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Pre-Demolition Audit

For Planning

41 Sheldon Avenue
Redevelopment for Domestic Property

For
Mark Tognolini and Eva Stengaard

June 2024



Revisions schedule		
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Checked by: Alan Calcott, Director, CarbonPlan Engineering		Date: 14 th June 2024
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A	19 th June 2024	Amended to include Design Team Comments

This pre-demolition audit was undertaken at concept design stage by Alan Calcott with of Carbon Plan Engineering. Carbon Plan Engineering have been appointed to independently complete the pre-demolition audit and Alan Calcott meets the definition of a competent persons (as defined under BREEAM New Construction 2018, Wst 01), i.e., an individual who has appropriate knowledge of buildings, waste and options for reuse and recycling of different waste streams.

Signed : *Alan Calcott*

Title: Director – Carbon Plan Engineering



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1. Executive Summary

This pre-demolition audit has been undertaken to assess the potential of refurbishment or reuse of materials in the existing 41 Sheldon Avenue (The Site) to set out a route to maximise the recovery of material for high grade or value applications.

Carbon Plan Engineering has been engaged to undertake a Pre-demolition audit based on previous survey information of the existing building to identify opportunities for reclamation, reuse and recycling from a demolition process.

The report includes the results of the audit and a reclamation valuation survey. Together these identify the key demolition products and their potential for being recycled or reused.

The information in the report can be used to:

- ❑ Reduce the cost of disposal of the building
- ❑ Inform the project’s Resource Management Plan
- ❑ This document sets out the process and results of the Pre-Demolition Audit and Demolition process taking account of any likely remediation works and stating the volumes of material recovered for recycling such as concrete, bricks, metals, wood/timber, etc.

NOTE: **Generally moveable and temporary items are excluded**

Key Conclusions

The majority of 41 Sheldon Avenue was completed in the 1920s incorporating mixed neo-Georgian/Arts and Crafts style, it comprises of three floors including utility rooms, garage and a large garden.

The structure is primarily brick with a thickness of 350mm with the potential for cavity to be built into the structure. The utility and garage walls have a thickness of 225mm which appears to be solid brick.

Timber is used extensively around the house and has been incorporated into doors, skirting boards, flooring, roof suspension and windows.

The property also includes metal grilles, railings, clay, ceramic tiling, single and double glazed windows.

Key targets for diversion from landfill have been proposed based upon experience of similar projects and the requirements of the new London Plan as set out below.

Achieving the following waste diversion benchmarks will be targeted through demolition and construction:



Table Ex.1: Target Waste Diverted and Landfill

Types of Waste	Tonnage
Non-Demolition	95%
Demolition	95%
Excavation	95%

- ☐ A strategic approach should be taken prioritising re-use before considering recycling or recovery
- ☐ For Excavation waste the 95% diversion target should prioritise beneficial re-use of inert materials in its existing form

Table Ex.2: Resource Efficiency Targets

No of BREEAM Credits	Waste Generated per 100m ² (GIA)	
	m ³	tonnes
1	≤13.3	≤11.1
2	≤7.5	≤6.5
3	≤3.4	≤3.2
Exemplary Level	≤1.6	≤1.9

