial waste storage areas should be separated from the access to the domestic waste storage areas. Effort should be made to provide waste separation facilities within developments. This should include such things as paper, card, glass, cans, and plastic bottles recycling collection points in offices and retail units and in facilities that produce high volumes of biodegradable content, extra attention should be paid to the storage and collection arrangements.

#### 5.1.2 Storage considerations for mixed use developments

Whether internally within buildings and loading bays or externally in yards or other areas, waste from commercial and residential elements of mixed used premise should be clearly segregated with no mixing in either containers or storage areas. Storage areas should be designed and provided to reflect this. The relevant design requirements for either element are described in the preceding sections above.

<sup>26</sup> Cambridgeshire Design Guide for Streets and the Public Realm



## 6 Waste Collection

### 6.1 Introduction

Collection of waste from developments is a fundamental consideration in the design stage. Domestic waste and commercial waste will need separate collection arrangements but may have to make use of common infrastructure (road access etc) and therefore the developer needs to consider all the likely scenarios that might impact on the design of the development.



44

#### 6.1.1 Local authority waste collection

An effective waste collection strategy is critical. It should outline how, where and with what frequency waste is collected. Frequency is important in terms of the amount of storage space required. Above all, waste collection points must be conveniently located and designed to maximise participation in recycling. Developers must consult the local waste collection authority in the early stages of the design to ensure that suitable arrangements are made to facilitate efficient waste collection.

#### 6.1.2 Impact of waste collection on placemaking quality

The importance of good placemaking in new developments, as promoted in Manual for Streets<sup>27</sup> and national Planning Policy Statements, is discussed in Section 8.

Whilst the emphasis in Manual for Streets on spatial character as a starting point for design is clear – the need to reconcile this with vehicle access requirements is also recognised. However, in order

to reduce the impact of these, greater flexibility and forethought in the design of provision for vehicles is encouraged, both in planning for the areas to which a given type of vehicle will require access, and the detailed layout design of the routes through which this will be achieved. This will mean:

- Reconciling proposed street character types with an appropriate movement framework. This movement framework itself will need to incorporate and reconcile networks for different competing modes of transport (such as walking, cycling, cars, buses) and service vehicles (including waste collection). Detailed advice on this process is provided in Manual for Streets and both developers and WCAs should recognise the need for plans for waste access to be developed within this context.
- Deciding on the appropriate level of provision that should be made for vehicles in any streets and spaces that it has been decided they require access to. In some locations unfettered access and movement may be required. However, Manual for Streets is explicit that, where movements by large refuse vehicles are infrequent, streets should not necessarily be expected to provide for their unfettered movement over other concerns. In such instances, it might be expected that a degree of waiting and manoeuvring should be undertaken (e.g. the convenient passage of pedestrians and cyclists, social use of the street, or a visually attractive design).

The two above tasks are discussed further below. In practice, substantial iteration and dialogue between the two above tasks is likely to be required to achieve layouts that match spatial and social quality with the functional needs for access by vehicles.



In approaching this issue it should be understood that Highway Authorities are free to set their own geometric design standards for the adoption of new streets and spaces.

Many authorities will have produced Highway or Streetscape Design Guides or adoption standards that establish what these are for their entire area. However, it is increasingly common for local authorities to develop bespoke standards for individual larger development sites. Expressed in 'Design Codes' and other design documents, these may or may not accord with the wider authority adoption standards.

Manual for Streets encourages a flexible approach to determining what such local or development specific streetscape design requirement should be. Rather than advising direct geometric standards and principles (as past superseded national guidance had) it encourages local authorities to determine their own – for the most part explaining issues and broad design considerations that should be born in mind in developing these. Highway Authorities are encouraged to accept bespoke design solutions and geometry for different streets and locations, guided by design parameters, rather than necessarily stating rigid street specifications.

Amongst the various vehicles that will need to be accommodated in a development, waste collection vehicles are likely to be the largest vehicle that will require regular access – though careful selection of appropriate collection systems has the potential to reduce this substantially (see section 6). They are thus likely to be a fundamental concern in the design process. Aspirations to achieve particular street or space characteristics, based on tight carriageway width or close definition by buildings or gateway features may be unachievable where inadequate thought is exercised in this respect or – alternatively - effective waste service provision may be compromised. As the Cambridgeshire Design Guide for Streets and the Public Realm notes *'It should be recognised that in some circumstances it may be inappropriate in overall design terms to modify a layout simply to accommodate occasional very large refuse vehicles'*<sup>28</sup>

This chapter of the guide aims to supplement existing advice in Manual for Streets on this process with further specific advice on the requirements of waste collection vehicles.

## 6.2 Waste Collection Vehicle Routing

Planning for collection vehicle access routes should commence at an early a stage in the design process and early dialogue with the local authority is again encouraged in this regard.

For most small to moderate size developments, with no more than a handful of new streets, it should be possible to establish detailed information on each of these at an early stage. This will avoid the need for potentially costly retrospective changes due to an unrealistic approach in placemaking aspirations for streets and spaces being taken.

However, for larger more complex developments such as urban extensions, the masterplanning process is likely to be an iterative process of refinement via a variety of stages. These may include:

- A masterplan framework: a strategic plan setting out broad land use quantities based on large unrefined blocks and initial coarse spatial and movement hierarchies and aspirations.



- An outline masterplan (outline planning application for the masterplan area): a more detailed plan establishing proposed blocks, land uses and quantities and spatial and movement hierarchies with greater certainty and detail. Depending upon the scale of the development and other factors, outline proposals may also be included for streets and spaces. Alternatively, for larger developments, a 'design code' or similar separate document may be produced establishing the detailed design specifications and principles upon which the detailed design of streets and spaces within or around different parcels must be based. Highway and access proposals will be subject to development control agreement with the Highway Authority, though the potential impact of these on broader placemaking quality may influence the Local Planning Authorities determination of the application.
- A detailed planning application: Containing the detailed design proposals for the site or (for larger developments) individual parcels within it. Highway and access proposals would again be subject to development control agreement with the Highway Authority.

The principle objective of the master planning stage is to reduce the extent of streets and areas to which collection vehicles require access. Being very large, collection vehicles have a substantial tracking envelope. Accommodating this can have a pronounced impact on townscape quality and the ability to achieve other spatial design aspirations (for instance to create a streetscape that promotes low vehicle speeds through the use of tight geometry or to base blocks around serviced communal courtyards). Consequently, the principle objective for designers in accommodating collection vehicles should be to reduce within practical limits the extent of streets and spaces along which they require access. Achieving this overall objective will require careful consideration not only of the various factors noted below, but also the location of collection points – adequate proximity of these from collection vehicles being a key determinant on acceptable routes.

## 6.3 Factors to address when planning for collection vehicle access

### 6.3.1 Round Efficiency

#### 6.3.1.1 Residential Developments

WCAs may use software systems to develop and maintain waste collection rounds and test the impacts of new developments. A principal goal for many in doing so will be to maintain equitable labour conditions for their employees by ensuring that the conditions and durations of the various collection rounds are broadly matched. Most software systems use information from the National Street Gazetteer on routes (and, where available, constraints) as the basis of networks; collection points and waste volumes based on standard per household assumptions are then added to make up the round. The operational working practice which is most directly associated with optimised waste collection rounds is "Task and Finish".



Task and finish (T&F) is a flexible working arrangement where the organisation of work is based on the completion of a particular task and the actual hours worked are less important than the achievement of the job to the required quality standard. For (T&F) arrangements to work well, managers will have to assess and agree how long they would reasonably expect an employee to take to achieve a particular task or piece of work. If the employee then completes the task or work within a shorter period and to an acceptable standard, they are not required to remain at work. However, the practice of applying T&F to the collection of household waste and recyclates has anecdotally

the potential to adversely affect the safety of the workers, as T&F may encourage workers to rush the job. Consequently it is recommended that the application of T&F working arrangements to waste collection services will require greater supervisory and management control than other working practices.

Rounds may be fundamentally reassessed or reviewed periodically in an effort to maintain the optimal collection route. However, the addition of successive new developments will gradually unbalance the rounds. Some software packages allow for the testing of the impact of proposed new development quantities on existing round formations, utilising proposed street networks, collection points and assumptions regarding waste quantities for households and businesses. Where, following testing, tolerances remain acceptable it may be possible to maintain a slightly amended version of an existing round route for the purposes of serving that new development. However, larger developments are likely to exceed tolerances and require a total re-optimisation of the WCAs round's. This may lead to radically different routes than those existing, therefore, developers need to consider the following:

- It should not be assumed by designers that existing waste collection rounds within or close to the development can necessarily be extended, tweaked and retained. Larger developments especially are likely to require a fundamental re-optimisation of all the WCA's rounds that may lead to markedly different routes.
- Information on proposed street networks, collection points and development quantities needs to be provided to the WCA for the purposes of modelling. Developers should check with the WCA to establish what their software package requirements are for these purposes. Critically, it will be important to ensure that information on constraints and any areas not designed to accommodate collection vehicles, is provided. This will be important not only for the initial testing (and potential re-optimisation) but also future re-optimisations. In the absence of clear information from the National Streets Gazetteer or other sources as to the inappropriateness of a route, the

careful work of establishing a street network that limits waste vehicle movement is likely to be undone. To these ends, when submitting information to the National Streets Gazetteer for new roads, Highway Authorities should ensure that information on width restrictions, one way restrictions or environmental sensitivity is uploaded as Additional Street Data fields.

In any event, both developers and WCAs should be prepared to test several iterations of the proposed waste vehicle access hierarchy to obtain a route that balances round efficiency with broader street character aspirations.

#### 6.3.1.2 Commercial Developments

Commercial developments will be serviced by private collection providers contracted by individual occupiers, though in serviced commercial premises shared collections may be arranged. This is likely to lead to a number of different service providers operating within a development. In the majority of cases it is unlikely that an individual provider will have a sufficient density of regular customers within an area to warrant an established collection route. Possible exceptions to this include dense city centres and larger commercial developments where a private management company arranges a single collection service for a number of occupiers. Moreover, different occupiers are likely to have varied waste collection needs. This will make it difficult for developers to foresee the particular vehicle types and sizes that will serve a given premises and thus to identify the most appropriate access route.

However, it is possible for Planning Authorities to limit via planning conditions the routes that private waste collection vehicles servicing commercial premises may take. This would in turn need to be written into the contract between the occupier and private collector.



As such, it is advisable that developers plan commercial developments on the basis that access for private waste collections can be limited to particular routes. Such routes should be specified by deed on disposal. Given the possible uncertainty over vehicle size and type it is advisable that the highway geometry for such routes be quite conservative (that is accommodating to larger collection vehicle sizes). To reduce the potential character impact of such routes, developers should consider grouping commercial developments such that they can all utilise a single access route so far as possible. Alternatively, they may wish to locate commercial developments around planned major roads, either within the development or bounding it. The potential to create serviced commercial complexes arranged around a shared yard or loading bay (where joint collections can be provided by a private overall complex management company) should also be considered as a means of reducing the frequency of vehicle movements. This will allow common waste streams (e.g. paper) to be stored and collected communally rather than independently. Management companies are often able to negotiate favourable rates with contractors for such arrangements.

