Avoiding rubbish design

Providing for bin storage on new housing developments

Guide

NHBC Foundation
Housing research & guidance

F60

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About the NHBC Foundation

The **NHBC Foundation**, established in 2006, provides high quality research and practical guidance to support the house-building industry as it addresses the challenges of delivering 21st century new homes. To date we have published 60 reports on a wide variety of topics, including the sustainability agenda, homeowner issues and risk management.

The NHBC Foundation is also involved in a programme of positive engagement with the Government, academics and other key stakeholders, focusing on current and pressing issues relevant to house building.

To find out more about the NHBC Foundation, please visit **www.nhbcfoundation.org**. If you have feedback or suggestions for new areas of research, please contact **info@nhbcfoundation.org**.

NHBC is the standard-setting body and leading warranty and insurance provider for new homes in the UK, providing risk management services to the house-building and wider construction industry. All profits are reinvested in research and used to improve the construction standard of new homes for the benefit of homeowners. NHBC is independent of the Government and builders. To find out more about NHBC, please visit **www.nhbc.co.uk**.

The NHBC Foundation Expert Panel

The NHBC Foundation's research programme is guided by an Expert Panel of senior representatives from Government and industry:

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Foreword

This Government is committed to tackling the scourge of 'bin blight' – the proliferation of badly placed wheelie bins creating a blot on our neighbourhoods. Too many of our streets are still dominated by the ugly clutter of unsightly bins ruining the look of families' homes and gardens.

As this guide recognises, existing homes that have ill thought-out waste storage represent a real challenge for us all. Residents can be forced to use up valuable storage space in their homes to sort waste and recycling for their council, while collection day presents a gauntlet to be run of wheelie bins and recycling boxes which clog up pavements, front yards and driveways causing not only an eyesore but a danger. On the contrary, there is no reason why waste storage in new housing developments cannot be planned in a sensible way which reduces its visual impact on the local community and is convenient and safe for the householder.

That is why I was pleased to learn that the NHBC Foundation also recognises the need to ensure good waste storage is not overlooked. In particular, I welcome the action it has already taken by commissioning work to identify the key factors which need to be considered for waste storage in new housing. I hope the examples of good practice within the housing industry that have been identified will also provide ideas for others looking to find ways of delivering a waste storage solution that works.

Most of all though, I hope the housing industry continues to recognise the importance of this issue. It matters because it is essential to deliver the high quality new homes we are all striving for. People deserve a decent waste and recycling service in return for the taxes they pay and as part of this should not have to suffer a bin-blighted local environment.

Rt Hon Eric Pickles MP
Secretary of State for
Communities and Local Government

Executive summary

Given the detailed attention that is paid to the design of new houses, it can sometimes seem as if insufficient attention is given to how bins for domestic waste and recycling are accommodated on housing developments. With the continuing expansion of recycling and growth in the number of bins required the issue of 'bin blight' was commented on by the Rt Hon Eric Pickles MP, Secretary of State for Communities and Local Government in 2013:

> "In streets up and down the country, ugly bin clutter has ruined the street scene and the look of people's homes and gardens."
>
> The Rt Hon Eric Pickles MP, August 2013

Evidence suggests that finding a suitable space for domestic waste and recycling storage is a common problem for many households. Whereas there may be limited opportunity for addressing this issue for existing houses, in the case of new build there is scope to design to accommodate bin storage and collection from the outset. Successful design brings benefits both in terms of reducing visual impacts but also of improving convenience for the people living in new homes.

This project began with a survey of local authorities in England carried out in the summer of 2014 to explore the provisions for waste and recycling that local authorities are asking for. It identified widely-varying requirements for waste and recycling storage, which increases the challenge for designers.

The second phase of the project involved a review of housing developments across England, using examples of good design, where adequate storage had been integrated unobtrusively. The criteria against which developments were considered included:

- reducing visual impact
- allowing adequate space for the number and size of bins and other containers
- ensuring convenience for use including by residents with reduced mobility
- ensuring that solutions are durable, low maintenance and cleanable
- managing odour and noise issues
- addressing other health and safety issues (including fire and vermin)
- working out arrangements for collection days
- minimising impact on use of pavements and streets by pedestrians and vehicles.

Perhaps unsurprisingly, it became clear that certain types of housing present a greater challenge for designers. Accommodating bin storage in terraced houses stands out as an example that requires particular thought and attention.

This guide seeks to provide a series of best practice examples which can be applied when designing residential layouts. The examples are by no means exhaustive and can be adapted to suit the site-specific requirements. A number of 'Golden Rules' provide a series of prompts for designers to consider.

The challenges of bin storage and collection

Bins in the UK are generally collected from the property boundary where the house meets the street. By the 1960s, after a century of variations, the 90-litre steel 'dustbin' had become the standard solution for the storage of residents' waste which local authorities collected on a weekly basis. Less than a metre high, these bins could be easily hidden behind hedges or shrubs if they were not kept in garages or purpose-built stores.

During the last two decades this approach came under pressures – exemplified by the overflow of black bin bags around bins on collection days. Efforts to divert waste from landfill intensified with the introduction of the landfill tax, the implementation of the EU Landfill Directive[1], and ever-reducing landfill capacity. The response of local authorities was to begin to draw up waste and recycling collection regimes based on the use of the 240-litre plastic `wheelie bins' which had already been in use for non-residential waste collection since the 1990s.

