

Broomfield House Stage D Report final 01

Appendix O

Waste Management Reports

for The London Borough of Enfield

Broomfield House, London Borough of Enfield

Operational Waste Management Strategy

23 February 2011

Notice

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1. Introduction

Atkins was commissioned in October 2010 by the London Borough of Enfield (LBE) to prepare a Waste Management Strategy for the redevelopment of Broomfield House.

The proposal is for the redevelopment of Broomfield House to provide modern residential units and a café for public use.

The proposed scheme comprises:

- Broomfield House
 - 3 x 1 bedroom flats
 - 4 x 2 bedroom flats
 - 30 seat café
- Stable block
 - 4 x 1 bedroom flats
 - 2 x 2 bedroom flats
- Bothy
 - 1 x 1 bedroom
- Walled gardens
 - 6 x 2 bedroom cottages

Broomfield House is located in Broomfield Park close to Broomfield Lane in Palmers Green, London Borough of Enfield (see Figure 1.1).

Figure 1.1 – Broomfield House



The Waste Management Strategy sets out the number of bins required to store the waste and provides an indicative floor area of the bin stores required to house the bins prior to collection.

2. Waste Management Legislation and Policy

This section highlights the legislation and policy which affects waste management at the site.

Legislation

Waste Framework Directive

The Waste Framework Directive (Council Directive 2006/12/EC) is the overarching Directive on waste and consolidates text from the 1991 Waste Framework Directive as subsequently amended. 'Waste' is defined in Article 1(a) of the Waste Framework Directive (Council Directive 75/442/EEC) as

"...any substance or object...which the holder discards or intends or is required to discard."

Landfill (England and Wales) Regulations 2002

The Landfill (England and Wales) Regulations 2002 implement the Landfill Directive (Council Directive 1999/31/EC), into domestic legislation. The effect of the regulations on historical waste management practices in the UK has been significant. Perhaps the most significant impact is the introduction of three progressive targets for the UK to reduce the amount of Biodegradable Municipal Waste (BMW) sent to landfill for disposal to:

- 75% of total amount of BMW produced in 1995 by 2010;
- 50% of total amount of BMW produced in 1995 by 2013; and
- 35% of total amount of BMW produced in 1995 by 2020.

An amendment made to the regulations in 2005 requires commercial waste to be pre treated to somehow change wastes properties before it goes to landfill. For many commercial waste produces this requirement is satisfied by segregating streams of material like, paper, glass, plastic or metal for recycling.

Environmental Protection Act 1990

The Environmental Protection Act 1990 is the main piece of legislation controlling the protection of the environment in all its forms (i.e. air, land, waste and water). The main provisions of the Act (with relevance to the proposed development) in terms of waste management include:

- the placing of a 'Duty of Care' on those who deal with or manage controlled waste; and
- that it is the duty of the waste collection authority to arrange for the collection of household waste in its area, and if requested, the collection of commercial waste from any premises within its area (Chapter 43, Part II, Section 45).

Chapter 43 of the Act also states that no charge should be made for the collection of household waste, except in cases prescribed by the Secretary of State.

Household Waste Recycling Act 2003

The Household Waste Recycling Act 2003 states that an English waste collection authority has a duty to arrange for the collection of any waste from any premises, unless the cost of doing so would be unreasonably high or comparable alternative arrangements are available. In addition, there is a requirement that there must be at least two types of recyclable waste collected together or individually separated from the rest of the household waste.

Clean Neighbourhoods and Environment Act 2005

The Clean Neighbourhoods and Environment Act 2005 sets out the requirements for preparation of Site Waste Management Plans. Chapter 3, Section 54, states:

“...these plans must set out the arrangements for managing and disposing of waste created in the course of the project.”