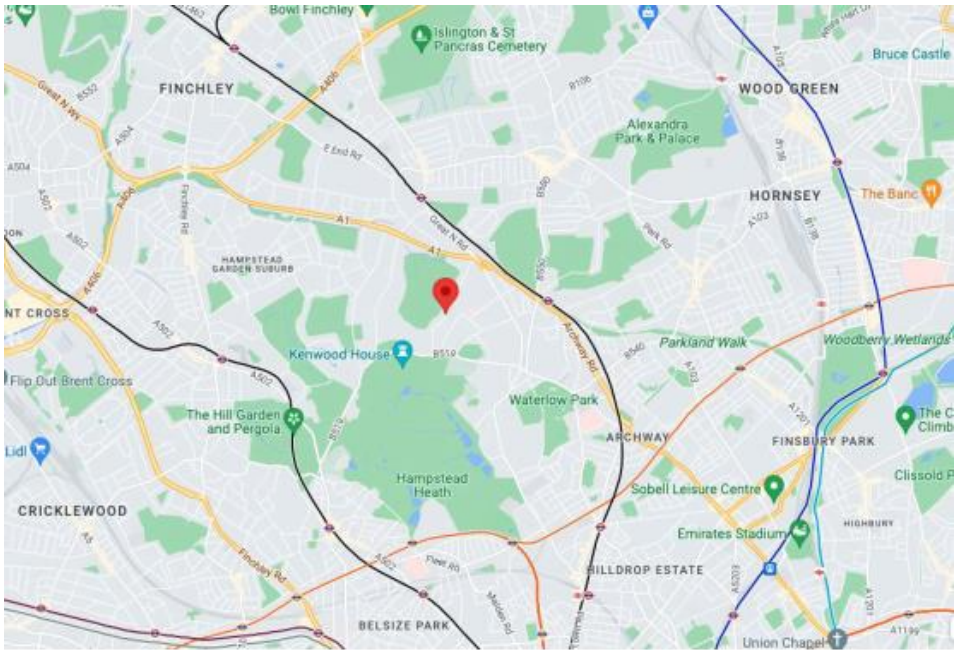


2. Project Information

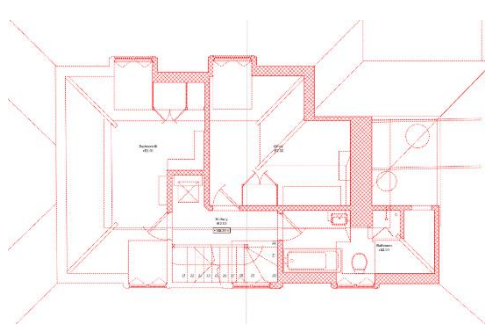
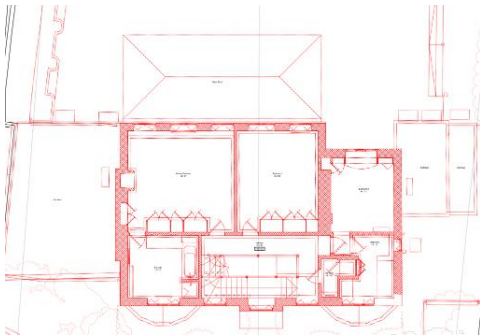
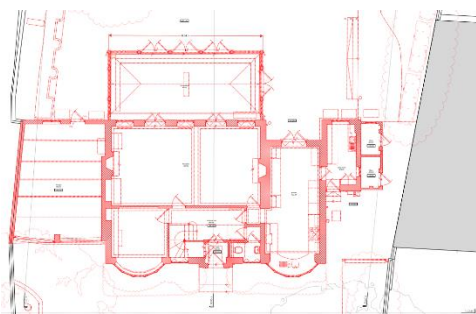
This report has been compiled to assess and confirm the performance as related to the site. The report sets out the outcomes of the audit providing details of the site and general volumes of waste. It also makes recommendations on specific elements within the building that are key components for re-purposing.

2.1. Site Context

The 41 Sheldon Avenue sits within the administrative area of the Borough of Haringey. The Site is situated relatively close to the London Underground with Highgate Underground Station being the closest. The property backs onto the Highgate Golf Club however demolition and construction should not have a negative impact in the surrounding area.



The existing 41 Sheldon Avenue comprises of three floors including a garage, utility rooms and a conservatory adjoining the main structure. The facade comprises of brick faced external walls under a softwood pitched roof frame with a small flat area at the apex. The roof frame entirely encloses the second-floor accommodation, incorporating perimeter dormer windows to the front and rear, eaves storage and a small loft space.



2.2. Site Description

The site is bounded to the North and South by existing houses and public pavements to Sheldon Avenue in the East. A description of each area and building within the audit area is provided below:

Generally – the building is of brick construction with the building being **residential/private**. The garden and boundary areas are defined with masonry, chain-link and fence.

The NW and South elevations of the site are bounded by other houses/properties along Sheldon Avenue.

Hardstanding – The site is bounded by pavements on the public realm which are generally tarmac with some areas of block paving / concrete slabs. However, maintenance should not be overlooked as masonry walls have noticeable cracks and a number of large trees exist and will acquire attention as part of a wider redevelopment.



3. Purpose of the Pre-Demolition Audit

The purpose of this PDA is to describe the procedure by which waste should be managed by the contractor during the lifetime of this project.

This document will also act as a guide to contractor personnel on how to manage the types of waste, in accordance with statutory and best practice requirements.

- PDA benefit for the client and associated contractors include:
- Providing a structured and forward-thinking approach to waste management & sustainability on site;
- Assisting with compliance of internal environmental management systems, objectives and targets, and associated key performance indicators;
- Greater control of regulatory risks relating to waste storage, handling and disposal at a site level;
- Greater transparency with interested parties including Local Authority and the Environment Agency (EA);
- Identifying savings through improved resource efficiency, ordering, materials storage & handling to eliminate waste at source; and
- Enhance waste storage and segregation practices to facilitate higher recycling and recovery potential on site.

Waste Category	Type Of Material	Actual Volume (M3)	% Target & Method of Treatment / Disposal
PHASE 1 – Strip-out / Screen Removal / Enabling Works			
INERT	E.g. Uncontaminated demolition material, concrete, brick, glass	Refer to Appendix B1	> 95% re-use off-site
NON-HAZARDOUS	E.g. Plasterboard, general waste, timber, metals, carpets, vegetation, wiring / plumbing, plastics etc.	Refer to Appendix B1	> 95% recycled off-site
HAZARDOUS	E.g. Asbestos, asbestos containing materials, contaminated ground (oil / solvents), oils / fuel, tanks, refrigerants (old AC units etc), Oil filled transformers (inc PCBs), contaminated demolition material, contaminated fume cupboards.	Unknown / by others	100% landfilled at a hazardous waste or for asbestos in a stable non-reactive hazardous waste cell)

The assessment includes site-generated wastes (e.g. arisings and demolition specific waste such as concrete break out / re-bar) and imported waste materials (e.g. imported secondary aggregates / third party construction / demolition sites)

The project team has ensured the principles of the waste hierarchy (eliminate, reduce, reuse, recycle, disposal) have been applied to this PDA to enable best practice on site and to improve the overall sustainability of the project.



4. Requirement

Although this is a residential project, this report has been produced in line with the requirements from the BREEAM New Construction 2018 assessment standard section on waste as well as the GLA Circular Economy requirements which require a pre-demolition audit of any existing buildings, structures or hard surfaces being considered for demolition be completed. This must be used to determine whether refurbishment or reuse is feasible and, in the case of demolition, to maximise the recovery of material for subsequent high grade or value applications.

4.1. Waste 01: Construction Waste Management

As per the BREEAM 2018 New Construction guidance, the Contractor will be required to provide evidence in support of the proposed development against the Wst 01 credit criteria as detailed below.

4.1.1. Pre-demolition audit

Requirement 1. A pre-demolition audit of any existing buildings, structures or hard surfaces being considered for demolition. This must be used to determine whether refurbishment or reuse is feasible and, in the case of demolition, to maximise the recovery of material for subsequent high grade or value applications. The audit must cover the following as a minimum:

- ☐ Identify and quantify the key materials where present and code them into appropriate construction waste groups
- ☐ Identify potential applications and any related issues for the reuse and recycling of the key materials in accordance with the waste hierarchy
- ☐ Identify opportunities for reuse and recycling within the same development
- ☐ Identify local re-processors or recyclers for recycling of materials
- ☐ Quantify overall recycling targets where as appropriate
- ☐ Quantify overall reuse targets as appropriate
- ☐ Quantify overall landfill diversion rate for all key materials

Additionally the demolition audit must:

- a) Be carried out at Concept Design stage by a competent person prior to strip-out or demolition works – *This demolition audit has been carried out by Alan Calcott who is a BREEAM AP and has worked in the construction industry for over 20 years.*
- b) Guide the design, consider materials for reuse and set targets for waste management – *This document achieves this in Sections 7.*
- c) Engage all contractors in the process of maximising high grade reuse and recycling opportunities – *The client will need to engage with demolition and construction contractors with regards to the outcomes of this document and any subsequent work.*

Requirement 2. Make reference to the audit in the Resource Management Plan (RMP) or Site Waste Management Plan (SWMP) – *The main contractor to reference this document and the final demolition outcomes in their SWMP / RMP*

Requirement 3. Compare actual waste arisings and waste management routes used with those forecast and investigate significant deviations from planned targets. – *The main contractor to reference this document and the final demolition outcomes in their SWMP / RMP*

4.1.2. Construction resource efficiency

Requirement 4. Prepare a compliant Resource Management Plan (RMP) covering:

- a) Non-hazardous waste materials (from on-site construction and dedicated off-site manufacture or fabrication, including demolition and excavation waste)
- b) Accurate data records on waste arisings and waste management routes.