The Government has more recently sought to protect regular waste collection services by, for example, providing the £250 million Weekly Collection Support Scheme which has protected weekly collections for six million households, and publishing the first ever guidance on weekly bin collections, encouraging councils in England to support weekly services.

The transition towards wheelie bins, and the use of refuse vehicles with automated lifts, also brought the benefit of minimising the need for operatives to lift bins and so helped in reducing the risk of injury.

These changes have been successful in reducing the amount of household waste sent to landfill. In the period from 2000/01 to 2011/12 annual landfill of domestic waste fell from 16.7 million to 10.6 million tonnes, a reduction of 36.5%. This is mirrored by a dramatic rise of 250% in recycling over the same period, with 44.5% of waste now being separated by householders[2].

However, the widespread adoption of wheelie bins alongside the introduction of a variety of additional bins, boxes and bags for storing waste for recycling has not been without its problems. Uppermost amongst these are the difficulties households face in accommodating all these bins and containers. Terraced houses are particularly affected where there can be restricted access or no access to the rear of the property; the narrow frontage and limited front garden space can also impose further constraints.

Data from a survey of local authorities carried out for this project reveal the varying requirements for domestic waste and recycling storage that currently exist throughout England. At the extreme, one local authority asks for residents to use nine separate storage containers for storing waste and recycling – somewhat beyond the single 90-litre steel dustbin that would have been in use a few decades ago.

Accommodating the bins and other containers within the curtilage of the home is not the only problem. The second challenge is where bins are placed on collection days so that they are accessible for collection – making sure that they do not get in the way of pedestrians and road users is an equally important issue for the designer.

[1] http://ec.europa.eu/environment/waste/landfill_index.htm

[2] www.gov.uk/government/uploads/system/uploads/attachment_data/file/375945/Statistics_Notice_Nov_2014_Final__3_.pdf

Survey of local authorities' waste and recycling requirements

Local authorities within England have powers to set their own standards for bin collection. During spring 2014 the research team conducted a survey of 326 local authorities, asking a person within their collection department to respond to a questionnaire. Questions included the number, type and purpose of bins and other containers.

The research achieved a high response rate of 325 completed questionnaires which, as anticipated, demonstrated a wide variation in waste collection regimes. Figures 1 and 2 summarise the findings from the survey.

The survey confirms that there are wide variations in the number, type and size of bins and other containers required in different local authority areas. This means that unlike other design challenges that can lend themselves to well-established, standard solutions, the waste and recycling challenges have to be reconsidered for each development, taking account of the specific arrangements that are in place locally.

How many bins and other containers are required?

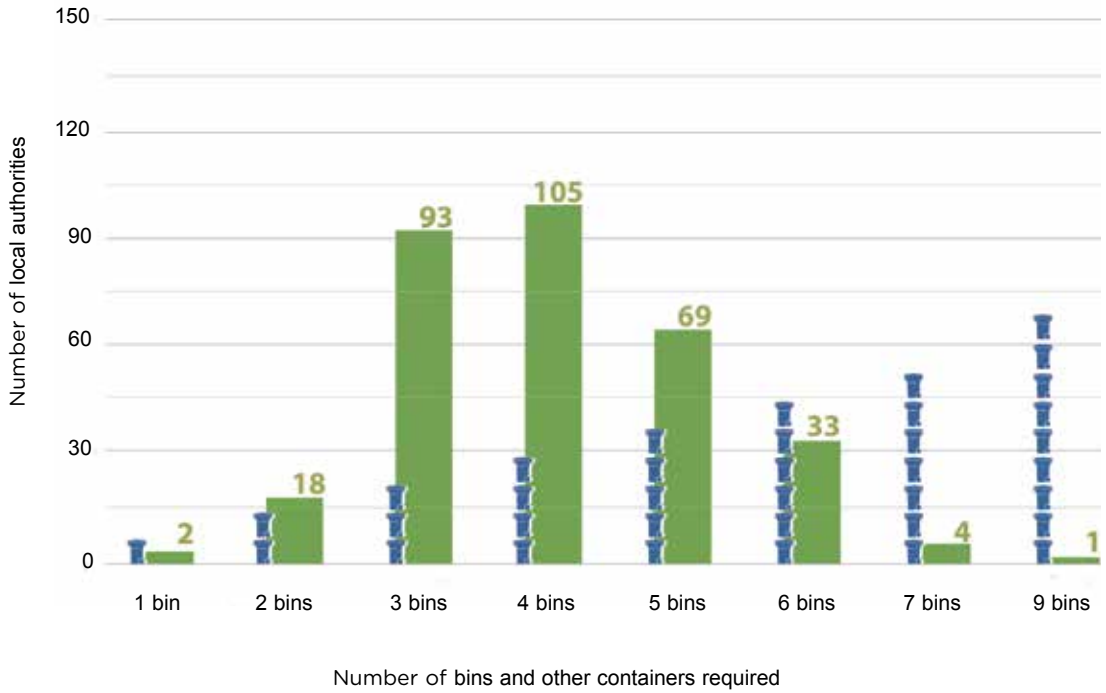


Figure 1 Number of bins and other containers

The survey revealed that:

- residents of Newcastle-under-Lyme in Staffordshire face the most comprehensive demands: nine different containers are provided for general waste, food, cardboard, plastics, paper, glass and cans, textiles and garden waste
- collection patterns have evolved in local authorities to the extent that there are wide variations in the number, type and size of bins and other containers required for residents to use for waste and recycling collection. The Government has encouraged councils to work together to standardise services and maintain frequent collections where this helps to improve service quality and save money
- there are still a number of local authorities that collect weekly
- monthly collections are limited to recycling and garden matter
- the majority of local authorities combine recycling material with mixed recycling (metal/glass/plastic/card/paper) accounting for the largest proportion recycled.