#### 6.3.1.3 Un-adopted roads

The preparedness of WCAs to take vehicles for residential collections through un-adopted streets will vary from authority to authority. Where it is proposed to include such streets in a development the WCA should be consulted at an early stage to confirm their policy on this issue. This should be of particular concern where routes through internal courtyards are being proposed as most Highway Authorities will be reluctant to adopt such areas. Where service providers are not willing to consider

this then occupiers may be required to bring bins to a designated location adjoining the private highway where they are accessible to operatives.

Such circumstances should be foreseen and planned for by the developer and an appropriate communal 'near entry' collection point designed to discreetly accommodate the waste at the development edge. Informal solutions that would result in large numbers of bins being left in the open in public view at the development edge for collection should not be accepted. Where suitable arrangements cannot be agreed with the WCA and Planning Authority, then a private collection may need to be arranged.

## 6.4 Types and size of collection vehicle(s)

The type and size of collection vehicles anticipated to use a development can have a pronounced influence on placemaking quality. There are several factors that should be considered in this respect.

### 6.4.1 Type of Collection System

In the vast majority of instances, collection of waste and recycle from a development is likely to be undertaken by the WCA or its nominated contractor using a refuse collection vehicle. However, in some larger developments it may be viable to establish alternative collection systems, either provided by the WCA or a development management company. Some new technologies have the potential to substantially reduce the areas to which collection vehicle access is required, the frequency with which this is necessary or may permit the use of much smaller vehicles in some locations. Further information on available options can be found in sections 4 and 7. Where it is intended to pursue such technologies it should be born in mind that their viability is likely to be highly dependant on other factors (such as development yield). With larger developments, these factors are liable to change substantially over the course of planning and delivery as market conditions change and proposals are refined.

Where a mixed use development is proposed, the differing collection requirements of commercial and other non-residential premises should be born in mind. Appropriate collection services and vehicles





may differ markedly from those for domestic properties. Given the likely uncertainty over the future detailed occupants of individual premises, consideration should be given to locating land uses that may potentially require larger vehicles in proximity to the edge of the development or locations adjoining proposed major routes through it.

#### 6.4.2 Type of Vehicle

##### 6.4.2.1 Residential Developments

In the likely event that residential collection of refuse and recycle is to be provided by the WCA or its nominated contractor, then the types and size of collection vehicles that will service the development should be established by the developer at the earliest available opportunity with them. This information should be used to establish the basic carriageway parameters for streets with the developments proposed street network. These parameters can be refined later during the detailed design of the street using vehicle tracking software based on the known vehicle types.

The respective fleets of different WCAs are likely to vary significantly, with different vehicles potentially being used across different parts of the area. Consideration should be given to the age of the vehicle proposed by the WCA, the consequent likely replacement date and what this might be with – particularly if the vehicle is unique in some respects (e.g. very big or small). Likely stand-in vehicles should also be investigated in the event that only a small number of such vehicles are used by the WCA.



Where it is proposed by a WCA that larger vehicles that might have a pronounced impact of place

making aspirations would be used, depending upon the scale of the development consideration may be given to:

- Investigating the potential of alternative collection technologies;
- Procuring a private standard collection service using a smaller vehicle; or
- Funding the acquisition by the WCA of a new smaller vehicle to serve the development.

##### 6.4.2.2 Private collection services for commercial premises.

Commercial developments will be serviced by private collection providers contracted by individual occupiers of premises. Commercial occupiers are likely to be less constrained in their choice of collection vehicles than residents, who will generally be reliant on those used by WCA. Commercial occupiers by contrast can choose private collectors with vehicles that fit constraints. The size and type of vehicles used by different firms to collect a given commercial waste stream may vary widely, offering a greater potential to fit the collection vehicle to the public realm, rather than vice versa.

BS5906:2005 Waste Management in Buildings – Code of Practice suggests that up to 80% of waste from shops and offices can be expected to comprise of paper. Commercial premise will generate a larger volume of such waste over a given period than residential properties. Such waste is typically bulky, taking up much storage space. As such, larger lone individual commercial premises or multi-occupancy commercial premises (that shares a single loading bay) may be expected to use a compactor or baling system to reduce storage space requirements. On this basis, in the absence of more detailed information about the requirements of occupiers, it is suggested that developers should normally anticipate a vehicle loading demountable bodies, i.e. skip or roll-on roll-off containers



(for collection of a compactor) as being the largest waste collection vehicle typically requiring access to commercial premises and design on this basis.

## 6.5 Permeability and Flexibility

As detailed in section 6.7.1, the turning area for collection vehicles can be considerable and this may impact on the character aspirations for a given street or public space. This is particularly so for turning areas where no through route is available (see section 6.7.1 for design requirements for turning areas). Such a process also takes time and may effect the efficient operation of the round.

Given the above it is advisable to develop overall street networks, and particularly collection vehicle routes, as permeable networks based on through routes.

From time to time it is inevitable that streets forming part of agreed collection routes will need to be closed – for instance, for utilities or other works. In this event, permeable networks of through routes provide flexibility for alternative waste collection vehicle access. However WCAs should not expect such alternative routes to provide unfettered access as this would most likely restrict the ability of the street to fulfil other design objectives for the vast majority of the year when emergency access were not required. A degree of manoeuvring around obstacles should be accepted whilst the expectation should be that the collection vehicle would block other traffic.

### 6.5.1 Reversing Distance

Reversing incidents account for a disproportionate number of accidents involving waste collection vehicles. As such, the need for reversing by vehicles should be avoided wherever possible. In the event that it is not possible to create permeable through routes for collection vehicles or it is considered beneficial to lift their access for other purposes, British Standard (BS 5906: 2005) recommends a maximum reversing distance for vehicles of 12m. However, in practice what is acceptable varies between different WCAs, with some accepting greater distances. It is recommended that WCAs remain open-minded to considering longer distances than 12m (within functional limits) where this would allow

for substantial gains in other aspects of design. Whatever the distance agreed, any reversing routes should be straight and free from obstacles and visual obstructions.

### 6.5.2 Street widths

BS 5906:2005 recommends a minimum street width of 5m for waste collection vehicles. However, Manual for Streets recognises that smaller general widths are likely to be acceptable, for example where on-street parking is discouraged. More substantive narrowings for traffic calming purposes will be acceptable providing that these are over short distances (see section 6.6.6 below). In instances where smaller widths are encouraged, initial indicative vehicle tracking of a notional section of street using the identified collection vehicle (rather than standard templates) may need to be undertaken to confirm acceptable working to the Highway Authority and WCA. The process of vehicle tracking and attendant assumptions is discussed further in section 6.6.2.



## 6.6 Detailed Streetscape design issues

Once the collection vehicle routes has been established, substantive thought will need to be given to various detailed streetscape design issues within the component streets and space. These are discussed below.

### 6.6.1 Frequency of vehicle movements

The frequency of use of a street by both waste collections vehicles and other vehicles or users with which they might conflict will be an important general factor that will inform decisions on many of the issues below. For instance, lane width and manoeuvring assumptions, the need for passing

and stopping locations and the specification of the road construction itself will, amongst others, all be influenced by this. Appropriate estimations of traffic flow, and component vehicle classifications (including that for waste vehicles) should be undertaken at the outset of designing new roads. It should be born in mind that in commercial and mixed use developments, subject to routing proposals (see section 6.3.1.2 above) a given street may be used by multiple collection vehicles belonging to different private contractors.

### 6.6.2 *Vehicle tracking*

Tracking of the swept path envelope of design vehicles is a critical part of good streetscape design practice. Using CAD software, layout proposals can be tested and refined by simulating the path of vehicles based on detailed information about the particular vehicles specification and handling. Larger design vehicles, including waste collection vehicles should always be tracked. Given the substantial potential impact of such vehicles, both design code specifications and outline or detailed street design proposals must always be based on the specification of the actual vehicles thought likely to service the site. This issue is discussed further in Section 7. Only during initial high level masterplanning should standard library vehicles be used.

It is good practice for WCAs and private contractors to develop and hold software library files of their fleet vehicles for use in standard tracking software.

Where this is not available, it may be necessary for developers to construct bespoke specification files of their own from drawings and information provided by the WCA or contractor. This should only be undertaken by confident software users, whilst the details of the final specification should be carefully checked with the waste service provider.

Specifications for chassis can often be obtained from manufacturer websites. Manufacturers may sometimes also hold software library files that can be made available for use. However, developers should be aware that waste collection vehicles are often subject to substantial customisation, both to the chassis and the body. Customisation is often undertaken by a specialist firm. Chassis

customisation (for instance through the addition of rear axle power steering) can radically alter manoeuvring whilst bodies are often bespoke, varying widely in size. Their impact on tracking envelope will depend upon the degree of overhang of the chassis and height. Designers should be mindful of the potential addition of rear hoists to bodies and the considerable projection of wing mirrors – both of which can substantially expand the vehicle envelope.

Tracking drawings showing how layouts accommodate anticipated waste collection vehicles should be submitted with both outline and detailed planning applications. Particular attention should be paid to any areas where reversing or turning is required though it is best practice to design the need for these out. Tracking should be undertaken based on lane use and turning assumptions agreed with the Highway Authority (See section 7) with consideration given to the need for adequate working area around vehicles for waste operatives (See Section 3.6.3).

Typically only horizontal tracking need be undertaken. However, where significant ramps and gradients exist (either within the street or on entry to premises (e.g. entry ramps to loading bays) or vehicles must pass under buildings through built gateways, vertical tracking drawings should also be provided.

### 6.6.3 *Lane width assumptions and manoeuvring*

As discussed above, being very large and infrequent users of streets, unfettered access should not necessarily be provided for waste collection vehicles. In some circumstances, vehicles may be expected to proceed forward or turn through junctions occupying more than one lane (potential blocking that of on-coming traffic). The potential to adopt such design assumptions should be discussed by developers at an early stage with the Highway Authority and WCA.



The main consideration for the Highway Authority and WCAs in determining when this will be appropriate will be overall traffic flows (and potential hindrance to this), the frequency of required waste vehicle access and safety for operatives and vulnerable road users.

Being very large, collection vehicles are conspicuous to other drivers. The main risks from out of lane movement are therefore to operatives and delay to other road users. As such, even where overall traffic flows are high, out of lane use may still be appropriate providing waste vehicles are infrequent, traffic speeds are low, regular safe passing opportunities for other vehicles exist and adequate conditions for the safe working of operatives can be achieved.

Particular consideration to out of lane movement should be made when designing junctions as it is when conducting sharp turns that the swept path envelope of a collection vehicle is at its greatest. Where in-lane provision is required large corner radii will be required and this may have a considerable impact on overall placemaking ambitions. Again, being large vehicles the conspicuous nature of collection vehicles means that other drivers can be expected to cede priority to them under most circumstances. As such, providing vehicle speeds are low, out of turn lane movement through junctions (potential accommodating the whole junction space) can be considered even where traffic flows are high.