Policy

National Policy

Waste Strategy for England 2007

The Department of the Environment, Food and Regional Affairs (DEFRA) drew issues from the above Directives and other related European legislation to create the Government's 'Waste Strategy for England 2007'. The Waste Strategy for England 2007 focuses on the importance of driving waste management up the waste hierarchy. It aims to create more effective incentives for individuals and businesses to recycle waste and puts a strong emphasis on waste prevention. It places a greater responsibility on businesses for the environmental impact of their products and operations.

The Waste Strategy for England 2007 defines Municipal waste in Appendix C1, paragraph 1 as follows:

“Municipal waste includes household waste and any other wastes collected by waste collection authorities (or their agents) such as municipal parks and gardens waste, beach cleansing waste, commercial or industrial waste and waste resulting from the clearance of fly-tipped materials.”

Planning Policy Statements

Government guidance on the relationship between waste management and the land use planning system was revised to bring it into line with the requirements of the Planning and Compulsory Purchase Act, 2004. This revised guidance took the form of 'Planning Policy Statement 10: Planning for Sustainable Waste Management', July 2005 (PPS 10), with accompanying guidance.

PPS 10 provides guidance on waste planning. It forms part of the national waste management plan (national strategy for waste) and its policies should be taken into account by waste management authorities in discharging their statutory responsibilities, by regional planning authorities in regional spatial strategies, by the Mayor of London in the Spatial Development Strategy and by local planning authorities in preparing local development documents. The policy refers to the duties placed upon waste planning authorities. These are authorities with responsibility for land-use planning control for waste management. Key waste planning objectives are:

- Make waste a resource to be used rather than disposed of;
- Make communities responsible for managing their own waste;
- Meet national waste strategy and EU obligations for reducing waste and its impact upon the environment;
- Enable the safe, healthy and environmentally acceptable handling of waste;
- Balance the community's concerns about waste management with the needs of communities and business for waste management;
- Promote technological advance and good design in sustainable waste management; and
- Protect the environment and major sensitive areas like the Green Belt whilst recognising that some waste management options can be accommodated in such locations.

Local Policy

The Mayor's Waste Management Strategy, 2003

In September 2003 The Greater London Authority published the 'Mayor's Municipal Waste Management Strategy – Rethinking Rubbish in London'. The Mayor's policies are based on the premise that London will need to radically redirect the way it manages its municipal waste. They aim to promote waste minimisation, increase the proportion of waste that is recycled and ensure that all waste is handled in the most sustainable manner, with minimum impact on the environment.

The proposals provide a clear lead to London's waste authorities on the actions it is expected they will need to undertake to meet and exceed their targets. They also encourage action by other waste stakeholders.

London will aim to exceed the recycling and composting Best Value Performance Standards for waste authorities set by the Government including any changes as a result of a review of the recycling targets.

The Mayor aspires to higher targets for recycling and composting and considers Municipal Solid Waste (MSW) recycling and composting rates should be:

- By 2010 – 50%; and
- By 2015 – 60%

A draft Municipal Waste Strategy has gone out for public consultation in 2010 but an update is not yet available.

The Mayor's Draft Business Waste Management Strategy, February 2008

In February 2008 the Greater London Authority published the 'Mayor's Draft Business Waste Strategy – Making Waste Work in London'. The aim of the strategy is to ensure that by 2020 the waste produced by London's businesses no longer compromises London's future as a sustainable city. London's businesses must take responsibility and take action to use resources productively and London's waste industry and entrepreneurs must maximise the economic opportunities of reprocessing and managing waste within London. Key policy targets proposed include:

- achieving recycling or composting levels in commercial and industrial waste of at least 70 per cent by 2020; and
- generating energy from any waste that cannot be recycled using advanced waste technologies.

The Mayor will ensure the GLA group leads by example to encourage London's businesses to take responsibility and take action for their waste in accordance with the waste hierarchy.

Public consultation on the draft strategy closes in January 2011.