What gets recycled?

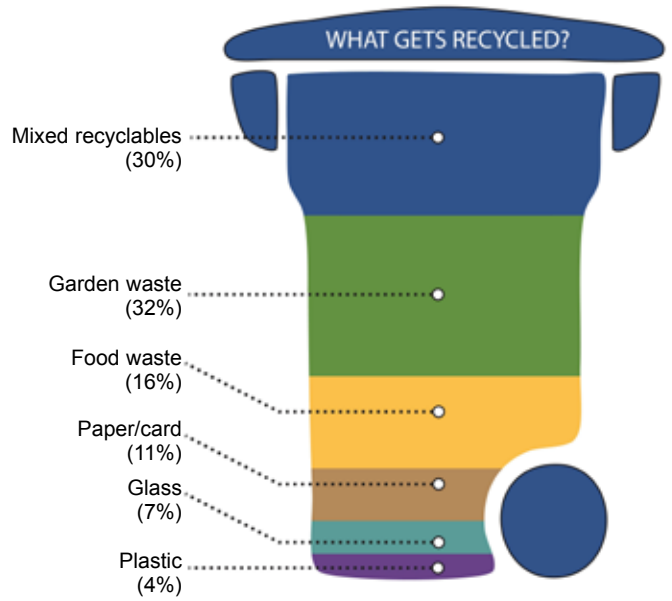


Figure 2 What gets recycled?

Designing for waste and recycling storage, and collection

Figure 3 Ventilated robust structures at Centenary Quays, Southampton

Image courtesy of Barratt Eastern Counties

Figure 4 Modular bin store at Trumpington Meadows, Cambridge

The starting point for storing waste and recycling is that each house will have its own bins and other containers, and that they will be accommodated outside of the house. Communal storage is likely to be more appropriate for apartment buildings.

Ideally bins should be stored alongside each other and sufficient height should be allowed so that lids can be opened fully without having to pull the bins out. Other containers (boxes, bags, etc.) should be stored without stacking – either located alongside each other or on shelves for ease of access and use.

Storage should be well ventilated to allow for the dispersal of odours and preferably be located in the shade to keep the inside temperature cool (Figure 3). It should also be located away from windows, ventilators and extractor fan terminals to prevent odours from entering the house. A lockable door should be provided to prevent tampering.

For most detached and semi-detached houses there is likely to be sufficient space to locate bin storage in the rear gardens. However, doing so without careful attention can have a detrimental effect in terms of visual impact and utility, eg presenting health and safety risks to children and pets, and making the use of gardens for relaxation and dining less appealing.

Responding to these challenges, some house builders have begun trialling the use of modular designs for bins to be put out of sight (Figure 4). Bin stores are constructed in various sizes to accommodate local requirements for storage of waste and recycling bins, the stores can also allow for discrete storage of other items such as bicycles.

The need for a collection strategy

Good design will anticipate and make dedicated arrangements for collection days. Without a dedicated on-street area for placing bins, they tend to be left scattered until residents move them back to their original position (Figures 5 and 6).

Scattered bins can create an obstruction for pedestrians and block views for vehicles driving out of side streets or driveways. It can also make the job of wheeling the bins to the refuse vehicle less efficient and unsafe as operatives navigate other bins and parked cars. In windy conditions, bins can be blown onto the road, further increasing the risk to pedestrians and road users.

Some local authorities have begun to ask for communal collection points, and the Derwenthorpe development on the eastern edge of York is one of the first to include them (Figure 7).

Figure 5 West Yorkshire example. Bins are wheeled to the shared surface on collection days without a dedicated area for them to stand

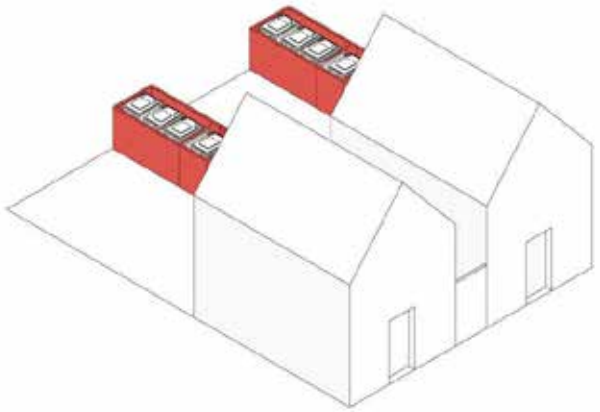
Figure 6 South Yorkshire example. Without a dedicated on-street collection area, bins are left on the road service margin

Figure 7 Bin collection area at Derwenthorpe, York. Collection areas to the sides of houses, away from people's windows and doors, are marked out with paving slabs and low fences

Generic design solutions for common home types

Semi-detached houses

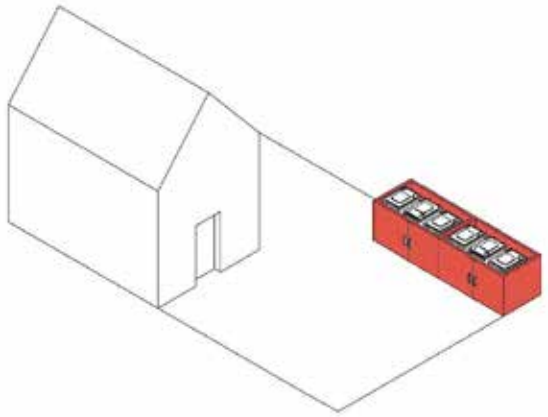
Freestanding storage



Storage in rear gardens

Bins are kept in purpose-built stores within the rear garden boundary, positioned where they are least visible from rooms within the houses, and not too far from the back doors. The illustration above shows two houses with a shared path leading to the storage area, fitted with a gate. A variety of materials can be used to construct the store, eg timber, brick, stone or metal.