In other circumstances, an alternative solution to out of lane working that minimises the potential tracking impact of turning collection vehicles may be to design footways at corners such that they can be over-run by collection vehicles (see section 6.7.1). However, where frequent access is required for waste or other large service vehicles in lane working should be assumed.

#### 6.6.4 Junction treatments

Junctions are often a natural choice for developers when considering where to establish public spaces within developments. The large turning envelope of waste collection vehicles may adversely impact upon such aspirations, requiring large unsightly corner radii. Even at standard junctions this can undermine priority, convenience and safety for pedestrians and other vulnerable road users.

To minimise these potential impacts a number of measures may be considered:

- The potential use of out of lane working by collection vehicles when conducting turns is discussed in Section 6.5.3 above.
- Where out of lane working is not an option, or this alone does not sufficiently mitigate the problem, developers may prefer to use a widened carriageway with tighter corner geometry as proposed in *Manual for Streets*<sup>29</sup>. However, developers should be mindful of the potential safety risk posed to slower vulnerable pedestrians of wide crossings. Whilst provision of a crossing refuge is an option to mitigate this, this will inevitably require the further widening of the overall carriageway.
- Where carriageway widening is to be avoided, but an alternative solution that allows in-lane working is required, developers may consider constructing footways at corners such that they can be over-run by turning vehicles. A robust construction specification with smaller unit pavers or steel reinforced slabs and a substantial concrete road base is likely to be required to prevent damage to the footways and utilities under these (See Section 6.8). Reducing kerbs to provide a flush or nominal difference will provide the smoothest design for collection vehicles. Developers should consult with the Highway Authority and/or any published adoption or design standards to establish an appropriate specification. Regardless of the detail, all parties should be aware of the potential risk to pedestrians that may be posed permitted footway over-running. Careful balancing of the pros and cons will be required to determine when this is suitable based on location specific factors.
- Where it is proposed to accommodate vehicles within the carriageway, substantial corner geometry can be required. Large kerb radii can be unsightly, undermining sense of place, encouraging greater speeds by smaller vehicles and contributing to an overall sense of vehicle dominance that discourages pedestrian use and enjoyment of the public

realm. In the past, over-run areas within the carriageway (comprised of other surfaces that deter over-running by smaller vehicles) have been employed as a potential way of mitigating this problem. However, these are seldom less unsightly and are likely to pose accessibility hazards for vulnerable pedestrians. The use of such features is therefore to be avoided.

- In preference to sweeping standard corner radii, consideration should be given to designing the junction space using a placemaking treatment that gives pedestrians equal priority over the use of the carriageway space by influencing driver speed and behaviour. This will require very careful design and close development with the Highway Authority. Important factors in achieving a successful treatment are likely to include the use of non standard kerb geometry (typically following building lines rather than vehicle swept paths – even when this requires a reduction in the footway area) and a non-standard carriageway surface – ideally providing a sympathetic visual match to that of the footway.

#### 6.6.5 *Access widths at narrow gateways defined by buildings*

Increasingly, narrow street widths with close building definition are employed at junction accesses to streets at the lower end of the hierarchy. This may be done to achieve appropriate character, to infer a sense of privacy or to slow traffic. Such treatments are particularly common at accesses to internal courtyards within perimeter blocks, where gateways might be comprised of arches passing through buildings.

The considerable turning envelope of refuse vehicles can conflict with such treatments where access for the vehicle through them is required and cannot be achieved elsewhere. In such circumstances out-of-lane working for the refuse vehicle should always be considered (see above). Built arches are not encouraged and only accepted where clearance of 300mm above the height of the largest collection (or other) vehicle can be achieved and demonstrated via vertical tracking. In calculating this, developers and Highway Authority should avoid the potential presence of services within the arch soffit, these being frequently over-

looked. The potential impact of ramps and other gradients should also be addressed. It should be considered that, even where such requirements can be met, the considerable extent of the necessary void or clearance seldom results in an attractive feature.

Where provision for alternative routes cannot be made, careful location of underground utilities through built gateways shall also be required to ensure that in the event of closure, sufficient passing width remains for collection vehicles.

#### 6.6.6 *Traffic calming features*

Being robust slow moving vehicles, waste collection vehicles seldom pose any constraint on the choice of vertical traffic calming feature. Consideration should be given to ramp heights and table lengths to prevent grounding of vehicles, but this is seldom a risk even for fully loaded collection vehicles. In the unlikely event that a vertical traffic calming feature is located close to a built features overhanging the Highway (for instance a gateway arch) vertical tracking should be carried out to confirm acceptable passage. Developers should consult with the Highway Authority and any adopted standards or guidance to determine the appropriate construction specification.

Greater potential conflict exists with horizontal traffic calming features intended to slow smaller vehicles. The substantial swept path envelope of manoeuvring collection vehicles can impact upon the potential to achieve appropriately tight geometry. Providing regular passing opportunities are made available, in most instances out of lane working (extending to blocking opposing traffic) through such features will be acceptable.

#### 6.6.7 *Turning areas*

See 6.7.1



### 6.6.8 *Space for loading around vehicle*

Guidance in the RECAP Waste Management Design Guide advises that clear space around a typical waste collection vehicle should be sufficient to allow efficient operation. 'For example, a minimum working area of 3.5m width and 4m in length should be sufficient where the emptying of containers takes place.'

### 6.6.9 *Loading area*

Loading of vehicles typically takes place at their rear. For domestic collections a clear space of 3.5m wide and 4m in length behind vehicles will typically be sufficient as a working area using standard 2 or 4 wheel containers. For safety purposes it should not be necessary for containers to be moved down the vehicle in order to gain access to the loading area. As such, un-broken lines of on-street parking at kerb side should generally be avoided on streets from which collection is to take place. Where this is unavoidable, communal collection points should be provided with an adjacent space for the passage of bins created in a gap in the parking.

Larger static containers (including underground containers) at communal storage facilities and bring sites will require side loading with a mechanical lift. Sufficient access and vehicle working area should be provided around such facilities for these purposes.

### 6.6.10 *Traffic flow considerations: passing and stopping*

The impact of waste collection and other vehicle frequency, traffic flows and speeds in determining assumptions about the occupation of carriageway space when collection vehicles are moving is discussed prior in Section 6 of this document.

Waste and recyclate collection vehicles will need to be stationary for loading purposes. In the majority streets, stopping within the carriageway that blocks following (or even opposing) vehicles is likely to be acceptable subject to other concerns (see below). Only on high speed streets or those where congestion is a concern should this be avoided. In such instances, stopping locations should be provided, either out of the path of the main flow of traffic (for instance in gaps sheltered by kerbside passing) or in purpose built lay-bys or widenings.

Where it is proposed for stopping to take place within the carriageway within the main path of following or opposing traffic flows, consideration should be given to the following factors:

- As public service vehicles, WCA collection vehicles are permitted to stop in all locations that are not subject to urban clearway, no stopping or (in London) red route restrictions. This includes locations subject to loading or waiting restrictions and the control area for zebra or signal controlled pedestrian crossings. Private contractor vehicles however must abide by all restrictions.
- Dependent upon overall traffic flows and the likely degree of obstruction and delay caused by collection vehicles, it is prudent to design streets to provide regular passing opportunities. This can be achieved via the provision of occasional widening in the street or breaks in kerbside parking into which collection vehicles can pull to allow other vehicles to proceed.
- The need for a safe working area alongside vehicles for operatives should be considered (working areas at the rear of the vehicle are discussed in Section 3.6.3). The need for operatives to move within the carriageway alongside the collection vehicle when moving containers should generally be avoided by removing obstructions at the edge of the carriageway (such as from kerb-side parking) such that passage to the rear of the vehicle occurs on footways. Where substantive on-street parking is unavoidable and operatives will need to move beside the collection vehicle, care should be taken to avoid residual carriageway widths that may encourage cyclists, motorcyclists or other vehicles to attempt to squeeze down the side of the vehicle. Inappropriate widths may result in a safety risk, both to the drivers of the passing vehicles themselves (for instance, through the risk of 'dooring' by the collection vehicle or other parked vehicles) or to operatives, who may be obscured behind the vehicle.

- Finally, being high and wide, collection vehicles may serve to obscure pedestrians waiting to cross the road at informal or controlled crossing locations (as above, it should be noted that public service vehicles are permitted to stop within zebra and signal controlled crossing controlled areas). This may result in a potential safety hazard. The risk of incident is best avoided by providing regular attractive safe crossing facilities for pedestrians along the street such that alternative locations for crossing can be conveniently used and pedestrians will not be tempted to take the risk of crossing in proximity to a stationary vehicle.

#### 6.6.11 Road and footway specification

Collection vehicles, both laden and un-laden, are heavy and can do considerable damage to inappropriately designed roads. The design and construction of roads and paved areas subject to vehicle over-running is a specialist engineering task. The construction specification is based on the predicted traffic flow (and resultant wear) caused by heavy vehicles with an un-laden weight of 1.5 tonnes or greater for the design life of the road. Most waste collection vehicles would fall within this bracket. The resulting measure of wear (expressed as million standard axles or “msa”) establishes the specification of the underlying road construction (pavement) and in turn the appropriate surfacing. Where frequent turning by HGVs is anticipated, incorporating a road base layer into the pavement specification should always be considered, regardless of whether this is required by “msa” thresholds.

Developers and their highway engineers should agree an appropriate construction specification for such surfaces with the Highway Authority based on appropriate local Adoption Standards, and design standards (e.g. British Standards and, where appropriate, the Design Manual for Roads and Bridges).

## 6.7 Impact on Placemaking and Sustainability

‘Placemaking’ is the process of creating spaces that have a distinctive character and react to their local environment and the needs of their local community.

The fundamentals of this concept can be summarised as being based around several principle inter-related, concerns. These include:

- Structuring developments around a considered street network incorporating different street and space character types in order to assist legibility provide an appropriate setting for different land use types and sizes and respond to the existing retained or surrounding context is vital. Streets may vary in size and character from wide boulevards to narrow mews, and public spaces from large squares to small internal communal courtyards within blocks.
- That the configuration of buildings should be the starting point in determining the character of such streets and spaces.
- That the dominance of static and moving vehicles should be reduced in most streets and spaces and greater priority and provision made for pedestrians, cyclists and social uses.
- That adequate thought should be given to the design, management and maintenance of the public realm in order to avoid unforeseen misuse that may diminish its use or enjoyment by the public.

