4 Oak Hill Park

Pre-Demolition Audit

Version 2.0

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JAWSustainability

Contents

1 Introduction

1.1 Objectives

This pre-demolition audit establishes what materials are currently present in the building and identifies opportunities for re-use and recycling of these materials. The results should be used to guide the design, consideration of materials that can be re-used, and to set targets for waste management and ensure all contractors are engaged in the process of maximising high-grade re-use and recycling opportunities.

This audit covers:

- Identification and quantification of the key materials where present on the project
- Potential applications and any related issues for the re-use and recycling of the key materials in accordance with the waste hierarchy.
- Requirements for the selection of local reprocessors or recyclers for recycling of materials
- Identification of overall recycling rate for all key materials
- Identification of re-use targets where appropriate.
- Identification of overall landfill diversion rate for all key materials.

1.2 Project overview

This is a pre-demolition audit for the project at 4 Oak Hill Park, London, NW3 7LG. The site currently accommodates a 2 storey residence with a small 3 storey annex attached. Whilst the building has clearly been added to over time, the estimated date of the most recent renovation is between 1970 and 1980. The current proposal is to demolish the existing building and redevelop the site to provide a new single family occupancy residential property. The proposed design is spread over 2 storeys totalling 576.9m^2, along with access, landscaping and amenity.

The existing buildings on site Is in a relatively poor state of repair. Although the majority of the buildings structural elements do appear to be structurally sound. Despite this the majority of the finishes and equipment remaining within the existing building are thought to be too old and/ in too poor of a state of repair to allow for significant opportunities for direct re-use. In addition the majority of furniture is in build limiting it's usefulness in other buildings.

The primary materials identified on the pre-refurbishment audit are:

- Calcium silicate bricks
- Red clay brick
- Concrete ground floor
- Concrete upper floor
- Concrete / red brick Foundation
- Rebar
- Roofing timbers
- Sanitary ware
- Blockwork
- Insulation
- Gypsum Plaster
- Timber Flooring
- Tiles
- Carpet

Figure 1-1 4 Oak hill Park

2 Waste Hierarchy

This audit aims to reduce impacts upon the environment by limiting waste sent to landfill. Diversion from landfill should be achieved by following the methods outlined in the Waste Hierarchy in order of importance, as shown in Figure 2-1.

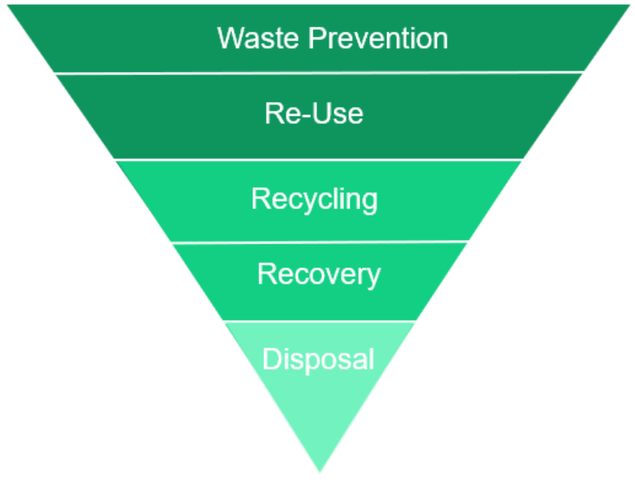

Figure 2-1 The Waste Hierarchy

2.1 Waste Prevention

The development comprised of the demolition of the existing building. Initial surveys of the building suggest that the existing building is no longer fit for purpose. As such It is not possible to retain any of the existing building elements in situ. As a result, any waste prevention on site is likely to be achieved through Re-use as outlined below.

2.2 Re-Use

Direct re-use occurs when an item is re-used on site or at another site without being sent to a re-processor or recycler or is not removed from the site at all. The existing building is generally in a poor state of repair, as such there is not expected to be significant opportunities for re-use on the site.