Requirement 5. Meet or improve upon the benchmark in Table 2.1 below for non-hazardous construction waste, excluding demolition and excavation waste - highlighted in Green:

Table 4.1: Resource Efficiency Targets

No of Credits	Waste Generated per 100m ² (GIA)	
	m ³	tonnes
1	≤13.3	≤11.1
2	≤7.5	≤6.5
3	≤3.4	≤3.2
Exemplary Level	≤1.6	≤1.9

The targets are indicative and it will be the responsibility of the main contractor and their appointed demolition contractor to meet these targets.

4.1.3. Diversion of Resources from Landfill

Requirement 6. Meet, where applicable, the diversion from landfill benchmarks in Table 2.2 for non-hazardous construction waste and demolition and excavation waste generated.

Requirement 7. Sort waste materials into separate key waste groups as per Table in Appendix B2, either on-site or through a licensed contractor for recovery.

- Diversion from landfill includes:

- ☐ Reusing the material on site (in-situ or for new applications)
- ☐ Reusing the material on other sites
- ☐ Salvaging or reclaiming the material for reuse
- ☐ Returning material to the supplier via a ‘take-back’ scheme
- ☐ Recovery of the material from the site by an approved waste management Contractor and recycled or sent for energy recovery.

Table 4.2: Target Waste Diverted and Landfill

No. of Credits	Types of Waste	Volume	Tonnage
1	Non-Demolition	70%	80%
	Demolition	80%	90%
Innovation Credit 2	Non-Demolition	85%	90%
	Demolition	85%	95%
	Excavation	95%	95%

The achievement of Requirement 6 – 7 relating to the diversion of Resources from Landfill is the responsibility of the appointed Main Contractor and its appointed demolition subcontractors, however based upon the pre-demolition audit, Carbon Plan Engineering see no reason that a minimum of 90% of the demolition waste can be diverted from landfill. In reality 95% could be achieved with some care.



5. Competent person

The pre-demolition audit was carried out by Alan Calcott, an environmental professional with more than 20 years’ experience in a broad range of environmental disciplines, in construction and infrastructure projects both in the UK and internationally.

The report was also reviewed and finalised by Alan Calcott who has been working in the construction industry for over 20 years and has acquired appropriate knowledge of buildings, waste and options for reuse and recycling of different waste streams during this time. Alan Calcott has been a practicing BREEAM Assessor since 2008 and has undertaken multiple Demolition and Refurbishment surveys and his experience is in line with BREEAM New Construction 2018 Wst 01 definition of a competent person.

Refer to Appendix A1 for complete CVs.

To show compliance with the BREEAM Man 03 – Responsible Construction Management credit, any main contractor or separate demolition contractor must have in place a relevant Environmental Management System equivalent to ISO 14001.



6. Pre-Demolition Audit

Pre-Demolition audits identify opportunities for reclamation, reuse and recycling from a demolition process.

Pre-Demolition audits are recommended by The Institute of Civil Engineers and can be requested for planning requirements. They are designed to highlight the potential for maximum material recovery through demolition and provide an estimate of types, volumes and tonnages that will arise.

The aim of a Pre-Demolition Audit, Sequential Demolition is to facilitate and maximize resource recovery of demolition materials for beneficial reuse/recycling, without compromising all safety measures and practices outlined in the standard **BS 6187 Code of Practice for Demolition**.

6.1. Recycling & reuse initiatives

As part of the development of this PDA, the following initiatives have been reviewed and agreed upon, aiming to reduce the amount of waste produced during demolition and construction, and assisting in the recycling and reuse of waste as an alternative to offsite disposal.

Recycling Off Site:

- ☐ Plastic packaging
- ☐ Paper and cardboard
- ☐ Plasterboard via British Gypsum / Knauf
- ☐ Concrete and demolition wastes processed to engineered spec / WRAP
- ☐ Re-use of wood waste (e.g. shoring and shuttering)

6.2. Scope of works

Carbon Plan Engineering were engaged to undertake a complete Pre-Demolition Audit prior to demolition works commencing to enable materials capable of being recovered for recycling to be identified (such as concrete, bricks, metals, wood/timber, etc). The benefit of this includes identifying potential resources available and the level of material segregation required to achieve this potential which normally depends on the type of buildings to be demolished.

The audit set out in this document covers:

- ☐ Types of waste generated on-site
- ☐ Quantity of waste
- ☐ Recovery/Recycling Target

The audit was based on previous non-intrusive site surveys and desktop reviews of plans and other information provided.

The audit report does not offer technical advice on the demolition process but focuses on the environmentally preferable options for the reuse and recycling of parts of the structure and internal fixtures and fittings as appropriate.

Within the audit we include many items that may be stripped out by the tenants of various parts of the building, however wherever possible they should provide records of how they have managed these works and of what waste was produced and what was diverted from landfill.

For many of these items it is not possible to accurately quantify the amount (volume / weight) that will be produced however these are noted in the accompanying spreadsheet – refer to Appendix B1.

No Loose items of furniture or equipment are included.

6.3. Review of Reclaimable and Recyclable Materials

The Site has been assessed with a review of all the materials within the building, separating the materials into one of the three categories and this is reflecting in the Appendix B1 spreadsheet:

- ☐ Reclaimable – where materials can be re-used in their current form
- ☐ Recyclable – where materials can be processed by a recycling facility into a secondary product / use
- ☐ Landfilled – Where materials can't be reclaimed or recycled.