Planning Policy Statement 10 refers to design and layout in new developments being able to help secure opportunities for sustainable waste management. Conversely, when considering how the treatment of waste is incorporated into a new development, it is important not to under estimate how it’s poor planning and design can have a detrimental effect on the quality, character and function of that space. Potential risks include:



- That the overall layout of buildings, blocks and the public spaces within and between these may be compromised, owing to unnecessarily conservative requirements for waste vehicle access requirements or the influence of 'carrying distances' between properties, storage and collection points.
- Poor street design with ineffective traffic calming features that fails to promote an environment that accommodates walking, cycling and the social use of street and spaces.
- Substantial clutter from bins and containers.
- Poor environmental quality of streets and spaces due to the dumping of waste in inappropriate locations owing to unsuitable designed waste collection or storage facilities.

Consequently, Manual for Streets advises that Planning Authorities should ensure that new developments make sufficient provision for waste management and promote design and layouts that secure the integration of waste management facilities without adverse impact on the street scene.

The design of residential roads should accommodate waste collection vehicles without allowing their requirements to dominate the layout. The quality of the space will be significantly affected by the type of waste collection used and therefore it is imperative that street design and the requirements of waste collection services are carefully integrated. Waste collection vehicles fitted with rear-mounted compaction units are typically the largest vehicle that will require regular access to residential areas.

#### 6.7.1 *Vehicle Routing and Street Hierarchies*

BS 5906:2005 recommends a minimum street width of 5m for waste collection vehicles but smaller widths are acceptable, for example where on-street parking is discouraged. In situations where a lesser width may be appropriate it is essential that vehicle tracking is undertaken. This is to demonstrate that the specific waste collection vehicle can pass through narrower street widths. For this reason it is important to identify the likely vehicle type with the local waste service provider

early on and track for this, rather than just basing on standard library templates.

In certain cases the character of a street may make it impractical to utilise standard Local Authority waste collection methods. It is therefore important that timely consultation is undertaken to determine alternative arrangements and any cost implications that may be incurred.

If these alternative methods of waste collection are very different from the norm it is advisable to allow for future flexibility in the design of the street. Consider the impact of the height of the vehicle in respect to any arched gateways, or where internal access to loading bays is required. For the latter, consider additional ceiling height that may be required for lifting hoists, booms or tippers and the impact that footway crossover ramps might have on vertical tracking (e.g. may cause the vehicle to hit the ceiling on entry to the building). Another point to consider is that the Local Authority cannot undertake collections over un-adopted roads. Where this is unavoidable, the collection point should be sited at the nearest adopted road. This should not detract from the character and appearance of the street scene.

#### 6.7.2 *Vehicle Access Considerations*

##### 6.7.2.1 *Collection Frequency*

The frequency of waste collection services should also be an integral part of street design and achieved in ways that do not compromise quality of place. Good practice is to base street design parameters on frequency of access by larger vehicles. This will affect tracking assumptions too (e.g. does vehicle need to be accommodated in the lane or can it track across the entire street).

##### 6.7.2.2 *Reversing and manoeuvring*

BS 5906:2005 recommends a maximum reversing distance of 12m for large waste vehicles. Longer reversing routes can be considered, to help obtain best results between placemaking aspiration and service provision, but the route should be straight and free from any obstacles or obstructions. The extent of manoeuvring accommodated within the street design should depend on the frequency of use by waste vehicles. Where low, a degree of manoeuvring is likely to be acceptable. (Very large



vehicles can obliterate streetscape and prevent achievement of quality placemaking objectives where they need to be accommodated rigidly within the lane). Instead overrun areas (dropped kerb lines, rounded corners and reinforced footways) could all help in reducing the impact of these vehicles on the streetscape.

#### 6.7.2.3 Traffic flow considerations: passing and stopping

Consideration may need to be given to the provision of pull over areas to allow waste vehicles to stop on streets without blocking traffic. The feasibility of these 'stopping bays' will depend on traffic flows, vehicles speeds, collection frequencies and general placemaking aspirations for the street.

## 6.8 Types of Vehicles

The types of vehicles employed in the collection of waste and recyclates can be split into two distinguishable groups. Compaction vehicles mount an integral on-board compaction mechanism to compact the collected waste as a vehicle works through its allotted collection round. Vehicles

mounting compaction systems are able to operate at improved waste weight to volume packing ratios and consequently offer transport cost efficiencies over non-compacted collection methods.

Compaction vehicles may have segmented bodies in order to allow for the segregated collection of more than one waste or recycling stream at the same time, by the same vehicle. The second vehicle group is that which operates demountable containers. These vehicles operate by mounting generally a single waste container and replacing the loaded container with an alternative empty vessel. Such vehicles commonly carry skip or bulk demountable waste containers.

#### 6.8.1 Vehicle dimensions

The dimensions and operating tolerances of commonly used waste collection vehicles are given in the table below. The information in Table 6.1 is provided for general guidance purposes only. It is recommended that the developer confirms the type and operational requirements of the waste collection fleet operated; during initial planning discussions with the local authority.

Table 6.1 – Typical Vehicle Dimensions

Parameter & measurement indices		Skip Loader 18 TGWV	RCV 21–26 TGWV	Rollon-off 32 TGWV
Width (m)		2.5	2.5	2.5
Length (m)	Overall	7.1	10.4	11.0
	Working	11.0	11.0	16.5
Height (m)	Travelling	3.7 (max 4.5)	3.8	4.3
	Working	4.45 (max 4.9)	3.8	5.5
Turning Circle (m diameter)	Kerb	14.4	18.7	21.4
	Swept	17.0	20.0	22.8
Axle Weights (t)	First	7.0	7.1	6.5
	Second	11.0	9.5	6.5
	Third	-	9.5	9.5
	Forth	-	-	9.5



## Notes

- Any part of a building through which a skip vehicle passes must have a minimum clear height of 4.5m, to allow for overhead fixtures and fittings. This must be increased to 4.9m in the service area containing the skip.
- Any part of a building through which a waste collection vehicle passes must have a minimum clear height of 4.5m, to allow for overhead fixtures and fittings
- Any part of a building through which a demountable skip collection vehicle passes must have a minimum clear height of 5.0m, to allow for overhead fixtures and fittings. This must be increased to 6.0m in the service area containing the skip.

## 6.9 Streetscape Design

### 6.9.1 Design principles

The recent trends in streetscape design, of introducing non-standard street geometry to reduce speeds and traffic dominance, have created new challenges for accommodating waste vehicle access. Overrun areas are used at bends and junctions and roundabouts and often have a texture and appearance to deter overrunning by cars. However their purpose is to still allow for the passage of large vehicles, while maintaining 'tight' carriageway dimensions to deter speeding. In lightly trafficked areas, carriageways can be narrowed over short lengths to a single traffic-calming feature. However the minimum width permitted (2.75m) will still allow for a waste collection vehicle to pass. It is particularly important that when considering any form of traffic calming feature, whether it is a ramp, shared space courtyard or arched gateway that detailed vehicle tracking (vertical and horizontal) is carried out and based on the actual vehicles to be used. Finally, the early liaison between the urban designers, waste authority and the traffic engineers at the outset of the project will help deliver a successful traffic calming scheme that does not compromise the waste collection facilities in the development.

# 7 Waste Storage Containers and Infrastructure

## 7.1 Introduction

Waste storage containers along with collection vehicles represent the most visible aspect of the waste management process to the vast majority of the wider public. The range of container types and volumes employed by WCAs across the country will greatly depend upon the local waste and recycle collection policy.

## 7.2 Standard Containers and Receptacles

The dimensions of standard containers employed in the collection of domestic waste and recycling applications are, as follows:

## 7.3 Communal Waste Storage Compounds

Communal or shared waste container storage areas are traditionally most prevalent in high density/high rise developments. However in recent times designers and masterplanners have reconsidered the application of communal waste storage areas to developments that would usually accommodate dwelling specific waste storage provision. This development is aimed at enhancing the placemaking characteristics of a development by removing the requirement for multiple containers to be sited at the end of properties on the scheduled collection day. The use of communal waste storage areas also has the benefit of limiting the required access of the servicing vehicle consequently allowing for areas to be designed without the requirement to accommodate heavy goods vehicle traffic. Where a developer proposes the employment of communal waste storage compounds suitable arrangements should be made for the management and maintenance of the same.



### 7.3.1 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.

### 7.3.2 Specifications for communal waste storage systems

When calculating the size of a chamber/storage area, it must be designed allowing the containers to fit side-by-side (width to width), enabling the lid to be opened by any person depositing waste/recycling directly in front of them.

The height of any bin chamber must allow the lid of the container to be opened without having to be removed from the storage area. There should be sufficient clear space of 150mm between the containers to allow for ease of movement. The chamber must also be permanently ventilated. The bin storage area should be appropriately screened from all aspects.

The floor should be constructed to take into account adequate drainage. It must be possible to

remove the container horizontally and a minimum width of 2 metres and 2 metres in height must be allowed for the removal and safe return of the container(s) during collection. Doors must be fitted with restrictive openers to prevent over extension and must not open onto or obstruct any existing or proposed public footway or highway. Scratch plates must be fitted to the relevant side of the doors to prevent the bins damaging them, e.g. If the doors open outwards, they must be fitted with scratch plates on the inside. The surface must be paved or of a solid finish and without steps or kerbs. If containers are to be required to negotiate a change of level from the footpath to the road surface, a maximum kerb height of 30-60mm should be constructed. Any slope must not exceed a gradient of 1:12. All bin chambers should have adequate lighting, artificial or natural. The floor should be a surface that can be easily cleaned. 'Bump strips' should be placed around the edges at bin height to prevent damage caused when using the bins and any doors must have a facility to be held open during collection.

## 7.4 Subterranean Storage Systems

Underground storage systems represents a recent development to waste storage, management and recycling in regeneration projects and in new residential, business and mixed use developments.

Container Size (litres)	Depth (mm)	Width (mm)	Height (mm)
44	355	585	285
55	390	585	350
140	550	480	1,060
190	630	525	1,060
240	730	580	1,080
360	885	620	1,100
1,100	985	1,260	1,370

Table 7.1 – Typical Container Dimensions

<sup>30</sup> <http://www.sustainablecities.org.uk/waste/makingspace/>



With a reduced surface footprint the underground system is ideally suited for the collection of waste and recyclables whilst creating a feeling of open space and hygiene.

Subterranean systems free up space for developers – more apartments and parking spaces can be built as no bin stores are needed. Such systems remove the need for wardens to move bins around, saving the ongoing cost and health and safety implications. Systems are available with remote monitoring and card access. With 3m, 4m and 5m storage capacities below the surface, underground systems can collect waste in large quantities. Self contained units, prevents vermin infestation, reduces odours and creates a modern solution to traditional waste issues. It should be noted that early dialogue with the WCA is again recommended to ensure that the proposed system service requirements are compatible with the vehicle fleet operated by the WCA or its nominated contractor.

## 7.5 New Storage and Collection Technologies

Increased attention on a global basis on the issue of waste generation, servicing and recycling has seen the further development of alternative methods for the transportation of waste. Most notable and tried of such developments is that based on the transport of waste by air vacuum in subterranean piping systems. Such systems are installed as a further “utility” in new developments and should be considered where the economics of so doing allow.