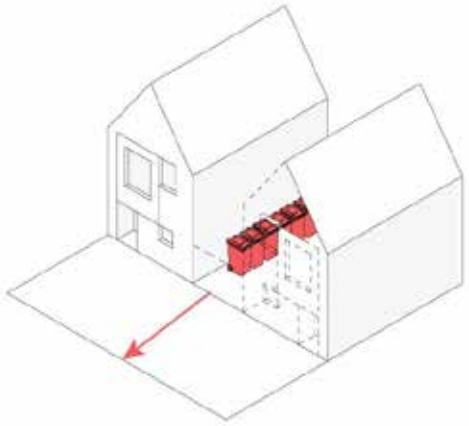
Freestanding storage



Storage in front of houses

Bins are kept in purpose-built stores in front of houses, along the property boundary. The dedicated storage area keeps bins secure and screened from the street. Stores can be made from different materials eg timber, brick, stone or metal, according to the design of the houses.

Freestanding storage

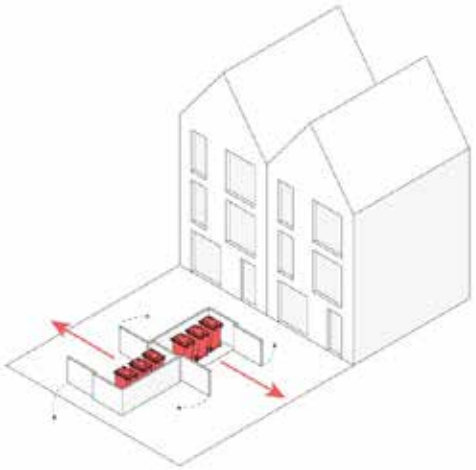


Storage between houses

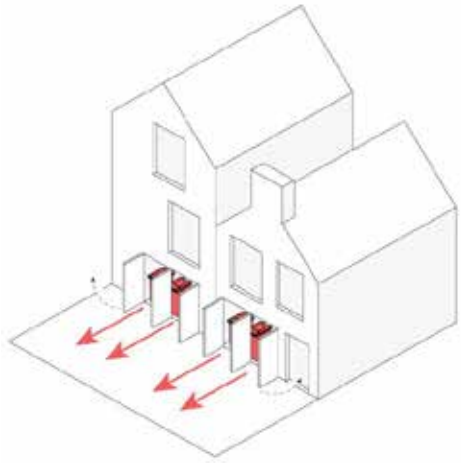
Bins are stored in the space between detached houses. Sufficient space should be provided to allow storage of bins for both houses, and for bicycles and garden equipment to be wheeled past. A gate should be provided at the front of the store.

Linked houses

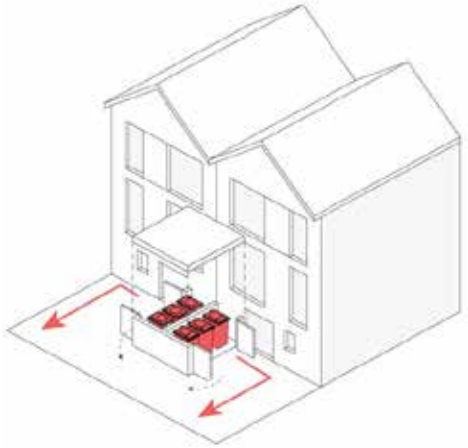
Freestanding storage



Built-in storage



Semi-integrated storage



Storage in front of houses

Bins are kept in purpose-built stores in front of houses along the property boundary. The dedicated storage area, which can be combined for pairs of houses as shown, keeps bins secure and discrete and can be constructed from a variety of materials. The design and location of the stores should take account of vehicle and pedestrian access.

Storage behind garage-type doors

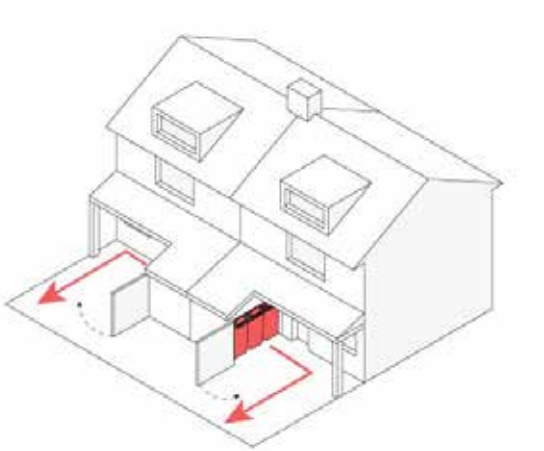
Particularly suited to mews-type buildings where there is little space at the front, this solution places the bins behind doors to the front of the houses. Care should be taken to ensure that the design of the facade is not overly dominated by too many doors.