The followings sections provide a dialogue and description of the key materials while categorising them into one of the above .

6.3.1. Timber products

Garden furniture

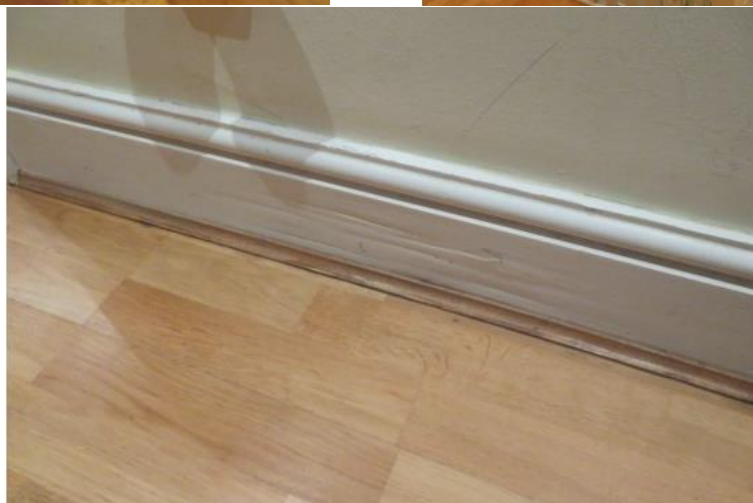
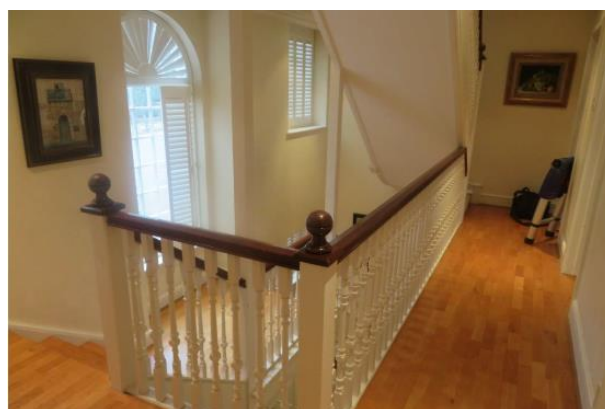
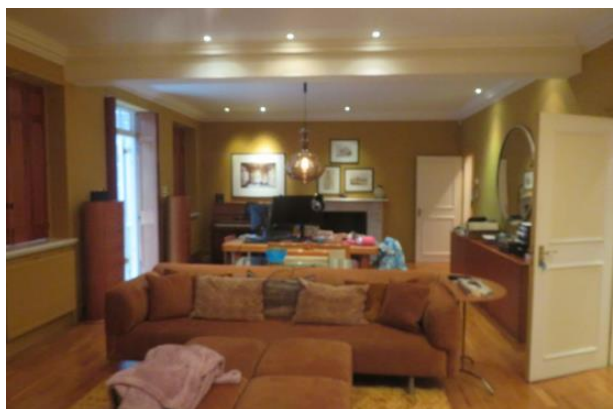
The garden area contains timber products such as chairs, a swing set and a slide. However it is unknown whether these products will be reclaimed after demolition, recycled or removed/sold/stored away by the owners.



Timber Doors, Architraves, skirtings, etc

There are a significant number of internal and external doors, 55 in total. It is assumed that 100% of these will be sent for recycling / energy from waste. The Strip-out contractor should consider whether any of these doors could be reclaimed for re-use as part of the new construction or for alternative uses rather than simply being reprocessed.

The property also uses a large amount of wood flooring with most of the ground floor, bedrooms, hallways and the office. Some of the skirting board is noted as rotting but there is no significant timber decay as of yet. It is therefore assumed that 100% of these will be sent for recycling.



Timber Structures

The property includes a large amount of Timber Structures ranging from softwood casements and hardwood in windows, suspended timber in the upper floor and the roof frame.

The majority of windows comprise of single glazed softwood casements. The condition of these are serviceable however extensive decay is beginning to affect the dormers, therefore it can be assumed that these will be 100% recycled/ reprocessed.

The remaining windows are double glazed hardwood and are located within the conservatory. Localised decay is evident but only at a low level and can be considered good quality. Therefore it can be assumed that these will be 100% recycled/ reprocessed.

The timber frame of the apex roof can be seen as poor quality with evidence of leaks in the second floor bathroom and in the loft. Therefore all to be recycled / reprocessed.



6.3.2. Glass products

Windows

The majority of the windows both internal and external are single glazed, double glazed windows are only found in the conservatory. Internal windows are seen in photos and these are presumed to be single glazed. It is also assumed there is glazed doors in the property.

Glass is to be removed carefully and kept separate from all other materials to enable it to be recycled into clear glass in the future.

Frames are to be sent for reprocessing to reuse or recycled off site.



6.3.3.Fixed furniture, storage kitchens and kitchenettes

Kitchen

There is a kitchen on the ground floor which contains a satisfactory range of kitchen units and work surfaces. As they are in good condition these can be reclaimed for the new development.



6.3.4. Ceilings

Plasterboard (assumed) ceiling

The ground floor is suspended masonry whilst the upper floors are suspended timber with plasterboard (assumed) ceilings below. The ceilings may be of Lathe and Plaster depending on the time and extent of the last refurbishment of the house.

All elements of these can be recycled / reprocessed.



6.3.5. Internal Finishes and fittings

Floor Coverings

There is a total of two floor coverings used in the property:

Floor tiling is used in the bathroom, en-suites, kitchen and conservatory. The tiling in the conservatory is badly cracked.



Timber floor finishes cover the rest of the property including the lobby, reception, hallways, bedrooms and the office. These all appear to be in good condition with no noted issues.



All floor finishes to be sent for recycling and reprocessing.

Sanitaryware

There are various items of Sanitaryware which are in a reasonable condition and some effort should be made to try and find routes for re-use wherever possible.



6.3.6. Steel Products

Internal and External Handrails

There is existing railing located in the garden of the property, however it is unknown if this will be kept or removed during demolition and construction. If removed this can be recycled / reprocessed.

A metal flute is also present which replaced a chimney.