Key points of air vacuum waste collection systems:

- Waste is transported by 500mm carbon steel pipes. The pipe gauge varies according to the waste volume.
- Access to the delivery system is via ground or building mounted access points which allow for the separation of waste into up to three categories.
- Access points can be set in external or internal communal areas; with multi-floor ports being made available in high rise developments.
- Access points can be designed for domestic or commercial use. (The main difference being the size of the port).
- Material collected by the system is blown/ fed directly into a bulk storage receptacle or compaction unit sited in a service area of the development.
- Such systems are cost effective over traditional provision for waste facilities within a development at approximately 1,000+ dwelling developments.

## 7.6 Waste Compactors and Densification

Waste compactors are used to compact loose, voluminous waste material into an enclosed waste container. Consequently achieving a higher density packing ratio than is achieved by un-compacted material. Modern waste compactors can achieve compaction ratios of up to 5:1, dependant upon the nature and memory of the subject material. The advantage of material compaction is in the significant reduction that can be made to required service frequency, vehicle movements and consequently transport cost. Compactors may be employed for the following types of development. Where compactors are provided, separate provision must also be made for the storage and collection of dry recyclable material.

### 7.6.1 Residential

Compactors for residential developments only tend to be effective if these sites have a managed waste system which maybe operated by a facilities/ property management organisation.

### 7.6.2 Offices

Compactors are recommended for all office developments larger than 2,500m<sup>2</sup>. For offices over 10,000m<sup>2</sup> in size a rotary compactor is recommended and for those in excess of 15,000m<sup>2</sup> a portable skip compactor is recommended.

### 7.6.3 Light industrial

For units of 1,500m<sup>2</sup> or more, or for small units where the gross combined floor space exceeds 1,500m<sup>2</sup> a small sack compactor is recommended.

<sup>31</sup> Defra – Household Waste Recycling Act Guidance

#### 7.6.4 Retail

The most appropriate type of compactor for units of 1,500m<sup>2</sup> or more is the small sack compactor. This type of compactor may also be used for small units where the gross combined floor space exceeds 1,500m<sup>2</sup>. For major retail developments of over 5,000m<sup>2</sup> a rotary compactor is recommended. Those over 10,000m<sup>2</sup> should be provided with a portable skip compactor or a larger static compactor.

#### 7.6.5 Restaurants and fast-food outlets

Compactors are required for fast food outlets with an eat-in facility and are recommended for other restaurants. A small sack compactor or the type using wheeled containers, is suitable for most applications, although the rotary compactor is preferable for restaurants with potentially high output.

#### 7.6.6 Hotels

For hotels of up to 250 bedrooms the most appropriate type of compactor is the small bag compactor, or the type that compact waste into wheeled containers. For larger hotels a rotary compactor, portable skip compactor or a static compactor is recommended, particularly for those with banqueting facilities.

## 8 Policy and Planning Context

### 8.1 Introduction

This section of the guidance seeks to provide the key policy and planning context in which the field of municipal waste management services operate. A brief overview of the main instruments is provided along with suggested signposts for further sources of information.

### 8.2 The Sustainable Communities Agenda

As a nation we are producing more waste than ever before, though the signs are that the rate of growth in municipal waste is slowing and is expected that growth will fall to zero in the medium term. Clearly, continued growth in waste is not sustainable. It loses the energy and natural resources required to make the product, and additional energy and resources are used to process the waste.

Sustainable waste planning and management reduces our use of natural resources through actions such as re-use and recycling. It also enables us to recover value and energy from materials we use. It transforms the way we see materials such as sewage, which requires high levels of energy for treatment but has potential to provide a valuable energy source. Waste is a resource, not a by-product.

The benefits of sustainable waste planning and management include reducing pollution and greenhouse gas emissions, creating jobs, reducing land required for landfill and supplying lower carbon options for energy production. Local authorities can improve waste planning and management by building, and allowing to be built, new waste facilities and using and expanding existing recycling networks.



The key to more efficient recovery of materials is the greater segregation and sorting of waste at (or close to) its source by households and businesses. These need to be convenient to use and should not dominate the urban environment. Making space for waste management is therefore a priority in planning and design. New houses, schools, hospitals, commercial buildings and public spaces need to be designed with this in mind. Similar facilities need to be retrofitted into existing buildings and spaces, so that an integrated network exists to facilitate proper waste management.

Local authorities also need to plan for a network of facilities for storing, sorting, reprocessing and treatment of waste materials and businesses need to invest in and develop them. The Environment Agency predicts that 15 million tonnes of new waste processing capacity is needed in England to achieve EU landfill reduction targets.<sup>30</sup>

### 8.3 Waste Strategy for England 2007

Waste Strategy for England establishes the underlying principles for the management of wastes across the country. The published strategy acknowledges that progress has been made since the initial waste strategy was produced in 2000 and that this has been achieved through significant policy changes, for example the landfill tax escalator, LATS and PFI funding which has provided and is providing new waste management infrastructure. However, it also identifies that further improvements need to be made and that the responsibility for this rests with all stakeholders including producers, retailers, consumers, local authorities and the waste management industry.

In order to make these improvements the government has set key objectives including decoupling waste growth from economic growth, meeting and exceeding landfill diversion targets (including the diversion of non-municipal waste), acquiring further investment in waste infrastructure and, increasing the recycling of materials and the recovery of energy from residual waste. Central Government believe that this will provide a major annual net reduction in greenhouse gas emissions produced as part of managing the UK's waste.

Figure 8.1 Waste Hierarchy (from Waste Strategy for England 2007)



### 8.4 Household Waste Recycling Act 2003

The Household Waste Recycling Act 2003 requires all English waste collection authorities to collect at least two types of recyclable waste from all households separately from residual waste. The recyclables collected may include batteries, garden waste, glass, hazardous household liquids (i.e. paint and varnish), kitchen waste, metals, paper, plastics, textiles and shoes, electrical or electronic waste (e-waste) and wood.

The aim of the Household Waste Recycling Act is to increase the household waste recycling rate in England. Even though waste collection authorities do not have to comply with the Act until 31 December 2010, 90% of households in England are already receiving a kerbside collection of at least two recyclable materials. The Household Waste Recycling Act has contributed to the considerable increase in local authority recycling of household waste, the country as a whole achieved 37.6% in 2008/09, a doubling of the rate in the six years since the Household Waste Recycling Act was passed.<sup>31</sup>

### 8.5 EU Waste Framework Directive (Directive 2000/98/EC)

The Waste Framework Directive is due to be enacted into UK legislation by the end of 2010 and lays down measures to "protect the environment and human health by preventing or reducing adverse impacts of the generation and

management of waste and by reducing overall impacts of resource use and improving the efficiency of such use". This aims to move the EU closer to a "recycling society" by minimising the negative effects of waste on human health and the environment and reinforcing the waste hierarchy.

Key aspects of the Directive are to extend Producer Responsibility (Article 8) to improve waste prevention, recycling and recovery, and to instigate (fully) separate collections of recyclable material and residual waste (municipal waste only) (Article 11). By close integration of waste management collection infrastructure into the design, construction and operation of new developments, developers can have a positive impact in helping to deliver these objectives.

## 8.6 Planning Policy Statement 1

Planning Policy Statement 1 (PPS1) sets out the Government's overarching national planning policies on the delivery of sustainable development through the planning system. PPS1 identifies six key principles that should inform all development plans. Those of relevance to waste address sustainability and placemaking issues and include the following:

- [Planning Authorities] should ensure that development plans contribute to global sustainability by addressing the causes and potential impacts of climate change – through policies which reduce energy use, reduce emissions, promote the development of renewable energy resources, and take climate change impacts into account in the location and design of development.
- Planning policies should promote high quality inclusive design in the layout of new developments and individual buildings in terms of function and impact, not just for the short term but over the lifetime of the development.

PPS1 also advises that Planning Authorities seek to achieve outcomes which enable social, environmental and economic objectives to be achieved together. This is of relevance to community waste enterprises which provide a potential means of securing this goal.

PPS1 aims to promote better design in new developments. It states that design policies should not be over-prescriptive or stifle innovation and that 'Design which is inappropriate in its context or which fails to take the opportunities available for improving the character and quality of an area should not be accepted'. This underlines the need for flexibility from all involved in the planning process to ensure that designs provide a suitable compromise between competing requirements.

## 8.7 Planning Policy Statement 10 (PPS 10)

National planning guidance on waste minimisation is principally contained in Planning Policy Statement 10 'Planning for Sustainable Waste Management' (PPS10). PPS10 Key objectives include:

- Driving waste management up the waste hierarchy.
- 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, the needs of waste collection authorities, waste disposal authorities and business.
- Ensuring the design and layout of new development supports sustainable waste management.



## 8.8 Environmental Protection Act (1990)

The Environmental Protection Act 1990 represents a principle piece of legislation governing the provision of waste storage and collection from residential developments. Waste collection authorities are required under Part II of the Environmental Protection Act 1990 to collect household waste from all residential properties in the borough. Local authorities may also, under section 46 (Receptacles for Household Waste), specify the type and number of receptacles to be used and the location where the waste should be placed in order to ensure compatibility with the council's collection methods. Furthermore in relation to recycling, under section 46, a local authority may require:

- Waste of certain types to be stored separately so that it can be recycled,
- Occupiers of dwellings to provide containers of a specified type for storage of waste.
- Additional containers to be provided for separate storage of recyclable waste.
- Specific locations to be established where containers should be placed for emptying.

## 8.9 Regional Spatial Strategies

Regional Spatial Strategies (RSS) were launched in 2004 following the publication of PPS 11. They replace the previous system of Regional Planning Guidance through the publication of a regional planning policy document that provides a broad development strategy for the region for a fifteen to twenty year period drawing upon the requirements of the Government's Sustainable Communities Plan. Their aim is to identify the scale and nature of new development and how this needs to take into account environmental priorities such as biological diversity and countryside protection.

The respective RSS will include a specific component which provides strategic guidance in relation to regional waste management strategies. Such strategies provide support to the 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.

Local authorities will be directed by the respective RSS to include policies in their development plans which support, in principle, the infrastructure required to implement waste minimisation and recycling/composting initiatives. Policies state 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.

## 8.10 Manual for Streets

Manual for Streets (MfS) is issued by the Department of Transport and contains technical guidance on the design of streets and spaces. Whilst MfS focuses on lightly-trafficked residential streets the document also states that many of its principles are applicable to other types of streets. MfS promotes an approach to street design where concerns for vehicle access are balanced with those of pedestrians and cyclists, creating social attractive spaces not dominated by traffic. MfS provides substantial guidance on the design of waste collection services and emphasises that waste requirements should be an integral part of the street design process, with routing determined at the masterplanning stage, but should not compromise overall quality of place.