2.2.1 Bricks

The external walls are primarily of a masonry construction. There may be scope for the bricks to be reclaimed and reused, a suitable brick reclamation yard should be contacted to investigate the feasibility of this. There is typically excess supply of reclaimed bricks, so it may not be possible, particularly given the damage sustained by many of the bricks. As such a reserved estimate of 10% reuse has been applied to bricks present within the existing building.

2.2.2 Concrete

The primary material identified within the existing building is concrete. Ground floors , large portions of the foundations and the majority of the existing upper floors, all cast concrete, additionally some internal walls are of a concrete masonry unit construction. These items can be crushed and recycled for use as recycled aggregate. Where possible this will be done on site to form backfill for excavated areas or aggregate for foundations and hard landscaping. Additionally they will be made use of on site in the form of work platforms where possible. As such a provisional re-use estimate of 10% has been placed on concrete , the remaining concrete will be crushed for use off site.

2.3 Recycling

During demolition, the waste should be sorted on site into separate key waste groups and sent to the relevant recyclers. Due to the early design stage at which this audit was carried out, waste processors are yet to be selected. However, a minimum target of 95% diversion of waste from landfill has been set for this project. For the purpose of this pre-demolition audit, recycling figures have been set to 95%, this will be updated at a later date with the actual waste processor recycling figures once available. The following waste groups are currently assumed to be recycled at a 95% rate:

- Bricks
- Concrete
- Glass
- Gypsum
- Insulating Materials
- Metals
- Plastics
- Sand and Soils
- Tiles and ceramics

Electrical items often contain high value materials and as such their recycling is a priority. However, these elements are often encased by or combined with other materials. Once stripped these additional low value materials are often in such a state as to preclude recycling. It is therefore assumed that these materials will be recovered through waste to energy conversion. As such electrical equipment is assumed to have a 45% recycling rate with a 50% Recovery rate totalling the minimum target 95% diversion from landfill rate.

Once selected, the details of the responsible waste carrier(s) will be detailed below.

European Waste Catalogue Categories	
European Waste Catalogue Codes	
Company	
Address	
Website	

The re-use, recycling and recovery rates of each of the waste processors could not be identified. As such assumptions have been made to the end use of the material and the diversion from landfill rate, for each of the key material categories identified on site.

Material	Re-use (%)	Recycle (%)	Recovery (%)	Landfill (%)
Binders	0	95	0	5
Bricks	10	85	0	5
Concrete	10	85	0	5
Gypsum	0	95	0	5
Glass	0	95	0	5
Insulating Materials	0	95	0	5
Metals	0	95	0	5
Plastics	0	95	0	5
Sand and Soils	95	0	0	5
Electrical	0	45	50	5
Timber	0	0	95	5

Table 2-1 – Assumed waste end use rates

2.3.1 Concrete

The primary material identified within the existing building is concrete. Ground floors , large portions of the foundations and the majority of the existing upper floors, all cast concrete, additionally some internal walls are of a concrete masonry unit construction. These items can be crushed and recycled for use as recycled aggregate. Opportunities to re-use some concrete waste, for purposes such as a piling matt if required, should also be reviewed at further the design stages.

2.3.2 Metals

Metals, such as rebar and other small amounts can be easily recycled with no loss of quality.

Metals within the existing building are largely limited to reinforcements and services such as electrical and heating distribution systems.

2.4 Recovery

The majority of waste will have been prevented, re-used or recycled. Where materials can not be recycled, they can be used for energy recovery

2.4.1 Timber

Timber flooring, roofing timbers, internal and external cladding timbers, wooden doors and window frames will generally be used for energy recovery.

2.5 Disposal

Hazardous materials will be safely disposed of in line with the Hazardous Waste Regulations 2016 and have been excluded from this report. Non-hazardous waste produced on site will always be assessed for handling following the waste hierarchy.

3 Quantification

The items and materials present in the building have been estimated by volume and categorised by European Waste Catalogue (EWC) category in order to calculate tonnage of each material, with results shown in Figure 3.2. The remaining waste has been assigned re-use, recycling, recovery and landfill diversion rates. The full calculation table can be seen in Appendix Table 4.1.