All these can be recycled.



6.3.7. Brick, Clay and Concrete products

Brick

The properties external walls are around 350mm thick which allows incorporation of solid brickwork and may have a cavity, these bricks appear to be generally in good condition with little decay or damage other than structural cracks. The external brick walls may be of quality to be reclaimed if it is removed carefully, but is more likely to be sent for reprocessing and potentially used as aggregate on or off site. Some external brick has been painted and are therefore not fit for reclamation and should be sent for reprocessing.

The utility room and garage form as a side addition to the main building and comprises of 225mm solid brick walls.

The utility room does have a large noticeable crack however there is no urgency to repair the wall as it is a secondary structure. These bricks have been painted and are not fit for reclamation and so should be sent for reprocessing and potentially used as aggregate on or off site.



The intent is for any reclaimed brickwork to be re-used within the construction of the new dwelling.

Clay

The roof tiles consist of clay measured at 50mm thick.

No extensive or significant damage so all can be recycled / reprocessed.



6.4. Potential Reuse/Recycle/Disposal Options including Local re-processors or recyclers

Generally the most useful resources for re-use and reclamation in London are set out below:

<https://relondon.gov.uk/>

ReLondon is a partnership of the Mayor of London and the London boroughs to improve waste and resource management and transform the city into a leading low carbon circular economy.

<https://londonrecycles.co.uk/>

London Recycles is supported by the Mayor of London, collaborates with London's councils and waste authorities, and is managed by ReLondon.

<https://reuse-network.org.uk/>

The Re-Use Network supports a network of charitable reuse organisations, we are helping our members connect with the most isolated and vulnerable members of their communities.

6.5. Furnishings & Finishes

If furnishings are in good condition, these could be reused, if not onsite then by another company or enterprise.

For items that cannot be reused on site the following recommendations are proposed for reuse or recycling by other parties and to ultimately reduce the amount of waste being sent to landfill (complete table as required).

Item Group	Proposed reuse or recycling	Organisation contact information
Ceramic toilets, urinals, sinks	Various Sinks, WCs and showers in a reasonable repair could be reclaimed.	National http://www.globechain.com Local http://www.dulwichreclamation.co.uk/ 130-132 Kirkdale, London SE26 4BB 07833 432 372 Distance to site - ~ 14 miles
Catering kitchen (metal sinks, ovens, storage units, countertops, fridges)	There are several schemes available including the reuse/recycling firm envirowaste, Kitchen Clearance UK (a commercial kitchen specialist who refurbish and supply catering equipment from professional kitchens), and Globechain.	National https://envirowastemanagement.com www.kitchenclearanceuk.co.uk http://www.globechain.com Local

Item Group	Proposed reuse or recycling	Organisation contact information
		https://www.preownedkitchens.co.uk/ Pre Owned Kitchens Kemp House 152-160 City Road London EC1 2NX 0208 166 9990 Distance to site - ~ 6 miles
Carpet tiles	Commercial carpet tiles are often replaced or removed long before the end of life due to soiling or stains which could be cleaned. After recovery and grading, carpet tiles are then supplied to charities, schools, businesses, contractors and for public reuse.	National No local organisations recorded. Local https://www.londonreclamation.net/ 181 Kirkwood Road, SE15 2BG 0207 6398 909 Distance to site - ~ 10 miles
Vinyl Floor Coverings	Vinyl Floor Coverings are often replaced or removed long before the end of life due to soiling or stains which could be cleaned. These are unlikely to be re-used but should be sent for reprocessing.	National No local organisations recorded. Local https://www.londonreclamation.net/ 181 Kirkwood Road, SE15 2BG 0207 6398 909 Distance to site - ~ 10 miles

6.6. Building & Hard Landscaping Elements

To maximise materials reuse and recycling, segregation during the strip out should be implemented on site wherever possible.

The following options will allow the percentage savings illustrated previously to be made.

Material	Recommendation	Link
Plasterboard	British Gypsum offer plasterboard recycling and have a dedicated Plasterboard Recycling Service Team. Their service is based on the principles of simplicity and reliability and are the only plasterboard manufacturer in the UK with dedicated plasterboard recycling facilities at their manufacturing sites.	National https://british-gypsum.com/about-us/csr/environmental-challenges/plasterboard-recycling Local N/A – National schemes only
Timber	The social enterprise Community Wood Recycling provide a commercial waste wood collection service. 100% of the waste wood collected is re-used or recycled (nothing goes to landfill). They collect virtually all waste timber, wood composites, furniture and wooden items regardless of type or condition.	National https://communitywoodrecycling.org.uk https://solowoodrecycling.co.uk Local https://www.londonreclamation.net https://www.londonreclamation.net/ 181 Kirkwood Road, SE15 2BG 0207 6398 909 Distance to site - ~ 10 miles
Metals	Most waste disposal companies achieve a 100% metal recycling rate as standard.	National N/A – Many local options Local http://artametalscrap.co.uk Arta Scrap Ltd, Unit 6, 6 Coombe Rd, Neasden, London, NW10 0EJ Tel: 02036431762 Distance to site - ~6.1 miles
Glass	Can be recycled by crushing and for use as an aggregate either directly or via construction disposal route.	National https://www.upvc-recycling.co.uk/ Local https://mayglassrecycling.co.uk/contact May Glass Recycling Ltd, Unit 5 Salamons Way, Rainham, RM13 9UL Telephone: 020 8524 5500 Distance to site - ~22.9 miles

6.7. Mechanical and Electrical Elements

To maximise materials reuse and recycling, segregation during the strip out should be implemented on site wherever possible