## 8.11 Building for Life

Building for Life (BfL) is a non-statutory accreditation system for new housing

<sup>32</sup> Data source Defra: from <http://www.defra.gov.uk/evidence/statistics/environment/waste/download/xls/wrfg18.xls>



developments. New developments are scored by accredited assessors against twenty broad 'question-based' criteria to assess the quality of their design. The 20 Building for Life criteria embody a vision of functional, attractive and sustainable housing. Those that achieve a mark above 14/20 obtain either a silver or gold standard.

An increasing number of planning authorities are asking for new residential developments to achieve BfL accreditation. Waste management and access is an implicit issue in many of the 20 criteria which address issues ranging from place making quality, layout and movement to community facilities and environmental standards.

## 8.12 Developer Contributions

By following this guidance and through appropriate consultation with the local planning authority prior to making a planning application it is envisaged that developers will not need to make 'contributions' for compensatory measures to mitigate the waste aspects of the development. However, if this is not the case developers requesting the granting of planning permission for residential and mixed use developments may be required to provide financial contributions to the provision of waste management and recycling facilities that would serve the residents of the proposed development.

Where planning permission is granted compensatory measures may be sought to mitigate adverse impacts that the development would otherwise create. Such measures could typically include:

- Provision of communal "bring" facilities for recycling.
- Improving the provision of and access to recycling facilities for city centre residents.
- Provision of litter and recycling facilities for visitors.
- Waste minimisation, composting and recycling promotion and education.

Section 106 of the Town and Country Planning Act 1990, as amended by the 1991 Act, enables planning authorities to seek to negotiate a contribution from developers towards the cost of meeting the infrastructure necessary to support their development. For waste and recycling purposes, this could mean asking developers of housing estates for a contribution towards the cost of extending an existing Household Waste Recycling Centre or provision of Bring Site. Properly used, planning obligations may enhance the quality of development; however they must be relevant to planning, and at an appropriate scale, directly related to the proposed development.

## 8.13 Planning Obligations

This guidance provides a general overview for planning obligations, the procedures involved and matters that may be included in a planning obligation. Clarifying the use of planning obligations provides an indication of what the authority may expect from developers and therefore a better framework for discussion.

The purpose of planning obligations is to enable any adverse impacts of a development to be offset, to enhance the physical environment or to contribute towards local facilities. Where a development creates a need for extra facilities, for example new housing may create a need for extra school places and health facilities, it is reasonable to ask developers to provide or contribute towards the provision of such facilities. It is only acceptable to ask if it would be wrong to allow the development without these facilities.



Planning obligations can also be used to overcome difficulties that a development would create. For example a development may result in the loss of open space and therefore it may be reasonable to require the replacement of the open space. Obligations may also be used to improve infrastructure such as new public transport routes, access roads or improved measures for cyclists / pedestrians. All obligations are intended to benefit the local community.

Planning obligations will only be sought where they meet all of the following tests; they are

- Relevant to planning.
- Necessary to make the proposed development acceptable in planning terms.
- Directly related to the proposed development.
- Fairly and reasonably related in scale and kind to the proposed development.
- Reasonable in all other respects.

Where contributions are secured through planning obligations towards the provision of facilities which are predominately for the benefit of the users of the associated development, it may be appropriate for the developer to make provision for subsequent maintenance. Such provision may be required in perpetuity, although generally where an asset is intended for wider public use, the costs of subsequent maintenance and other recurrent expenditure associated with the developers contribution is normally borne by the authority in which the asset is vested.

#### *Pooled contributions*

Where the combined impact of a number of developments creates the need for infrastructure, it may be reasonable for the associated developers' contributions to be pooled, in order to allow the infrastructure to be secured in a fair and equitable way. Pooling can take place between the primary and other local authorities where there is a cross-authority impact. There will need to be a clear audit trail between the contribution made and the infrastructure provided.

In some cases, individual developments will have some impact but not sufficient to justify the need for a discrete piece of infrastructure. In such cases the authority may seek contributions to specific future provision where need for such can be demonstrated. In such cases, spare capacity in existing infrastructure provision will not be credited to earlier developers.

In cases where an item of infrastructure necessitated by the cumulative impact of a series of developments is provided by the authority or another body before all the developments have come forward, the later developers may be required to contribute the relevant proportion of the costs. In such cases the need for the infrastructure and the proportionate contributions to be sought will be set out in advance, for example in the form of other supplementary planning policy guidance, area planning briefs or codes of practice. In the event that contributions are made towards specific infrastructure provision but the infrastructure is not provided within an agreed timeframe, arrangements will be made for contributions to be returned to developers.

# 9 Waste Management in Context

## 9.1 Introduction

The key indicators that influence waste generation levels in the UK are population growth and public attitudes towards waste and recycling practices, it is intuitive that as the numbers of people living in our country grows that the overall level of waste produced from domestic activities will also grow. However, government policy is seeking to decouple this waste growth from economic growth.

## 9.2 Types of Waste

This guide is concerned with regulating the provision of suitable waste and recycling facilities to accommodate wastes generated from households and commercial properties located within mixed use developments.

### 9.2.1 Household/domestic waste<sup>32</sup>

Household waste collected is composed of a wide variety of materials. There is limited compositional data available, but the best overall estimates currently available show that, on average, household waste typically consists of garden waste (20% of the total), paper and board (18%), putrescible waste such as kitchen waste (17%), general household sweepings (9%), glass (7%), wood (5%), wood and furniture (5%), scrap metal/white goods (5%), soil (3%), textiles (3%), metal packaging (3%) and disposable nappies (2%).

Whilst the composition of waste produced by households across England is nationally comparable the nature of the different collection systems and processes employed by Waste Collection Authorities across England varies significantly. This is of importance to potential developers because the manner in which waste is collected by the particular authority operating services in the area applicable to their development will impact upon the number and scale of waste storage facilities that will be required. WCA collect waste as identifiable “streams”, such streams may include, but not be limited to those materials shown in Table 9.1.

The above categories represent a generalisation. Individual WCA areas will classify different streams in different ways, dependant upon the particular waste collection/recycling policies and processes in operation. For example, a WCA may collect the Food Waste Stream and the Green Waste Stream as Single Biodegradable Stream. It follows that the number and nature of waste streams classified by a particular authority will have a direct impact on the type and number of waste storage receptacles required and the amount of physical space that must be made available within a development to accommodate such receptacles.

This known variation of waste storage and servicing systems in operation across the country should emphasise to the developer the vital importance of making contact with the respective authority’s Waste Services Department at the planning stage of any development in order to ascertain the specific requirements in force.

Figure 9.1 – Typical Household Waste Composition

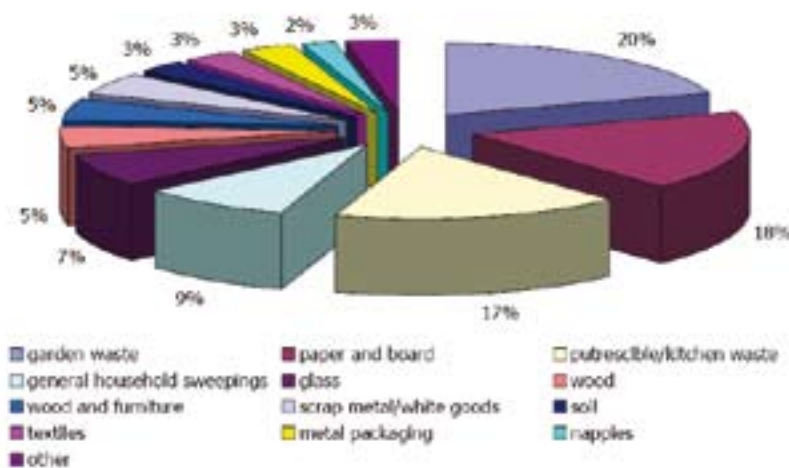


Table 9.1 Waste streams collected by local authorities

Waste Stream	Composition
Green Waste	Biodegradable garden waste/leaves/grass cuttings etc
Food Waste	Food
Dry Recyclables	Paper, plastic, cardboard, metal packaging
Residual Waste	Non-hazardous wastes not included in the above categories

9.2.2 Mixed use developments

Waste generated by mixed use commercial and residential developments should have separate storage areas for refuse and recycling containers for the commercial aspects and residential aspects of a development respectively. No mixing of commercial waste and residential waste is permitted. Storage arrangements should be designed and provided to reflect this. Storage considerations are discussed in Section 7.

The types of waste generated by mixed use developments will incorporate a proportion of residential waste from the domestic properties within the scheme. The nature of the residential waste and investigations and provisions that should be made in this regard are discussed above.

The type and nature of waste generated by the commercial aspect of a mixed use development will depend largely upon the nature of the businesses which the development accommodates.

We know that urban renewal depends on combining different uses to achieve successful and sustainable developments, for the purposes of this guide it is anticipated that the types of commercial activities that are likely to be undertaken within mixed use developments are;

- Office accommodation
- Retail accommodation
- Restaurants and fast food outlets
- Hotels

Waste generated by such operations should be streamed to allow for the optimum recycling and recovery levels of the commercial developments to be achieved. Likely waste streams will be:

- Food
- Glass
- Fibre (paper/cardboard)
- Plastic (predominantly packaging)
- WEEE
- Clinical/hygiene waste
- Residual waste

9.3 National Waste Targets

England has specified national waste reduction targets which govern the management of wastes. These targets are set out in the Waste Strategy for England 2007 (see section 8, and notes on the Landfill Directive). The Government have also indicated that they will be introducing a new target for landfilling of commercial and industrial waste and that they may also initiate targets to halve the amount of construction, demolition and excavation waste going to landfill by 2012.

Table 9.2 EU Waste Framework Directive targets

Target Year	To reduce the amount of waste disposed by landfilling to
2010	75% of 1995 level
2013	50% of 1995 level
2020	35% of 1995 level

Table 9.3 National targets for recycling and composting, and recovery of municipal/household waste

Target Year	To recycle/compost at least % of household waste	National targets for the recovery of municipal waste
2010	40%	53%
2015	45%	67%
2020	50%	75%

### 9.3.2 Waste Strategy for England 2007

Furthermore, the Government have set out their key proposals for future action that include financial incentives, more effective regulation, specific targeting of key materials, further investment in waste infrastructure, improvements in local and regional governance and, culture change. Specific actions include;

- Increasing the landfill tax escalator by £8 per year from 2008 until at least 2013/2014, meaning that landfill tax will be £72/tonne from April 2013.
- Consulting on financial incentives for householders to recycle more of their domestic waste.
- Improving waste protocols on the landfilling of biodegradable waste or recyclable materials and fly-tipping.
- Targeting paper, food, glass, aluminium, wood, plastics and textiles as recyclable wastes.
- Improvement of producer responsibility arrangements to have a positive impact on packaging and junk mail.
- Better procurement through enhanced central support.
- Encouraging partnership working between local authorities in two-tier areas and engagement with SMEs.
- Extended involvement of third sector expertise, reduction of waste and increased recycling at educational establishments and providing more recycling bins in public places.