3. Operational Waste Management Strategy

Design Assumptions

The redevelopment at Broomfield House will comprise;

- Broomfield House
 - 3 x 1 bedroom flats
 - 4 x 2 bedroom flats
 - 30 seat cafe
- Stable block
 - 4 x 1 bedroom flats
 - 2 x 2 bedroom flats
- Bothy
 - 1 x 1 bedroom
- Walled gardens
 - 6 x 2 bedroom cottages

Plans show that there will be a bin store close to Broomfield House with an approximate area of 6.48 m² which is intended to store the waste from the residents in Broomfield House and the café.

There is a further store located near to the stables, cottages and bothy which is intended to take waste from these households. This bin store has an approximate area of 22.62 m².

Waste Generation at the Café

To calculate waste generated at the café it has been decided to use the British Standards for waste storage, as an indices.

The requirement is to provide storage of 5 litres per sale for a fast food style venue.

Based on an assumption that the 30 seat café will make 6 sales a day per seat, the overall expected waste will be 900 litres per day. It is advised that this quantity is seen as being 50% waste and 50% recycling.

Storage

The London Borough of Enfield's Household Waste and Recycling Storage Policy Guidance sets out how many bins are required based on the number of households in a development, which is served by a communal collection system. The requirements are as below.

Table 3.1 – Number of Bins Required for Waste Storage

| Number of properties | Number of units required |
|----------------------|--------------------------|
| 7 units | 1100 litre |
| 14 units | 2 x 1100 litre |
| 18+ units | 3 x 1100 litre |

Table 3.2 - Number of Bins Required for Recycling Storage

| Number of properties | Number of units required |
|----------------------|--------------------------|
| 0 - 6 | 1 x 1280 (or 1 x 360) |
| 7 - 12 | 1 x 1280 (or 2 x 360) |
| 13 – 20 | 1 x 1280 (or 3 x 360) |

Based on the number of households in Broomfield House and the stables and kitchen garden cottages and the requirements shown in the tables above the required number of bins is shown in the tables below.

Table 3.3 – Summary of Estimated Bins Required for Broomfield House Bin Store

| Number of households | Eurobins required for waste (1100 litres) | Eurobins required for recycling (1280 litres) |
|----------------------|---|---|
| 7 | 1 | 1 |

In addition to the bins required for the residential waste and recycling from Broomfield House it is recommended that 1 no. 660 litre wheeled bin is provided for waste and 1 no. 660 litre wheeled bin is provided for recycling, from the café, per day.

Table 3.4 – Summary of Estimated Bins Required For Stables and Kitchen Garden Cottages Bin Store

| Number of households | Eurobins required for waste (1100 litres) | Eurobins required for recycling (1280 litres) |
|----------------------|---|---|
| 13 | 2 | 1 |

There is a plan at this stage to provide a compost bin in the shared gardens of the kitchen garden cottages in order to divert this material from landfill.

4. Additional Infrastructure and Requirements

Recyclable Waste Storage

For the new build kitchen garden cottages the 'Code for Sustainable Homes 2010' assessment will be applied for the provision of 'adequate internal and external storage space for non-recyclable waste and recyclable household waste', for which the scheme will be aiming to attain the full 4 credits. The requirements for which are as below:

Storage of recyclable household waste

A combination of internal storage capacity provided in an adequate internal space, with either:

- *a Local Authority collection scheme, or*
- *no Local Authority collection scheme but adequate external storage capacity.*

Local Authority collection scheme

In addition to a Local Authority collection scheme (with a collection frequency of at least fortnightly), at least one of the following requirements must be met:

- *Recyclable household waste is sorted after collection and a single bin of at least 30 litres is provided in an adequate internal space.*
- *Materials are sorted before collection and at least three separate bins are provided with a total capacity of 30 litres. Each bin must have a capacity of at least 7 litres and be located in an adequate internal space.*
- *An automated waste collection system which collects at least three different types of recyclable waste.*

No Local Authority collection scheme but adequate external storage capacity

For houses and flats there must be at least three identifiably different internal storage bins for recyclable waste located in an adequate internal space:

- *with a minimum total capacity of 30 litres*
- *with a minimum individual capacity of at least 7 litres.*

AND

For houses, an adequate external space must be provided for storing at least three external bins for recyclable waste:

- *with a minimum total capacity of 180 litres*
- *with a minimum individual capacity of 40 litres.*

For flats, a private recycling scheme operator must be appointed to maintain bins and collect recyclable waste regularly. Recycling containers must:

- *be located in an adequate external space*
- *be sized according to the frequency of collection, based on guidance from the recycling scheme operator*
- *store at least three types of recyclable waste in identifiably different bins.*

For the proposed development a Local Authority collection scheme will be in place in combination with adequate internal storage of either one bin with a 30 litre capacity or three bins with a combined 30 litre capacity.

For the refurbishment of Broomfield House, stables and bothy the Ecohomes assessment will be applied 'To encourage developers to provide homeowners with the opportunity and facilities to recycle household waste', for which the scheme will be aiming to attain the full 6 credits. The requirements for which are as below:

Provide full recycling facilities of:

Three internal storage bins with:

- *minimum total capacity of 30 litres*
- *no individual bin smaller than 7 litres*
- *all bins in a dedicated position.*

AND EITHER

- *Three external bins with:*

- *minimum total capacity of 180 litres**
- *no individual bin smaller than 40 litres*
- *all bins in a dedicated position (within 10 m of the external door).*

OR

- *A local authority collection scheme for recyclable material*.*

As stated above a Local Authority collection scheme will be in place in combination with adequate internal storage of either one bin with a 30 litre capacity or three bins with a combined 30 litre capacity, in addition external storage will be located within 50 m from the front door of the block of flats.

It is proposed that all waste storage containers are clearly marked and/ or colour coded to enable easy identification of what materials should be placed inside (for example: residual waste, dry recycle, etc) for both internal and external storage. In addition, it is recommended that additional signs are placed on the walls behind the containers in the external store.

Bin Stores

Footprints for the three types of bins highlighted above are:

- 660 litre Eurobins bin: W1260mm/L730mm/H1310mm – 0.92 m²
- 1100 litre Eurobins: W1260mm/L990mm/H1370mm – 1.25 m²
- 1280 litre Eurobins: W1280mm/L1000mm/H1440mm – 1.30 m²

Required footprint space for 2 no. 660 litre Eurobins (café waste and recycling), 1 no. 1,100 litre eurobin (residential waste) and 1 no. 1280 litre eurobin (residential recycling) in the Broomfield House bin store will be 4.40 m². This is the area needed for the bins only; the bin store will be required to be larger to enable manoeuvring and clear access to the bins.

It should also be noted at this point that it may be advisable to install some kind of barrier/partition between the commercial and residential waste and recycling. This is due to the fact that commercial waste producers are charged for collection of their waste and recycling however residential waste and recycling is collected for 'free' as it is included in council tax.

Required footprint space for two no. 1100 litre Eurobins and one no. 1280 litre Eurobins in the Stables and Cottage Store will be 3.80 m². This is the area needed for the bins only; the bin store will be required to be larger to enable manoeuvring and clear access to the bins.

Although the waste is likely to be stored in plastic bags within the bins there is still a chance of leakage to occur and as such it is recommend that the bin stores have both a water supply to clean the bins regularly and appropriate drainage.

Access Issues

The entrance to the site is via a Grade II listed arch with maximum headroom of approximately 3 m, this would not allow a conventionally sized refuse collection vehicle to enter the site.

As such Atkins contacted the waste department at LBE to discuss solutions to this issue.

A member of the environment team at LBE (Marcin Mazur) has visited the site and confirmed that smaller collection vehicles which LBE have as part of their fleet will be able to access the site via the arch as they have lower headroom clearance requirements.

5. Conclusions & Recommendations

Calculations to determine the number of bins for the redevelopment at Broomfield House are summarised in the tables below.