Storage adjacent to front doors

Bins are kept in purpose-built stores adjacent to the front doors of the houses which can be constructed as pairs, as shown. Constructed from masonry, timber, or other materials this design can be particularly convenient in use and can have the additional benefit of improving privacy. It can also help break up houses in a long terrace into more discrete pairs.

Linked houses

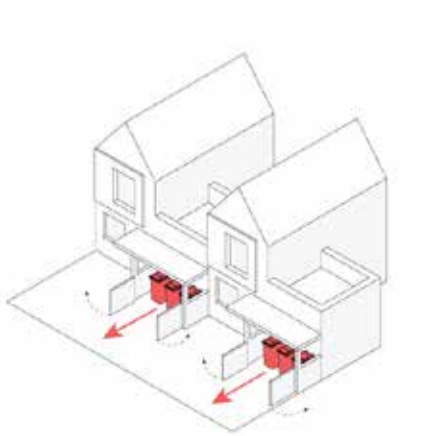
Semi-integrated storage



Storage within storm porches

This variation of the design for storage adjacent to front doors (shown on page 7) integrates into a wider porch.

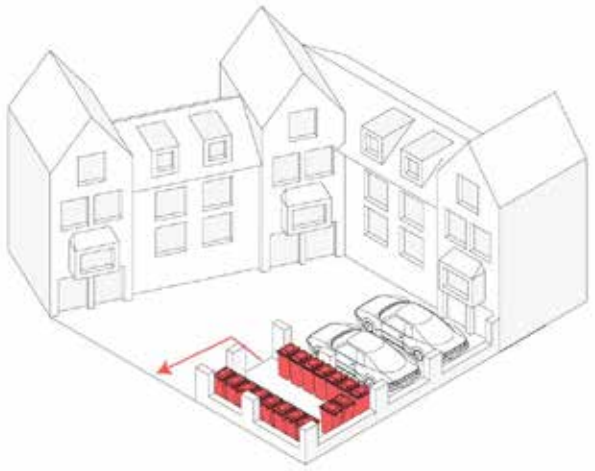
Semi-integrated storage



Storage in front of courtyard houses

Like terraced houses, courtyard houses have restricted access from garden to street so there are few options for storage. In this example, bin stores fit under porches, with doors that open away from the house entrances.

Freestanding storage

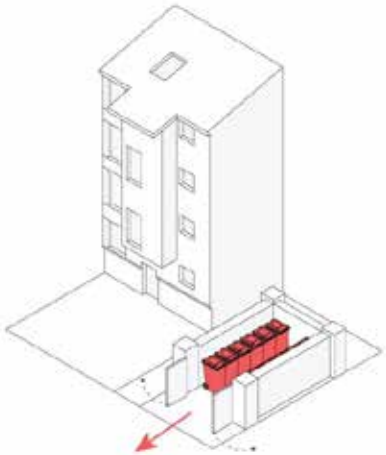


Communal storage sited separately within shared grounds

Again, this solution provides open storage for a number of bins but it is located away from the houses. Due to the scale of the storage, consideration should be given to providing landscaping and/or screening to block residents' views of the bins. If possible the storage should be located close to the street boundary so that bins do not have to be wheeled out by residents on bin collection days.

Apartment buildings

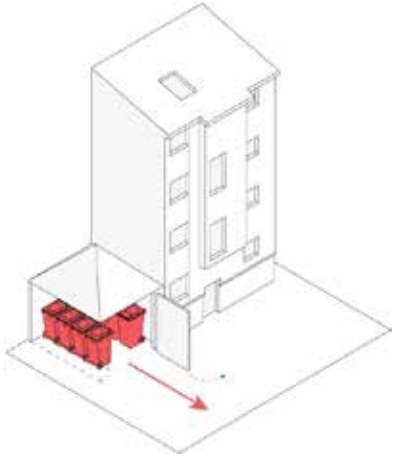
Freestanding storage



Communal storage within shared grounds adjacent to apartment buildings

This solution provides open storage for a number of bins. The preferred location is close to the street boundary so that bins do not have to be wheeled out by residents on collection days.

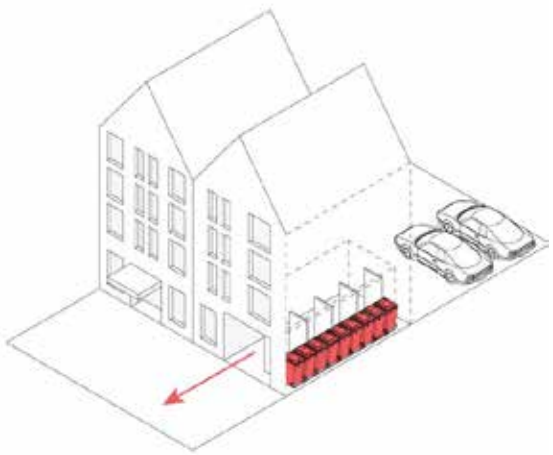
Semi-integrated storage



Communal storage to the side of apartment buildings

This solution provides a dedicated store to the side of the building in a logical position in relation to the entrance. The store should ideally use the same facing material as the building.

Built-in storage



Communal storage within apartment buildings

Best suited to smaller apartment buildings, storage space for bins is provided within the envelope of the building. Ideally the storage space is discretely located but close to the building's access.