Quantification is based on estimates and has been used to guide decision for key material groups. Final material quantities are likely to vary significantly form estimates outlined below. Sand and soil has been excluded from the quantification, as amount of excavation & levelling work was not know at the time.

A summary of results and re-use, recycling, recovery and total landfill diversion targets are shown in Table 3-1 and Figure 3-1. They show that this project aims for a minimum 95% of waste in the majority of waste groups to be diverted from landfill.

EWC Group	Weight (tonnes)	Re-used Target (tonnes)	Recycled Target (tonnes)	Recovered Target (tonnes)	Landfill Diversion Target (tonnes)	Re-used Target (%)	Recycled Target (%)	Recovered Target (%)	Landfill Diversion Target (%)
Metals	23.90	0.14	22.57	0.00	22.71	1	94	0	95
Gypsum	10.05	0.00	9.55	0.00	9.55	0	95	0	95
Timber	37.98	0.00	0.00	36.08	36.08	0	0	95	95
Concrete	127.29	0.00	120.93	0.00	120.93	0	95	0	95
Tiles and ceramics	6.94	0.00	6.59	0.00	6.59	0	95	0	95
Binders	0.40	0.00	0.38	0.00	0.38	0	95	0	95
Electrical	81.20	0.00	36.54	40.60	77.14	0	45	50	95
Plastics	1.03	0.00	0.98	0.00	0.98	0	95	0	95
Insulating Materials	0.75	0.00	0.72	0.00	0.72	0	95	0	95
Glass	3.05	0.00	2.90	0.00	2.90	0	95	0	95
Bricks	207.37	20.74	176.26	0.00	197.00	10	85	0	95