Table 5.1 – Summary of Estimated Bins Required for Broomfield House Bin Store

| Number of households | Eurobins required for waste (1100 litres) | Eurobins required for recycling (1280 litres) |
|----------------------|--|--|
| 7 | 1 | 1 |

Table 5.2 – Summary of Estimated Bins Required for Stables and Kitchen Garden Cottages Bin Store

| Number of households | Eurobins required for waste (1100 litres) | Eurobins required for recycling (1280 litres) |
|----------------------|--|--|
| 13 | 2 | 1 |

Broomfield House bin store will also require two no. 660 litre wheeled bins to be collected daily for waste and recycling produced by the café. The total floor space required for all bins in the Broomfield House bin store is 4.40 m².

The total floor space required for all bins in the stables and cottages bin store is 3.8 0 m².

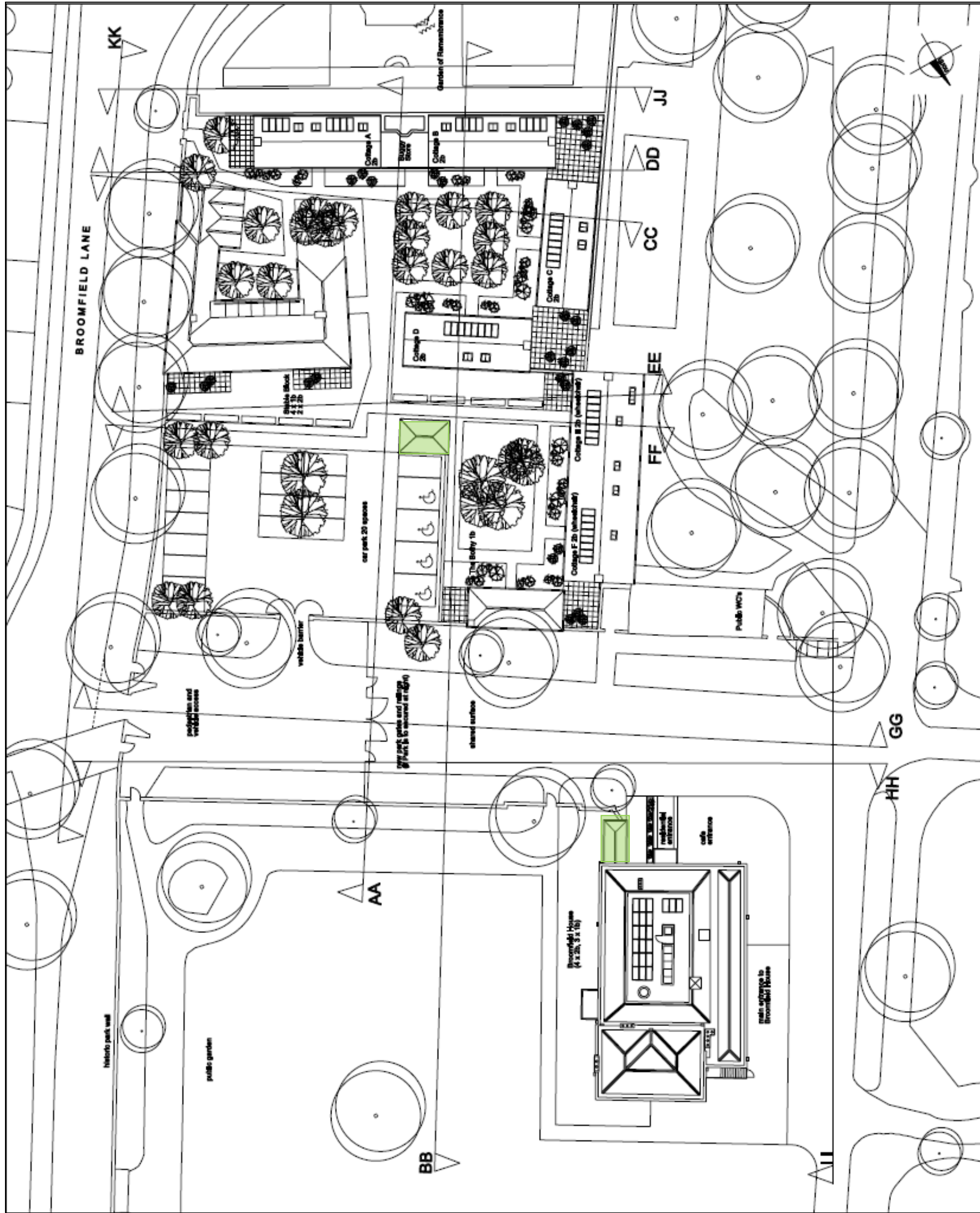
For both bin stores the area shown is for the bins only; the bin store will be required to be larger to enable manoeuvring and clear access to the bins.