Case studies

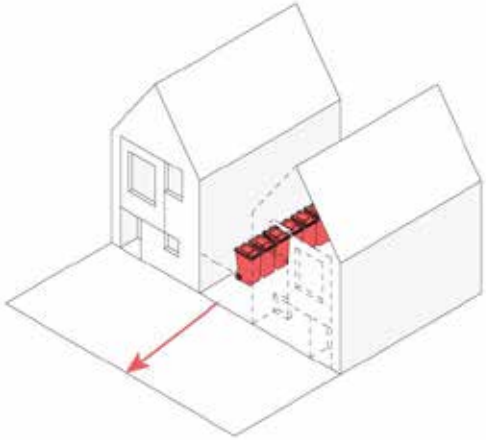
Horsted Park, Chatham

Storage between houses

At this development, bins are stored behind a wooden gate in the space between the semi-detached houses. When the weather is poor, or residents are time constrained, they can delay returning their bins to the storage areas which are sited in the back gardens.

A gate between pairs of semi-detached houses allows some flexibility by hiding the bins from the street in the alley between the houses. An additional benefit is that the rear of the properties is secured from the street.

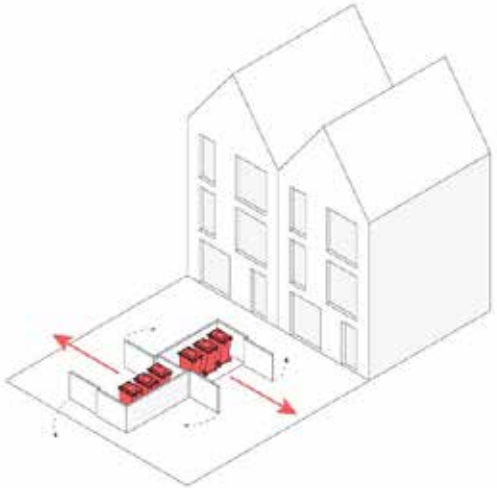
Freestanding design for semi-detached houses



Kidbrooke Village, Greenwich

Storage in front of houses

Bins are kept in purpose-built stores in front of the houses along the property boundary. A slender metal structure, softened with landscaping makes a store for six wheelie bins less obtrusive, while creating separation for the approaches to two adjacent front doors.



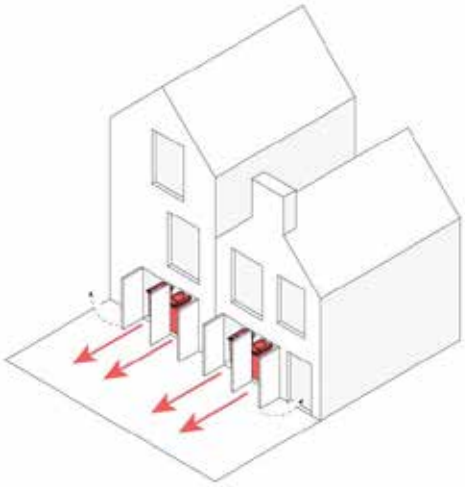
Freestanding design for linked houses

Tibby's Triangle, Southwold

Storage behind garage-type doors

Bin storage has been provided in a partitioned area within the houses, accessible through garage-type doors. In mews-type buildings, where the space between building lines is confined, bins are kept separately from shared spaces.

Built-in design for linked houses

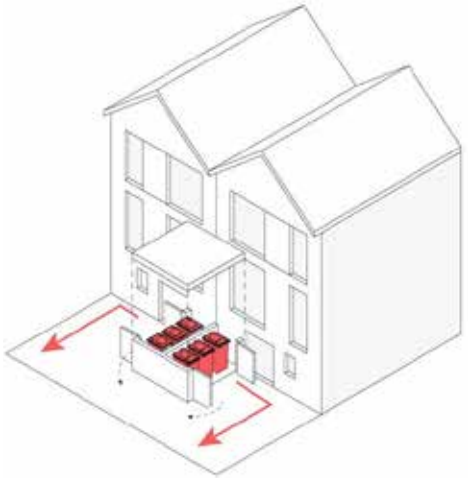


Centenary Quays, Southampton

Storage adjacent to front doors

Purpose-built stores have been provided in pairs adjacent to the front doors of terraced houses, giving privacy between thresholds. Materials designed to complement details in the front elevations of houses avoid the structure from being too imposing.

Semi-integrated design for linked houses

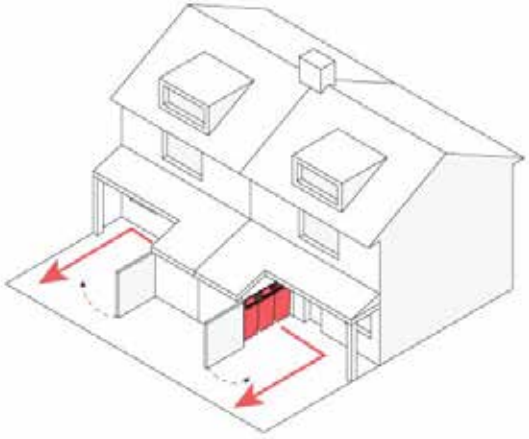


Holmesgate Place, Hayes

Storage within storm porches

Storey-height cupboards have been provided adjacent to the front doors. A bin store built up against houses, combined with a generous porch, creates a sheltered and private threshold.