Equipment	Scheme	Link
Fluorescent lamps / tubes / LED	Companies such as Ecolamp Recycling Solutions ensure all waste lamps and tubes are recycled.	National https://ecolamp.co.uk/lamps Local https://www.pureplanetrecycling.co.uk/weee-recycling-london/ 90 Paul St, London EC2A 4NE Tel : 01234 315496 Distance to site - ~5.8 miles
Cables and switchgear	Cables contain many valuable metals which can be reprocessed relatively easily.	National https://www.cablewirerecycling.co.uk/ Local https://surplex.co.uk Surplex UK Limited, Unit 3A, 34-35 Hatton Garden, London EC1N 8DX 0207 139 5175 Distance to site - ~6.1 miles
General Plant	Companies such as Industrial Disposal undertake to purchase redundant plant for Third World Use. They buy and recycle used industrial plant from around the UK including London. Plant types they but include industrial boilers, generators, transformers, switchgear, chillers and air-conditioning and refrigeration plant.	National https://www.industrialdisposal.net/services/plant-purchasing Local https://www.pureplanetrecycling.co.uk/weee-recycling-london/ 90 Paul St, London EC2A 4NE Tel : 01234 315496 Distance to site - ~5.8 miles

7. Demolition

7.1. Demolition Process

The demolition process is separated into phases in which one type of material is carefully dismantled at a time and salvaged for reuse and recycling. The wastes generated in each dismantling stage are of similar types and nature such that contamination of nonrecyclable items can be significantly reduced.

The principal phases of Demolition involved the following:

- ☐ Stripping of deleterious materials (such as asbestos, lead etc) which may contaminate the clean concrete debris of building bearing structure.
- ☐ Stripping out of loose and fixed furnishings and finishes such as kitchenettes, flooring, ceilings, etc.
- ☐ Stripping out of all services – after safe disconnections have been made – ensuring that any refrigerants, gases, etc are drained from the systems present.
- ☐ Demolition of part of the building structures with higher concrete content (such as concrete parapet walls, etc).
- ☐ Step-by-step demolition of the bearing and main structure by dismantling part of the structures that are of similar materials to avoid contamination of clean concrete debris and allow separation of concrete debris with other demolition arising.

All demolition materials arising from or in connection with the demolition work must be separated into different groups, such as concrete, bricks, metals, wood/timber, etc. To facilitate sorting, allocation of on-site temporary storage points for various materials generated from the demolition process were provided before sending them off-site. These sorted materials were then delivered to an approved disposal facility or accredited recycling facilities for further processing into recycled products and aggregates for beneficial reuse/recycling.

7.2. Description of Demolition works

As part of the demolition works the following general steps should be undertaken before demolition and strip-out works start to build upon the contents of this report:

- ☐ The types of material used in the construction of the building through desk study of the building plans and site visits should be confirmed by intrusive surveys.
- ☐ The construction method, structural framing system, and critical building elements that need special treatment during demolition are assessed.
- ☐ A set of the phased building plans of the structures to be demolished should be produced as part of a demolition management plan / method statement. The key aim of this from an environmental perspective is to establish the most effective demolition sequence to reclaim and recycle the key material components identified in the audit. It should state clearly the sequence of strip-out and demolition of

structural elements on each floor, i.e. finishes, furnishings, services, parapets, brick wall, slabs, beams, columns, walls, etc.

7.3. The Demolition Management Plan / Method Statement is to be developed including as a minimum:

- ☐ Identifying existing fixtures and fittings that may affect the demolition progress and need to be removed prior to commencement of demolition works (such as false ceiling, air conditioning units, doors, wooden floors, partitions, ceilings, windows, and other mechanical services).
- ☐ Identifying part of the building structures with higher concrete content (such as concrete parapet walls, slabs, columns, etc).
- ☐ Identifying potential removal of materials which may contaminate the clean concrete debris (such as bricks, tiles, etc) and the level of material segregation/sorting required.

7.4. Demolition Phases

The following sets out at a high level the phases that the contractor should undertake in the demolition process.

Phase 1 – Strip out

- ☐ Removal of existing fixtures, fittings & services (such as false ceiling, air conditioning units, ductwork doors, wooden floors, partitions, ceilings, windows, and other mechanical services).
- ☐ Stripping of deleterious materials which may contaminate the clean concrete debris of building bearing structure (such as asbestos, lead etc).

Phase 2 – Demolition

- ☐ Demolition of the bearing and main structure to be progressed in conformance with the method statement.
- ☐ Demolition of part of the building structures with higher concrete content (such as concrete parapet walls, etc).
- ☐ Step-by-step demolition of the bearing and main structure by dismantling part of the structures that are of similar materials to avoid contamination of clean concrete debris and allow separation of concrete debris with other demolition arising.

Phase 3 – Segregation and separation

- ☐ Separation of demolition debris into different groups (such as concrete, bricks, metals, wood/timber, plastic, etc).
- ☐ Proper labelling and storage of sorted waste generated in the demolition process.

7.5. Waste Storage and Disposal Options

It is the responsibility of the Main Contractor and its appointed demolition subcontractor to ensure that suitable waste storage facilities / arrangements must be made are available on site to ensure effective segregation of wastes on site.

Waste disposal, where possible, shall consider the implications of long-distance travel in terms of health and safety risk, commercial terms and increased emissions from vehicles.

Details of all waste carriers, including waste carriers number should be captured by the Main Contractor and its appointed Demolition subcontractor and held within its relevant documentation including Construction Site Waste Management Plan.

7.6. Project waste policy

All materials on site are to be handled efficiently. The site manager shall:

- ☐ Ensure all waste collections are coordinated
- ☐ Ensure dedicated storage yard / area provided and that materials susceptible to water damage (e.g. cement bags / plasterboard) are stored within a weather-proof area;
- ☐ Ensure materials are stored in a manner that will not result in fire or damage.
- ☐ Ensure stores are locked when not in use to prevent misuse or vandalism.

Provision of suitable containers for the collection and storage of identified waste streams to be provided across the site;

Dedicated waste storage area with suitable hard standing for containers to be established (e.g. open builders skip / Rear End Loaders REL), in a secure location, preferably set back from public access (to prevent fly tipping), ensuring skips (wherever possible) are at least 8m away from any building. Area to be suitably signed, clearly identifying permitted wastes (aiding segregation) and marked on both the site plan and the traffic management plan;

Hazardous waste:

- ☐ Used aerosols – throughout the lifetime of the project; store in segregated and labelled container e.g. empty 205L drum / wheelie bin;
- ☐ Contaminated arisings encountered during remediation of contaminated land for brownfield developments or hot spot removal exercises;

All waste transfers from site MUST be dealt with in strict accordance with the Environmental Protection (Duty of Care) Regulations 1991 (as per section 34 of the Environmental Protection Act 1990). This will be enforced on site ensuring the commitment made by the project officer.