The bins will be collected by LBE using a small refuse collection vehicle due to the headroom restriction imposed by the Grade II listed arch at the entrance of the site.

All waste containers will be clearly labelled and/ or colour coded to enable easy identification and segregation of waste into the correct stream (e.g. dry recyclables, wet residual waste, etc.). In addition, it is recommended that additional signs are placed on the walls behind the containers.

The Eurobins will be constructed from metal (as far as is possible) to reduce fire hazard risks associated with waste storage.

Appendix A - Location of Bin Stores



Broomfield House, London Borough of Enfield

Site Waste Management Strategy

23 February 2011

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1. Introduction

The requirement to produce a Site Waste Management Plan (SWMP) was introduced by the Site Waste Management Plan Regulations 2008.

The Regulations require that all construction projects over £300,000 must produce a SWMP which will identify the client and contractor, show how waste has been reduced in the design stage and estimate how much waste will be generated and how the waste will be managed e.g. re-used on or off site, recycled on or off site, recovered or landfilled.

While work on site is carried out (excavation, demolition, construction etc) the actual waste arisings and how the waste has been managed (which will be recorded throughout excavation, demotion and construction) will be recorded in the SWMP.

A review will then be undertaken once work on site is complete to compare the estimates of arisings and management options with the actual arisings and management options.

Reasons for deviations should be explained and lessons learnt highlighted.

The Broomfield House redevelopment is currently at planning stage and therefore does not need a full SWMP at this stage.

This document summarises high level estimates of how much waste is estimated to be generated and how much is estimated to be recycled, recovered or disposed of based on information available at this stage.

2. Designing Out Waste Actions

The opportunity to design out waste, use materials with a high recycled content and use recyclable materials has been considered throughout the design of the project so far.

The beam and block design for the floors will allow for offsite pre cast concrete to be used, minimising waste on site and also provides an opportunity to specify the use of cement replacements in the concrete such as pulverised fly ash (PFA) or ground granulated blast furnace slag (GGBFS) which increases the recycled content of the concrete.

The use of responsibly sourced timber for the roof structure, doors and window frames will allow this to be easily recycled in the future if the development is extended, refurbished or demolished.

Measures will also be taken to specify water based stains for the windows and similar for paints and other products to reduce hazardous waste in the form of stain/paint tins, used brushes etc.

As set out below the contractor will also be set targets to reuse or recycle 90-95% of most materials either through crushing inert materials and using them on site for a fill material or sending materials off site to a licensed recycling facility. In addition where possible material which can be recovered from Broomfield House, such as bricks, tiles etc will be reused on site.

3. Demolition Waste Quantity Estimate Assumptions

Demolition, site clearance and enabling works for the project will include the removal of seven garages, four 1960's houses, a section of wall in the stables cottages area of the project and some material assessed to be not of any use in Broomfield House itself. In addition hard surface from the site entrance to Broomfield House will be removed, as well as vegetation and soil from the stable cottage area in order to grade the site and prepare it for construction of the new cottages and car park.