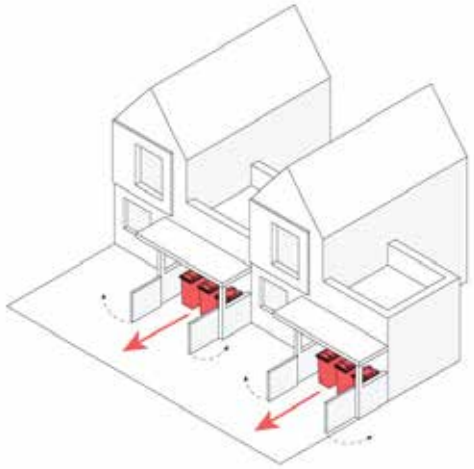
Semi-integrated design for linked houses



Hereward Hall, March

Storage in front of courtyard houses

These courtyard houses use their wide frontages to accommodate a shallow, broad bin store which is incorporated as part of the structure supporting a porch.



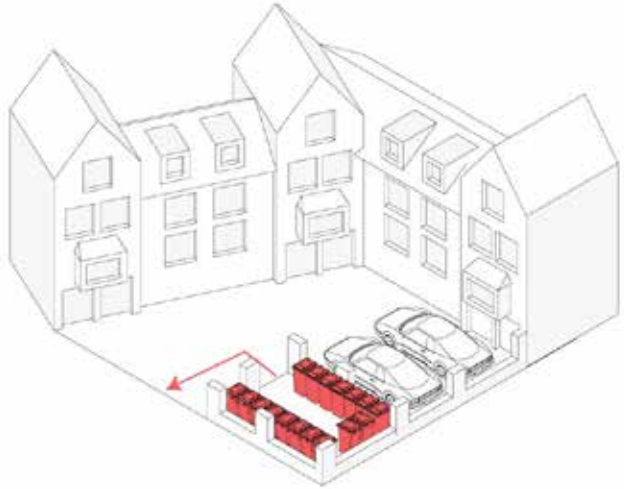
Semi-integrated design for linked houses

Ingress Park, Dartford

Communal storage sited separately within shared grounds

A metal-fenced enclosure has been provided close to the street boundary. The formal black painted metal railings suspended between generous gateposts, and on top of a dwarf brick wall, help mask views of a large group of different coloured bins close to the edge of the road.

Freestanding design for linked houses

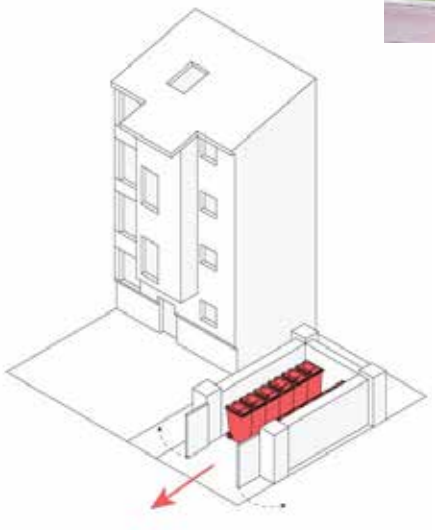


Wilford Place, Nottingham

Communal storage within shared grounds adjacent to apartment buildings

A brick and timber open-roofed enclosure has been provided. Residents at this small apartment building can conveniently dispose of waste as they leave their homes, but are spared the sight of the bins from their balconies by a ventilated timber canopy.

Freestanding design for apartment buildings

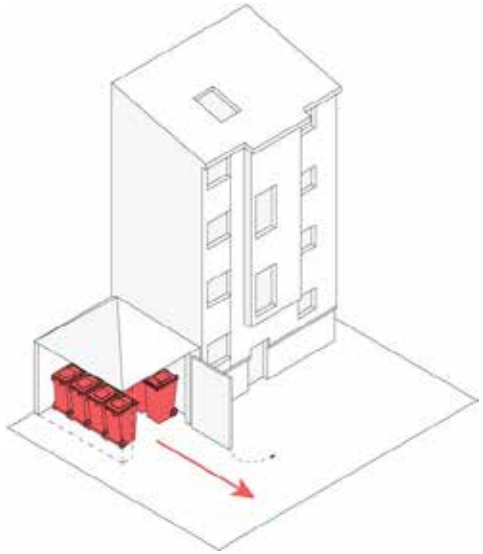


Stubwick Court, Amersham

Communal storage to the side of apartment buildings

Communal bin storage has been attached to, or provided close to, the apartment buildings. Their presence is downplayed by dividing bins between a number of similar structures, with one built to offset the blank flank wall of the apartment building. Landscaping also softens the presence of the bin storage.

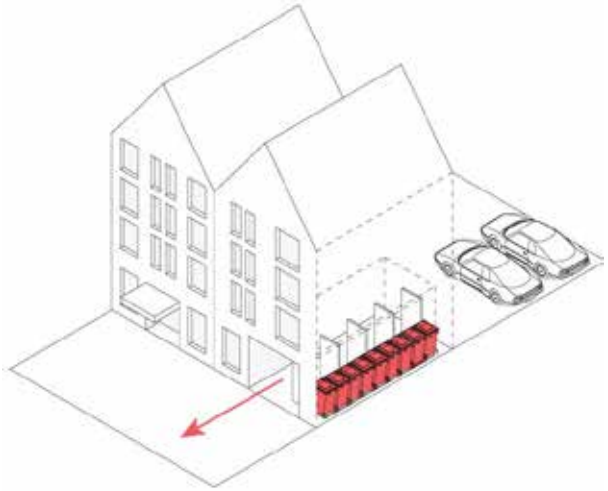
Semi-integrated design for apartment buildings



Trumpington Meadows, Cambridge

Communal storage within buildings

Wheelie bins are provided within the building in a drive-through leading to a rear parking court. Higher quality doors along the bin storage wall reflect their convenient position opposite access to the apartments.