8. Conclusion

This pre-demolition audit has highlighted where there are opportunities for resource efficiency, reuse and recycling options ensuring diversion from landfill.

As shown in Appendix B1 almost all items quantified can be diverted from landfill and so the overall diversion from Landfill target will be >95% and with good practice on site will be close to 100%.

This pre-demolition audit report should be made available to all the project team and relevant contractors to enable this information to guide the design, giving consideration of the materials and equipment that can be reused and ensure contractors are engaged in the process of maximising high-grade reuse and recycling opportunities.

The report shall form the basis for a review at the end of the project to determine actual waste arising and waste management routes used will be compared with those forecasts from the audit and enable the barriers to achieving targets to be investigated.

The audit shall be referenced in the resource management plan and cover:

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

Alan Calcott

A black and white portrait of Dr. David A. Clark, a middle-aged man with a receding hairline, wearing a patterned shirt. He is smiling slightly and looking directly at the camera. The background is a dense, out-of-focus foliage.

Architecture: Advanced Environmental and Energy Studies to MSc – 2005

Low Carbon Consultant

Non-Domestic Energy Assessor

BREEAM Assessor, all schemes

BREEAM AP

Appendix A2: Carbon Plan Engineering Environmental Policy

The following is a summary of our environmental policy.

Overview

Carbon Plan Engineering Limited is a small and medium-sized enterprise not bound by the legal requirements to provide a formal ISO 14001 or Environmental policy and we feel our impacts are minimal, however we all must work to create a better environment and minimise the impacts of the business.

Commitments

Carbon Plan Engineering is committed to managing its activities within the principles of this guidance and, wherever practical, and as part of our company culture will minimise any harmful impact on the environment from its activities.

Carbon Plan Engineering recognises and support the need to conserve vital resources, and are committed to seeking the best and most efficient use of energy consistent with related costs and environmental implications.

Our Environmental objectives are supported through:

- ❑ The design of energy efficient, Low Carbon buildings
- ❑ Continuously seeking further cost effective measures to improve the overall thermal performance of buildings and reduce the reliance on Fossil Fuels and Grid supplied electricity
- ❑ Continuing the appraisal of purchasing arrangements for fuels and energy, and by the monitoring of associated tariff arrangements
- ❑ The specification of components free of CFC and Green House Gases (GHG), and by the use of alternatives free of other hazardous materials where possible
- ❑ Recognition of the impact of Carbon Dioxide (CO₂) and other harmful emissions resulting from energy production when choices are available
- ❑ The specification, wherever possible, of timber from temperate or sustainable tropical sources only
- ❑ The specification of materials with regards to their impact on the environment, with preference being given to those from recycled and/or sustainable sources where practical (Green Guide Rating of A+ or A)
- ❑ The reduction, where practical, in the amounts of materials used
- ❑ The phasing out of materials with a harmful effect on the environment and their replacement by environmentally friendly materials where reasonably practical
- ❑ The understanding of, and compliance with, all Environmental Legislation and the application of BS 7750 for Environmental Management

The full policy can be requested by emailing enquiries@carbonplan.co.uk

Appendix B1: Pre-Demolition Audit Data Sheet

The following is the inserted outputs from the accompanying Waste Data Reporting spreadsheet.

41 Sheldon Avenue		✓			✓		✓		✓		5th June 2024	Rev	-	
List of waste identified on site and estimated to be generated during the project														
Waste Type	EVC Code	Produced	Re-use on site?	Re-use %	Reclaim for re-use	Reclaim for re-use %	Recycle / reprocess	Recycle %	Safe Disposal	Landfill	Landfill %	Estimate Quantity	Units	Comments / Describe how reduced, reused, recycled
Aluminium	17.04.02						✓	100%				unknown		Metal Chimney and Flute
Asbestos (bonded)	17.06.05*													
Asbestos (fibrous/insulation)	17.06.01*													
Bituminous mixtures - Roof	17.03.02													
Bituminous mixtures - Car Park	17.03.02													
Bituminous mixtures - Pavements	17.03.02													
Clay tile	17.01.03	✓					✓	100%				131.6	m2	Roof tiles
Brick whole	17.01.02	✓	✓	40%	✓	30%	✓	30%				63.6	m3	Bricks appear to be of good quality so can be reclaimed
Cable	17.04.11	✓					✓	100%				unknown		Misc cabling internally
Carpets, curtains and other geotextiles	20.01.11	✓					✓	100%				unknown		TBC
Ceiling Tiles - Mineral wool based	17.06.04						✓	100%				unknown		TBC
Concrete - Blocks	17.01.01													
Concrete - Panel Façade	17.01.01													
Concrete - Superstructure	17.01.01													
Concrete - PreCast Columns	17.01.01													
Concrete - Substructure	17.01.01													
Concrete - External Areas	17.01.01													
Cement Render - External	17.01.01													
Copper	17.04.01	✓					✓	100%				unknown		Misc copper piping
Demolition wastes containing dangerous substances	17.09.03*													
Discarded electrical equipment (no dangerous substances)	16.02.14	✓					✓	100%				unknown		TBC
Excavated soil (contaminated)	17.05.03*													
Excavated soil (non-contaminated)	17.05.04													
Fluorescent tubes	20.01.21*											unknown		Various light fittings
Glass - Windows	17.02.03	✓					✓	100%				31.94	Tonnes	Conservatory has double glazed windows (not included on revit drawing) single glazed for the rest assumed 30kg/m2
Glass - Internal Partitions	17.02.02													
Gypsum based wastes (Plasterboard)	17.08.02	✓					✓	100%				210	m²	Has plasterboard/plaster components
Insulation (Mineral wool)	17.06.04													
Insulation (Other)	17.06.04	✓					✓	100%				unknown		TBC
LED Lighting - containing POPs and hazardous substances	16-02-13*	✓							✓	100%		unknown		Various light fittings
LED Lighting - containing NO hazardous substances	16-02-14	✓					✓	100%				unknown		Various light fittings
Mattresses, furniture and other bulky household items	20.03.07	✓					✓	100%				unknown		Assumed to be removed by client
Metal - Posts & Bollards	17.04.07													