Based on information from a WRAP case study it is estimated the demolition of the four houses and the small wall section will produce approximate 60 tonnes of waste, 90-95% of which can be recycled, either on site for the inert material to be used as backfill or off site at a licensed facility.

Using the same indices from WRAP as above it is estimated the demolition of the garages will produce approximately 10 tonnes of waste. It has been noted that the garages are constructed from asbestos cement and as such this will require disposal to a licensed hazardous landfill.

It has been assumed that the area which will form the car park by the stables and kitchen cottages will be excavated down by 0.5 m. This would be an area of 1,344 m² and a volume of 672 m³. This is estimated to be 840 tonnes, it is expected that this will reach a recycling rate of 90-95%.

Removal of the hard surface from the site entrance round to Broomfield House (estimated at 0.05 m deep) is estimated to generate approximately 65 tonnes of waste. Where tests show that this material does not contain coal tart this material should reach a recycling rate of 90-95%.

At this stage it is not known how much waste will be produced during the enabling works of Broomfield House itself, however similar recycling rates as above will be aimed for in the case of inert material like masonry. Where materials are of a good enough quality these will be reused rather than recycled. The scaffolding and temporary roof over Broomfield House should also reach recycling rates of 95% or above as it is assumed that both will be metal.

4. Construction Waste Quantity Estimate Assumptions

The volume of wastes estimated to arise during the construction of the development has been calculated using data from the Building Research Establishment (BRE) which has recorded data from actual construction projects. For residential development the average waste volume was 16.4 m³/100 m² of floor space¹.

Following on from this the streams of waste were estimated based on figures from the British Urban Regeneration Association (BURA).

The final step of the calculations was to convert the volume of each waste stream into tonnes which was done using density figures from WRAP.

All estimates have been based on floor areas from Stage D plans dated 21.12.10.

It is not possible to predict quantities of wood and plastic packaging based on any indices/industry knowledge as with other materials. A nominal 5% of total waste has therefore been assumed.

Table 1: Summary Table of Waste Estimates

| Type of waste | Volume (m ³) | Density (tonnes/m ³) | Weight (tonnes) | Recycling rate % | Recovery rate % | Disposal rate % |
|-------------------|--------------------------|----------------------------------|-----------------|------------------|-----------------|-----------------|
| Timber | 42.68 | 0.34 | 15 | | 95 | 5 |
| Plastics | 42.68 | 0.23 | 10 | 95 | | 5 |
| Plasterboard | 14.23 | 0.33 | 5 | 95 | | 5 |
| Glass | 14.23 | 0.61 | 10 | 95 | | 5 |
| Concrete | 71.14 | 1.27 | 90 | 95 | | 5 |
| Metals | 28.45 | 0.42 | 12 | 100 | | |
| Block | 42.68 | 1.2 | 51 | 100 | | |
| Mixed C&D | 28.45 | 0.87 | 25 | | 85 | 15 |
| Plastic packaging | 14.23 | 0.22 | 3 | 95 | | 5 |
| Wood packaging | 14.23 | 0.23 | 3 | | 95 | 5 |
| Total | 313 | | 224 | | | |

Note – figures for weight have been rounded so maybe higher/lower than expected from volume and density.

It is expected that a recycling and recovery rate of 90-95% will be achieved through waste on site being segregated into separate containers for each waste type identified above and appointing a waste contractor who can demonstrate that they are able to recycle or recover to the same level for mixed waste.

Throughout the demolition and construction phases the amount of waste being generated will be monitored on at least a six monthly basis in line with requirements in the Regulations.

¹ BRE Waste Benchmark Data - <http://www.smartwaste.co.uk/page.jsp?id=37>

5. Targets

Based on the information above on the quantities of waste expected from the demolition and construction work and the assumed areas for car parks, hard surfaces and construction (4,519 m²) a target of 2.7 tonnes/m² is set for waste from the demolition and construction phase in total.