## 9.4 Landfill Allowance Trading Scheme

The Waste and Emissions Trading Act (2003) provides the framework for a Landfill Allowance Trading Scheme designed to implement Article 5(2) of the Landfill Directive. LATS, which came into effect in April 2005, is the government's key measure to meet the demands of the European Landfill Directive, which calls for a reduction in the landfilling of biodegradable municipal waste to 75% of 1995 levels by 2010, 50% of 1995 levels by 2013 and 35% of 1995 levels by 2020.

It sets Waste Disposal Authorities (WDA) a limit on the amount of biodegradable waste they can send to landfill. WDAs have been allocated landfill allowances for the period up to 2020, and they can trade these allowances if they need to landfill more material than their allocations permit, or if they have surplus allowances. Failure by a local authority to meet its obligations will result in fines of £150 per tonne of biodegradable municipal waste over the landfill allowance.



## 10 Glossary

**Alternate weekly collections (AWC)** A waste collection scheme where, usually, recyclable and residual wastes are collected on alternate weeks. Householders are required to sort their waste into recyclable and residual fractions; recyclables are collected on week one and residual waste on week two. These are also known, incorrectly, as fortnightly collections; households still receive weekly collections, one week it is recyclables, the next residual waste.

**Anaerobic Digestion (AD)** A process whereby biodegradable material is broken down in the absence of air (oxygen). Material is placed into a closed vessel and in controlled conditions it breaks down into digested material and biogas.

**Biodegradable** Biodegradable materials are generally organic, such as plant and animal matter and other substances originating from living organisms. They can be chemically broken down by naturally occurring micro-organisms into simpler compounds. Waste which contains organic material can decompose producing bio-gas, leachate and other by-products.

**Bring Site** A site where the public can deposit source segregated household dry recyclables for collection by the Waste Collection Authority or its nominated contractor.

**Climate Change** Regional or global-scale changes in historical climate patterns arising from natural and/or man-made causes that produce an increasing mean global surface temperature.

**Co-located Waste Facilities** Where a waste management facility(ies) is located on the same site or in the immediate area of another waste management facility, often operating in an integrated manner.

**Combined Heat and Power (CHP)** The combined production of heat (usually in the form of steam) and power (usually in the form of electricity). The heat can be used as hot water to serve a district-heating scheme.

**Commercial Waste** Waste produced from premises used solely or mainly, for the purpose of a trade or business or for sport, recreation or entertainment.

**Composting** A biological process which takes place in the presence of oxygen (i.e. it is aerobic) in which organic wastes, such as garden and kitchen waste are converted into a stable granular material. This can be applied to land to improve soil structure and enrich the nutrient content of the soil.

**Department for the Environment Food and Rural Affairs (DEFRA)** Government department with national responsibility for sustainable waste management amongst other things.

**Energy from Waste (EfW)** Energy that is recovered through thermally treating waste. EfW is also used to describe some thermal waste treatment plants.

**Energy Recovery** The combustion of waste under controlled conditions in which the heat released is recovered to provide hot water and steam (usually) for electricity generation (see also Recovery).

**Gasification** The thermal breakdown of organic material by heating waste in a low oxygen atmosphere to produce a gas. This gas is then used to produce heat/electricity.

**Green Waste** Organic waste from households, parks, gardens, wooded and landscaped areas such as tree prunings, grass clippings, leaves etc.

**Hazardous Waste** Waste that contains potentially damaging properties which may make it harmful to human health or the environment. It includes materials such as asbestos, fluorescent light tubes and lead-acid batteries. The European Commission has issued a Directive on the controlled management of hazardous waste; wastes are defined as hazardous on the basis of a list created under that Directive.

**Household Waste** Waste from a private dwelling or residential house or other such specified premises, and includes waste taken to household waste recycling centres.

**Household Waste Recycling Centre (HWRC)**

Facilities to which the public can bring household waste, such as bottles, textiles, cans, paper, green waste and bulky household items/waste for free disposal.

**Incineration** The burning of waste at high temperatures in the presence of sufficient air to achieve complete combustion, either to reduce its volume (in the case of municipal solid waste) or its toxicity (such as for organic solvents). Municipal solid waste incinerators can recover power and/or heat. Incinerators are often referred to as EfW (energy from waste) plants.

**Integrated Waste Facilities** Where a waste management facility is located within the same development as the source of waste that it is treating.

**Kerbside Collection** Any regular collection of recyclables from premises, including collections from commercial or industrial premises as well as from households. Excludes collection services delivered on demand.

**Landfill** The deposit of waste onto and into land, in such a way that pollution or harm to the environment is prevented and, through restoration, to provide land which may be used for another purpose.

**LATS** Landfill Allowance and Trading Scheme (LATS) introduced in 2005; local authorities are set limits on the amounts of biodegradable municipal waste which can be sent to landfill. Tradable allowances mean that local authorities can buy LATS from other authorities that have performed better than their allowance; failure to meet the allowance (or buy sufficient LATS) will result in heavy financial penalties for the local authority. More information from <http://www.defra.gov.uk/Environment/waste/localauth/lats/index.htm>

**Materials Recycling Facility or Materials Recovery Facility (MRF)** A special sorting 'factory' where mixed recyclables are separated into individual materials prior to despatch to reprocessors who prepare the materials for manufacturing into new recycled products.

**Municipal Waste** Any waste collected by or on behalf of a local authority. For most local authorities the vast majority of this waste is from the households of their residents. Some is from local businesses and other organisations such as schools and the local authority's own waste.

**Planning Policy Statements** Guidance documents produced by central government to explain statutory provisions and provide guidance to local authorities and others on planning policy and the operation of the planning system. For example:

PPS1: Delivering Sustainable Development

PPS3: Housing

PPS10: Planning for Sustainable Waste Management

PPS12: Local Spatial Planning

**Pyrolysis** The heating of waste in a closed environment, in the absence of oxygen, to produce a secondary fuel product.

**RECAP** "Recycling in Cambridgeshire and Peterborough" – The Cambridgeshire and Peterborough Waste Partnership

**Recovery** The process of extracting value from waste materials, including recycling, composting and energy recovery.

**Recycling** Recovering re-usable materials from waste or using a waste material for a positive purpose.

**Re-use** The re-use of materials in their original form, without any processing other than cleaning.

**Sustainable Waste Management** Using material resources efficiently to cut down on the amount of waste we produce and, where waste is generated, dealing with it in a way that actively contributes to economic, social and environmental goals of sustainable development.

**Thermal Treatment** Treatment of waste using heat e.g. incineration, pyrolysis, gasification, etc.



**Waste Arising** The amount of waste generated in a given locality over a given period of time.

**Waste Collection Authority (WCA)** Organisation responsible for collection of household waste i.e. the local district or unitary council.

**Waste Disposal Authority (WDA)** Organisation responsible for disposing of municipal waste. In two-tier areas this is the County Council

**Waste Hierarchy** An order of waste management methods, enshrined in European and UK legislation, based on their predicted sustainability. The hierarchy is summarised as “reduce (prevent), re-use, recycle/ compost, recover, dispose”.

**Waste Minimisation** Reducing the volume of waste that is produced. This is at the top of the Waste Hierarchy.

## 11 Bibliography

### 11.1 National Documents

British Standard BS 1703:2005 Refuse chutes and hoppers. Specification

British Standard BS 5906:2005 Waste Management in Buildings – Code of Practice

British Standard BS 8300:2009 Design of buildings and their approaches to meet the needs of disabled people

Building for Life – CABE & Home Builders Federation, 2003 – CABE & HBF, 2003, from <http://www.buildingforlife.org/publications/assessment-exercise>

Building Regulations 2000 – H Drainage and Waste Disposal – ODPM, 2006, from [http://www.planningportal.gov.uk/uploads/br/BR\\_PDF\\_ADH\\_2002.pdf](http://www.planningportal.gov.uk/uploads/br/BR_PDF_ADH_2002.pdf)

By Design: urban design in the planning system towards better practice – DETR/CABE, 2001, from <http://www.cabe.org.uk/files/by-design-urban-design-in-the-planning-system.pdf>

Chute Recycling Schemes – WRAP, from [http://www.wrap.org.uk/local\\_authorities/research\\_guidance/collections\\_recycling/recycling\\_collections\\_for\\_flats/operation\\_of\\_](http://www.wrap.org.uk/local_authorities/research_guidance/collections_recycling/recycling_collections_for_flats/operation_of_)

[different\\_collection\\_schemes/chute\\_recycling.html](http://www.wrap.org.uk/local_authorities/research_guidance/collections_recycling/recycling_collections_for_flats/operation_of_different_collection_schemes/chute_recycling.html)

Code for Sustainable Homes – DCLG, 2006 from <http://www.communities.gov.uk/planningandbuilding/buildingregulations/legislation/codesustainable/> (also includes Technical Guidance document)

Design & Access Statements: How to write, read and use them – CABE, 2006 from <http://www.cabe.org.uk/files/design-and-access-statements.pdf>

Designing Waste Facilities – A Guide to Modern Design in Waste – CABE/DEFRA, 2008 from <http://www.defra.gov.uk/environment/waste/localauth/facilities.htm>

Ecotowns Worksheets – TCPA, 2008, from <http://www.tcpa.org.uk/pages/sustainability-worksheets.html>

Environmental Protection Act, 1990, from [http://www.opsi.gov.uk/acts/acts1990/Ukpga\\_19900043\\_en\\_1.htm](http://www.opsi.gov.uk/acts/acts1990/Ukpga_19900043_en_1.htm)

Household Waste Recycling Act, 2003, from [http://www.opsi.gov.uk/Acts/acts2003/ukpga\\_20030029\\_en\\_1](http://www.opsi.gov.uk/Acts/acts2003/ukpga_20030029_en_1)

Manual for Streets – Department for Transport, 2007, from <http://www.dft.gov.uk/pgr/sustainable/manforstreets/>

Open University Household Waste Study: Key findings 2008 – Defra, 2008, from <http://www.defra.gov.uk/evidence/statistics/environment/waste/research/oustudy.htm>

Planning Policy Statement 1 (PPS1): Delivering Sustainable Communities – OPDM, 2005 – from <http://www.communities.gov.uk/planningandbuilding/planning/planningpolicyguidance/planningpolicystatements/planningpolicystatements/pps1/>

Planning Policy Statement 3 (PPS 3): Housing – DCLG, 2006, from <http://www.communities.gov.uk/publications/planningandbuilding/pps3housing>

Planning Policy Statement 10 (PPS10): Planning for Sustainable Waste Management – DCLG, 2006, from <http://www.communities.gov.uk/planningandbuilding/planning/planningpolicyguidance/mineralsandwaste/wastemanagement/pps10/>

Planning for Sustainable Waste Management: Companion Guide to Planning Policy 10 – DCLG, 2006, from <http://www.communities.gov.uk/publications/>



planningandbuilding/planningsustainable

Secured by Design – ACPO, 1989, from <http://www.securedbydesign.com/>

Statutory Instrument 2006 No. 3368 The Smoke-free (Premises and Enforcement) Regulations 2006