Table 3-1 – Estimated material end use rates

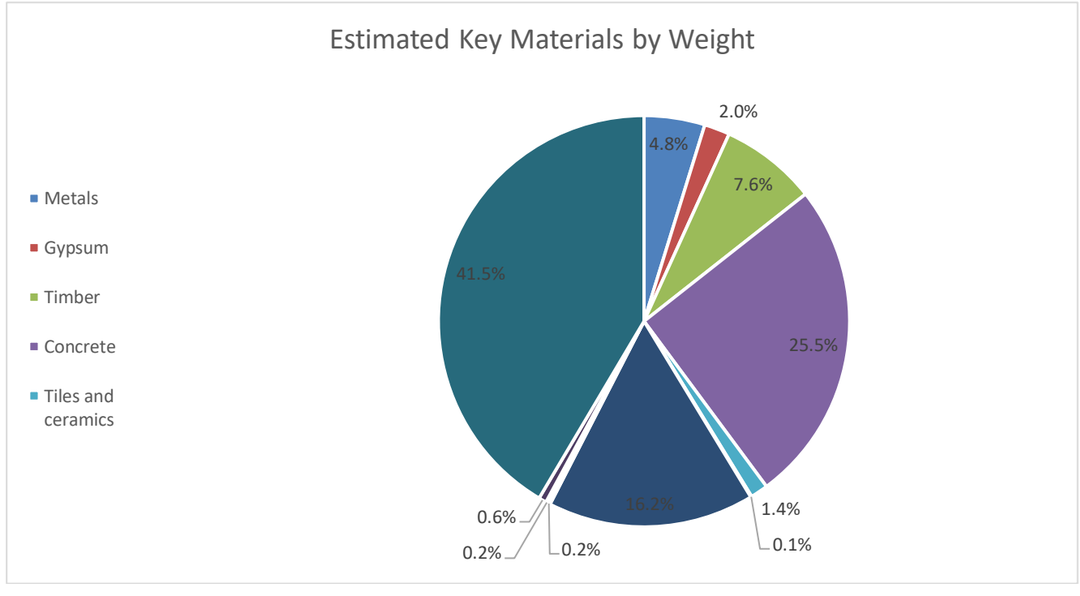

Figure 3-1 – Estimated materials by weight

Appendix 1 – Full Material Calculations

Item	European Waste Catalogue	Total Weight (tonnes)	Direct Re-Use (%)	Direct Re-use (tonnes)	Remaining Waste (tonnes)	Recycler	Re-used (tonnes)	Recycled (tonnes)	Recovered (tonnes)	Landfill Diversion (tonnes)
Red Brick foundations	Bricks	143.89	0.00	0.00	143.89	10.00	14.39	122.30	0.00	136.69
concrete rafts	Concrete	9.31	0.00	0.00	9.31	0.00	0.00	8.84	0.00	8.84
Calcium Silicate brick	Bricks	63.48	0.00	0.00	63.48	10.00	6.35	53.96	0.00	60.31
Wiring	Electrical	80.13	0.00	0.00	80.13	0.00	0.00	36.06	40.06	76.12
Mortar (External walls)	Concrete	1.46	0.00	0.00	1.46	0.00	0.00	1.39	0.00	1.39
plasterboard	Gypsum	6.24	0.00	0.00	6.24	0.00	0.00	5.93	0.00	5.93
Concrete Block	Concrete	10.58	0.00	0.00	10.58	0.00	0.00	10.05	0.00	10.05
Partition mortar	Concrete	0.25	0.00	0.00	0.25	0.00	0.00	0.24	0.00	0.24
Partition timber	Timber	16.93	0.00	0.00	16.93	0.00	0.00	0.00	16.08	16.08
partition plaster	Gypsum	3.81	0.00	0.00	3.81	0.00	0.00	3.62	0.00	3.62
Roof and upper floor timber	Timber	4.51	0.00	0.00	4.51	0.00	0.00	0.00	4.28	4.28
Roof deck	Timber	2.90	0.00	0.00	2.90	0.00	0.00	0.00	2.76	2.76
glass wool	Insulating Materials	0.26	0.00	0.00	0.26	0.00	0.00	0.25	0.00	0.25
bitumen roofing	Binders	0.40	0.00	0.00	0.40	0.00	0.00	0.38	0.00	0.38
Structural concrete	Concrete	105.02	0.00	0.00	105.02	0.00	0.00	99.77	0.00	99.77
Void formers	Tiles and ceramics	3.50	0.00	0.00	3.50	0.00	0.00	3.33	0.00	3.33
wood wool	Concrete	0.67	0.00	0.00	0.67	0.00	0.00	0.64	0.00	0.64
tiles	Tiles and ceramics	3.00	0.00	0.00	3.00	0.00	0.00	2.85	0.00	2.85
glass wool	Insulating Materials	0.49	0.00	0.00	0.49	0.00	0.00	0.47	0.00	0.47
Parquet flooring	Timber	0.65	0.00	0.00	0.65	0.00	0.00	0.00	0.61	0.61
carpet	Plastics	0.95	0.00	0.00	0.95	0.00	0.00	0.90	0.00	0.90
Toilet	Tiles and ceramics	0.14	0.00	0.00	0.14	0.00	0.00	0.13	0.00	0.13
Bath	Plastics	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.08
sinks	Tiles and ceramics	0.30	0.00	0.00	0.30	0.00	0.00	0.28	0.00	0.28
Cupboards	Timber	9.40	0.00	0.00	9.40	0.00	0.00	0.00	8.93	8.93
doors	Timber	0.83	0.00	0.00	0.83	0.00	0.00	0.00	0.79	0.79
windows	Glass	2.54	0.00	0.00	2.54	0.00	0.00	2.41	0.00	2.41
Gas boilers	Electrical	0.16	0.00	0.00	0.16	0.00	0.00	0.07	0.08	0.15
electrical distribution systems	Electrical	0.03	0.00	0.00	0.03	0.00	0.00	0.01	0.02	0.03
Heating distribution systems	Metals	22.09	0.00	0.00	22.09	0.00	0.00	20.99	0.00	20.99

Table 4-1 – Full results table