Built-in design for apartment buildings

Underground bin storage

The prevalence of the 'row house' in much of Northern European town planning, and the use of long unbroken terraces for whole town blocks, rules out the use of multiple bins as a workable option. As a result countries such as The Netherlands developed, and then popularised, the use of underground cassette storage systems which are usually located within parking areas (Figure 8). Locating them in the parking areas allows heavy vehicles to collect bins without disturbing residents.

Underground bin storage systems have been used in London since the late 1990s when Tower Hamlets pioneered their use for waste collection in apartment developments. Tower Hamlets Borough Council took advantage of European grants available at the time to buy the special vehicles needed to hoist the underground cassettes.

A major advantage of underground storage is that of space compared with conventional storage at ground level. Underground bin storage systems generally have more capacity compared with the even larger 1100-litre 'Euro' bin. Using these systems also reduces the number of collections and the number of vehicles needed by the local authority.

A study produced for the London Plan consultation in 2014 highlighted that 1100-litre bins were typically using around 280 m^2 of space at ground floor level in apartment buildings. The implications are that four extra family-sized apartments could be built from space savings; there is also the benefit to the local authority and neighbourhood of reduced waste and recycling traffic. Bins are out of sight, thus also out of mind. Recycling provision in community hubs interspersed within the development can also be incorporated.

Within London, other boroughs are considering adopting the Tower Hamlets approach to underground bin storage provision. Peterborough waste authority has recently installed several underground bin storage systems in residential areas of the city, primarily in areas of low-rise flats and higher-density housing. In addition, the local authority is adopting this as the preferred method of waste collection in new urban developments, promoting its use over standard bin compounds. Underground bin storage has also been proposed for a large housing development in Edgbaston consisting of a range of housing densities including detached housing.

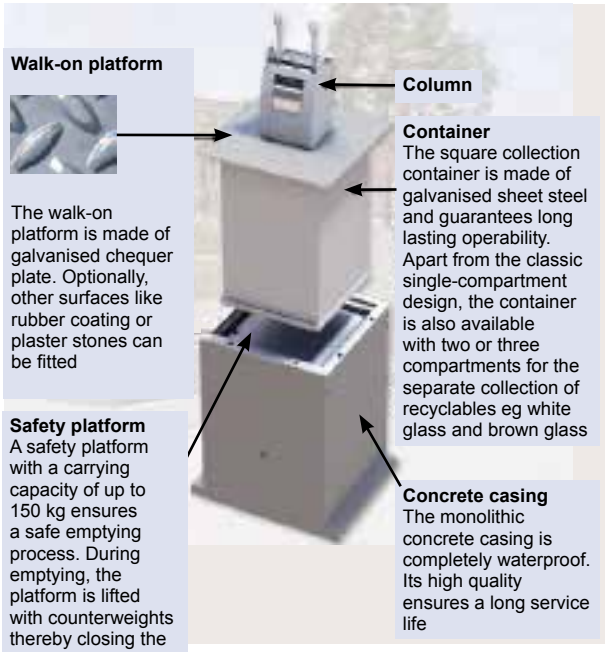


Figure 8 Cassette system at De Strijp, The Netherlands. Image courtesy of Graham Smith

Golden rules – points to consider

Local bin strategy

Always check planning policies for features such as minimum garden depths or maximum carriageway widths. Are there local requirements for provision of bin storage? Consider the frequency and type of bins collected in the area.

Use of available space

Providing adequate space for the required number of bins will be a greater challenge on densely-developed sites, particularly where there are a lot of terraced houses. Consider the integration of waste and recycling storage from the earliest stages of the design.

Communal storage

Aim to locate communal waste and recycling storage to be accessible and convenient for all houses and integral to the development's street scene and circulation routes.

Collection and access

Consider what happens on bin collection days. Provide appropriate hard standing areas to the front of buildings for bins to be left before and after bin collection. More space may be required when different types of waste and recycling are collected on the same day.

Appearance and quality

Give thought to how the design and materials of bin stores integrate with the design of the houses on the development. Use materials that will look good for years to come.

Flexibility

Local authorities' collection strategies may change over time. Try to design storage that is adaptable to future requirements, which can accommodate additional bins.

Street scene

Consider what residents and visitors will see as they approach the houses. Think about the appearance of the development on collection days.

Avoiding rubbish design

Providing for bin storage on new housing developments

An issue picked up by the Rt Hon Eric Pickles MP, Secretary of State for Communities and Local Government in August 2013, accommodating an increasing number of bins and other containers for domestic waste and recycling presents a major challenge for the design of new housing developments. A survey undertaken as part of this research identifies that requirements vary widely between local authorities, with one even asking for a total of nine bins and other containers.

This guide identifies and illustrates good practice where space for domestic waste and recycling storage has been integrated unobtrusively within a variety of housing developments. We hope that these examples can be used by others as the starting point for addressing the design challenges on many more new housing developments.

The NHBC Foundation, established in 2006, provides high quality research and practical guidance to support the house-building industry as it addresses the challenges of delivering 21st century new homes. To date the NHBC Foundation has published 60 reports on a wide variety of topics, including the sustainability agenda, homeowner issues and risk management.

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