Understanding Waste Growth at Local Authority Level (WR0121) from [http://randd.defra.gov.uk/Document.aspx?Document=WR0121\\_8316\\_FRP.pdf](http://randd.defra.gov.uk/Document.aspx?Document=WR0121_8316_FRP.pdf)

Urban Design Compendium – Homes & Communities Agency, 2000, from <http://www.urbandesigncompendium.co.uk/public/documents/UDC1FULL.pdf>

Waste Framework Directive (Directive 2000/98/EC) from <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0030:en:PDF>

Waste Strategy for England 2007 – DEFRA, 2007, from <http://www.defra.gov.uk/environment/waste/strategy/strategy07/documents/waste07-strategy.pdf>

## 11.2 Local Documents

Barking and Dagenham (London Borough of) – Planning Advice Note 3 – Refuse and Recycling Provisions in New and Refurbished Developments, from <http://www.barking-dagenham.gov.uk/8-leisure-envir/planning/pdf/refuse-recycling-part-3.pdf>

Barnet (London Borough of) – Information for Developers and Architects – Provision of Domestic and Green Waste Collection Services from <http://www.barnet.gov.uk/index/environment-planning/rubbish-waste-and-recycling/refuse-recycling-developers-architects.htm>

Belfast City Council – Waste and Recycling Storage Requirements (2006) from <http://www.belfastcity.gov.uk/recycle/wastestorageguidancenotes.pdf>

Cambridgeshire Design Guide for Streets and the Public Realm (2007) – from <http://www.cambridgeshire.gov.uk/NR/rdonlyres/A094E38D-C335-4A22-8549-66C8767E7788/0/CambridgeshireDesignManual051007EMAIL1.pdf>

Cambridge and Peterborough (RECAP) - Cambridgeshire & Peterborough Joint Waste Management Strategy, 2008,

from <http://www.recap.co.uk/information/joint-municipal-waste-management-strategy-2008.aspx>

Cardiff Supplementary Planning Guidance Waste Collection and Storage Facilities, 2007, from [http://www.cardiff.gov.uk/ObjView.asp?Object\\_ID=870](http://www.cardiff.gov.uk/ObjView.asp?Object_ID=870)

Carrick District Council - Waste Storage and Recycling in New Developments SPD

Chichester District Council – Standard Waste and Recycling Requirements

Cherwell District Council – Interim Guidance SPD

Cornwall County Council – Draft Supplementary Planning Document – Managing Waste in New Developments

Dartford District Council - Local Guidance on Design and Access Statements, from <http://www.dartford.gov.uk/planning/DesignandAccessStatements.htm>

Kent Design Guide - Kent County Council, from <http://www.kent.gov.uk/publications/council-and-democracy/kent-design-guide.htm>

Lambeth (London Borough of) – Waste and Recycling Storage and Collection Requirements – Guidance for Architects and Developers, from <http://www.lambeth.gov.uk/NR/rdonlyres/A80052DE-AD40-4C17-B1C4-F26428B7F121/0/GuidanceForArchitects.pdf>

Lewisham (London Borough of) - Planning Obligations Supplementary Planning Document

Luton BC & Bedfordshire County Council - Managing Waste in New Developments SPD, 2006, from <http://www.luton.gov.uk/Media%20Library/Pdf/Environment%20%26%20regeneration/Planning/Minerals%20and%20Waste/managing%20waste%20in%20new%20development%20SPD.pdf>



Manchester City Council – Guide to Development in Manchester, from [http://www.manchester.gov.uk/info/856/local\\_development\\_framework/1528/the\\_guide\\_to\\_development\\_in\\_manchester/1](http://www.manchester.gov.uk/info/856/local_development_framework/1528/the_guide_to_development_in_manchester/1)

Manchester City Council - Waste Storage & Collection Guidance for New Developments, from [http://www.manchester.gov.uk/info/200084/recycling\\_rubbish\\_and\\_waste/3156/waste\\_storage\\_and\\_collection\\_guidance/1](http://www.manchester.gov.uk/info/200084/recycling_rubbish_and_waste/3156/waste_storage_and_collection_guidance/1)

North Devon District Council – Design Guide on Refuse Storage for New Residential Properties

RECAP Partnership: Waste Management Design Guide from <http://www.recap.co.uk/pdf/RECAP-Waste-Management-Design-Guide.pdf>

Suffolk County Council - Suffolk Waste Local Plan, 2006

Suffolk County Council - Waste Core Strategy Issues and Options (Part II) Strategic Sites, 2008

Suffolk County Council - Joint Municipal Waste Management Strategy for Waste Strategy 2003-2020, from [http://www.suffolkrecycling.org.uk/Files/Adopted\\_Strategy.pdf](http://www.suffolkrecycling.org.uk/Files/Adopted_Strategy.pdf)

Suffolk County Council - JMWMS for Suffolk 2003-2020 - Annexes 2008/ Action Plans 2007-2012 - Policy Statements/ Consultation

Suffolk County Council - Guide for Waste Management Facilities Applications- Planning

Suffolk County Council - Suffolk Design Guide for Residential Areas

Suffolk County Council - Suffolk Estate Road Specification, 2007

Suffolk County Council - Suffolk Design Guide for Residential Areas, 2000 rev.

Suffolk County Council - Suffolk Manual (for the design of Highways Works), undated, from <http://www.suffolk.gov.uk/PlanningAndBuilding/ConservationAndListedBuildings/SuffolkManual.htm>

Tower Hamlets (London Borough of) – Planning Standard 2 – Residential Refuse and Recycling Provision

Waste and Recycling Requirements for New Residential Developments in Medway

# Notes



# 12 Developers Checklist

Consideration	Standard Minimum Requirements	Applicable Y/N ?	Containers Required Y/N	Developer's Document Reference
Residential Internal Storage Requirement	Minimum total storage capacity to accommodate 60 litres of total storage capacity. Such capacity to be the aggregate sum of no fewer than 3 containers, where no individual bin has an individual capacity of less than 15 litres. Typical container dimensions are listed in Section 7.			
Residential External Storage Requirement	Minimum external storage capacity to accommodate up to 3 bins with a total capacity of between 480 and 720 litres, with no bin smaller than 40 litres. All bins should be located within 30m <sup>2</sup> of an external door. External storage areas should be hard floored and if covered of sufficient height to permit the opening of the bin lids. Offices - 2,600 litres of waste storage space for every 1,000m <sup>2</sup> gross floor space Retail - 5,000 litres of waste storage space for every 1,000m <sup>2</sup> gross floor space Restaurants and Fast Food Outlets - 10,000 litres of waste storage space for every 1,000m <sup>2</sup> litres gross floor space Hotels - 7,500 litres of waste storage space for every 1,000m <sup>2</sup> gross floor space Developments must provide specific segregated waste storage areas for domestic waste arisings and commercial waste arisings respectively. The extent of provision should relate to the specifications given for commercial and domestic waste accordingly. <ul style="list-style-type: none"> <li>• Sufficient containers for staff, clients and customers</li> <li>• Sited in a convenient location and easily identifiable (signed)</li> <li>• Ensure that containers are adequately serviced</li> </ul>			
Commercial				
Mixed Use				
Cigarette Related Litter				
<b>Storage Requirements</b>				
Residential Low Rise	<ul style="list-style-type: none"> <li>• Storage locations should not be more than 30 m distance from the point of collection</li> <li>• Collection crews should not have to carry individual containers or move wheeled containers more than 25m</li> <li>• Passage of a bin from store to collection point should avoid steps, but where not possible should avoid transfer over more than 3 steps</li> <li>• Gradients over which containers must traverse should not exceed 1 in 12</li> <li>• Containers should not have to be moved through a building to the point of collection</li> <li>• Provision for composting should be made in all dwellings with a garden. An area of 2m x 1m should be allocated with suitable drainage</li> </ul>			
Residential Flats/Apartments	<ul style="list-style-type: none"> <li>• Safe handling arrangements for caretakers/management staff when transporting waste</li> <li>• Conditions within freehold, lease or tenancy agreements to prescribe waste deposit areas</li> <li>• Effective monitoring of occupants level of compliance with the development waste storage requirements</li> <li>• Regular cleansing of the collection areas</li> </ul>			
Commercial	<ul style="list-style-type: none"> <li>• Storage locations should not be more than 30 m distance from the point of collection</li> <li>• Collection crews should not have to carry individual containers or move wheeled containers more than 25m</li> <li>• Passage of a bin from store to collection point should avoid steps, but where not possible should avoid transfer over more than 3 steps</li> <li>• Gradients over which containers must traverse should not exceed 1 in 12</li> <li>• Containers should not have to be moved through a building to the point of collection</li> </ul>			
Mixed Use	<ul style="list-style-type: none"> <li>• Storage locations should not be more than 30 m distance from the point of collection</li> <li>• Collection crews should not have to carry individual containers or move wheeled containers more than 25m</li> <li>• Passage of a bin from store to collection point should avoid steps, but where not possible should avoid transfer over more than 3 steps</li> <li>• Gradients over which containers must traverse should not exceed 1 in 12</li> <li>• Containers should not have to be moved through a building to the point of collection</li> <li>• Provision for composting</li> </ul>			
Infrastructure Requirements	<p>Communal Waste Storage Compound</p> <ul style="list-style-type: none"> <li>• Sufficient clearance to allow full opening of the lid</li> <li>• 150mm clearance space between containers to allow ease of movement</li> <li>• 2m minimum working height where compound is covered</li> <li>• 2m minimum width of access threshold to the compound to allow for removal and return of containers whilst servicing</li> <li>• Layout should be such that any one container may be removed without the need to move any other container</li> </ul>			
Highways and Access Requirements	<p>For standard waste recycling collection services, highways should adhere to the below criteria</p> <ul style="list-style-type: none"> <li>• Be of a minimum 5m in width</li> <li>• Designed to accommodate maximum reversing distance of 12m</li> <li>• Allow a minimum of 4.5m vertical clearance</li> <li>• Minimum working area of 3.5m width and 4m in length should be available where the containers are emptied.</li> </ul>			
Recycling Centre Requirements	<ul style="list-style-type: none"> <li>• Provision of financial contribution on an per dwelling basis to contribute towards:</li> <li>• Local recycling facilities, HWRCs, enhancement of recycling containers &amp; recycling points, provision of new recycling containers</li> <li>• Minimum area of 15m x 5m</li> </ul>			
Bring Site Requirements	<ul style="list-style-type: none"> <li>• Container specification available from WCA</li> <li>• To purchase and supply suitable recycling containers to meet specifications supplied by the authority, for use on the constructed bring site.</li> <li>• A bond of suitable financial bond will be payable to cover defects occurring on the site for a period of 5 years from the date of completion. After this time, the authority will adopt the site.</li> <li>• The authority will undertake responsibilities for routine inspection and cleaning services on the completion of the facility, at a frequency to be decided by the Authority.</li> </ul>			