Metal - Cat Ladder and Railings	17.04.07	✓					✓	100%				1.00	No	External railing located on the South Side
Metal - Barriers - Armco	17.04.07													
Metal - Façade panel	17.04.07													
Metal - Grilles / mesh - Internal	17.04.07													
Metal - Rebar	17.04.07													
Metal - Steel Framing - Façade	17.04.07													
Metal - Grilles / mesh - Façade	17.04.07	✓					✓	100%				16.72	m2	External metal grilles
Metal - Window Frames	17.04.07													
Metal frames to Ceilings and Partitions - Steel	17.04.07													
Metal - Radiators	17.04.07	✓					✓	100%				unknown		TBC
Mixed demolition and construction wastes	17.09.04	✓					✓	100%				unknown		TBC
Mixtures of concrete, bricks, tiles and ceramics	17.01.07	✓					✓	100%				unknown		TBC
Other (specify) - Payment Machines & Gates	WEEE - POP??													
Other (specify) - EV Chargers	WEEE - POP??													
Other (Specify)														
Paper	20.01.01													
Plastic	17.02.03	✓					✓	100%				Unknown		Plastic guttering and cables
Refrigerators and air/con equipment	16.02.11*	✓					✓	100%				Unknown		TBC
Stone Slabs / Stone Facades	17.05.04													
Services - AC Indoor Unit	20.01.23*													
Services - AC Outdoor Unit	20.01.23*													
Services - AC Outdoor Unit	20.01.23*													
Tiles and ceramics	17.01.03	✓					✓	100%				0.4	m3	Assumed kitchen, bathrooms, en-suite and conservatory are all ceramic till
Tiles, ceramics, etc. containing dangerous substances	17.01.06													
Wood - External Decking, Benches, etc	17.02.01											Unknown		TBC
Wood - Doors	17.02.01	✓					✓	100%				55	No.	Wooden doors
Wood - Flooring	17.02.01	✓					✓	100%				1.7	m3	Assumed bedrooms, hallways, office, reception and lobby all as wood tiling
Wood - Structure	17.02.01	✓					✓	100%				4.3	Tonnes	Assumed 800mm between each joist and 400mm between each batten



Appendix B2: Pre-Demolition Audit Checklist

To be completed by Contractor

Project Stages		Questions to consider	Tick if 'Yes'	Comment: If 'yes', what action have you taken/do you propose to take? If 'no', why not?
Policy	1	Has your organisation adopted a waste management policy?		
	2	Has the client signed the Site Waste Management Plan?		
	3	Have relevant sub-contractors producing significant wastes streams been identified?		
	4	Have the identified sub-contractors signed the Site Waste Management Plan?		
Procurement	5	Has a careful evaluation of materials been made so that over- ordering and site wastage is reduced?		



Project Stages		Questions to consider	Tick if 'Yes'	Comment: If 'yes', what action have you taken/do you propose to take? If 'no', why not?
	6	Has full consideration been given to the use of secondary and recycled materials?		
	7	Is unwanted packaging to be returned to the supplier for recycling or re-use?		
	8	Can unused materials be returned to purchaser		
Project planning	9	Has responsibility for waste management planning and compliance with environmental legislation been assigned to a named individual at both main contractor and identified sub- contractors?		
	10	Has a project programme been developed to include likely waste arisings (how much, when, and what types)?		



Project Stages		Questions to consider	Tick if 'Yes'	Comment: If 'yes', what action have you taken/do you propose to take? If 'no', why not?
	11	Has an area of the site been designated for waste management, including segregation of waste?		
	12	Have targets been set for the different types of waste likely to arise from the project?		
	13	Have measures been put in place to deal with expected (and unexpected) hazardous waste?		
	14	Has disposal of liquid wastes such as wash-down water and lubricants been considered?		
	15	Where relevant, has discharge consent been obtained from the Agency?		
	16	Has agreement been sought from the sewerage company for trade effluent discharge?		



Project Stages		Questions to consider	Tick if 'Yes'	Comment: If 'yes', what action have you taken/do you propose to take? If 'no', why not?
	17	Have opportunities been considered for re-use of materials on site?		
	18	Have opportunities been considered for re-use of materials off site?		
	19	Have opportunities been considered for on-site processing and re-use of materials?		
	20	Have opportunities been considered for reprocessing materials off-site?		
	21	Have you considered the most appropriate sites for disposal of residual waste from the project?		
	22.	Are there opportunities for reducing disposal costs from waste materials which may have a commercial value?		



Project Stages		Questions to consider	Tick if 'Yes'	Comment: If 'yes', what action have you taken/do you propose to take? If 'no', why not?
Site operations	24	Has responsibility for waste management on site and compliance with environmental legislation been assigned to a named individual?		
	25	Have toolbox talks been planned for all site personnel about waste management on site?		
	26	Are selected waste materials segregated to allow best value to be obtained from good waste management practices?		
	27	Are containers/skips clearly labelled to avoid confusion?		
	28	Is Duty of Care procedures complied with, including provision of transfer notes and checking authorisation of registered carriers, registered exempt sites and		



Project Stages		Questions to consider	Tick if 'Yes'	Comment: If 'yes', what action have you taken/do you propose to take? If 'no', why not?
		licensed waste management facilities?		
	29	Are any checks made that excavation waste is received at the intended site?		
	30	Is implementation of agreed waste management procedures monitored?		
	31	Are reports regularly produced regarding waste quantities and treatment/disposal routes, and on costs incurred?		
	32	During site operations, are barriers to good waste management practice considered and noted for incorporation into the post-completion review?		
Post Completion	33	Has a final report of use of recycled and		



Project Stages		Questions to consider	Tick if 'Yes'	Comment: If 'yes', what action have you taken/do you propose to take? If 'no', why not?
		secondary materials, waste reduction, segregation, recovery and disposal, been completed?		
	34	Has the final report been signed by the relevant contractors and the client?		
	35	Have key waste management issues been considered for action at future projects?		

Signed:

Position

Name

