



Pre-Demolition and Pre-Redevelopment Audit Report

Highgate School Science Block

Client: Highgate School

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1. Introduction

KaNect Limited ('KaNect') has been commissioned by Highgate School ('Client') to prepare this Pre-Demolition and Pre-Redevelopment Audit Report ('Report') in support of the redevelopment of the Highgate School Science Block site ('Site') located in London Borough of Haringey (LBH).

As per the BREEAM New Construction 2018 (UK), a total of 5 credits can be obtained for the Wst 01 Construction Waste Management criteria. These credits are split into four parts (for Simple Buildings) including:

- **One Credit** – Pre-Demolition Audit:
 - Complete a pre-demolition audit of any existing buildings, structures or hard surfaces being considered for demolition. This audit will:
 - » Be carried out at Concept Design stage by a competent person prior to strip-out or demolition works
 - » Guide the design, consider materials for reuse and set targets for waste management
 - » Engage all contractors in the process of maximising high-grade reuse and recycling opportunities
 - Refer to the audit in the resource management plan (RMP)
 - Compare actual waste arisings and waste management routes used with those forecasts and investigate significant deviations from planned targets
- **One Credit** – Construction resource efficiency: preparing a compliant Resource Management Plan (RMP) with the aim of minimising and monitoring waste.
- **Two Credits** – Simple buildings – RMP measurements and Reporting
- **One Credit** – Simple buildings – Diversion from landfill

As per the London Plan Guidance: Circular Economy Statement (Ref. 1), to meet Policy SI7 (B) of the London Plan (Ref. 2) one of the requirements is to submit a Pre-Redevelopment audit. The Pre-Redevelopment audit is a tool for understanding whether existing buildings, structures and materials can be retained. The Pre-Redevelopment audit should outline an explanation of the existing buildings on the site and brief description of state of their repair. The details should include: the building's age, key materials, photos of typical internal spaces and facades, and site plans.

The extent or details required to complete the Pre-Redevelopment audit is not mentioned by the Greater London Authority (GLA), however, based on KaNect's experience of working on these Audit reports, we have included the information in Section 2, that would be useful in understanding the approach adopted for the redevelopment of the Proposed Development.

2. Site Information

Existing Site

The subject of this application are three connected blocks that sit between Science Quad and Garner Quad. The buildings are:

- Centre Block
- East Wing
- Link Block

Science Quad is defined by buildings on all sides, but is open to the south-east, facing towards Southwood Lane. The space is generally hard landscaped with areas of planting. It is a formal space, due in part to the character of the Centre Block, and has a raised terrace on the west side, divided by a brick wall and railings. This Quad provides an amenity space, plus a thoroughfare for the whole School, pupils and staff criss-crossing the space as they move between buildings and lessons.

Garner Quad has School buildings to the west and south, with a much more open aspect to the other two sides. On the east side it shares a boundary wall with the listed single storey pitched roofed almshouses along Southwood Lane, which are set at a lower ground level, of a half storey down, and have small rear courtyard gardens. To the North, the Quad finishes at a wall with gates, with the narrow lane of Castle Yard beyond, and residential houses each side. On the west side the terrace of the Charter Building overlooks. This space is used for pupil outdoor play and socialising between classes, and there are trees and landscaping to soften the environment.

Figure 1 and Figure 2 provides the images of the Science Buildings. Whereas Figure 3 provides the existing Site Plan.

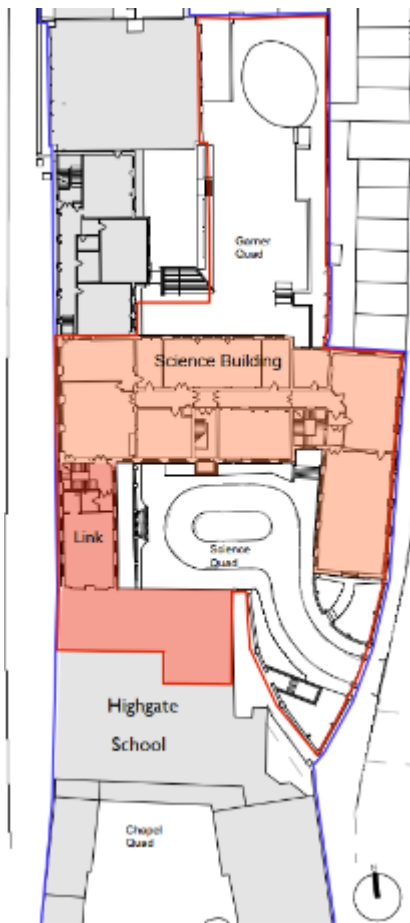
Figure 1 Science Buildings – View from Science Quad



Figure 2 Science Buildings – Aerial View



Figure 3 Existing Site Plan



This figure is not drawn to scale

Existing Site Analysis

The existing buildings are sound and well-constructed, with a long usable service life ahead if periodic refurbishment and maintenance is carried out. The original buildings of Centre block and East Wing require careful detailed refurbishment of masonry brick and stone walls, with targeted re-pointing and sensitive cleaning that still retains the integrity of the materials. Brick, and Portland stonework, will be cleaned to remove years of pollution and weathering stains.

Timber windows, which are single glazed and poorly weather-sealed, are now in poor condition, with many partially rotten or twisted, and will require extensive renovation and/or replacement, both to improve condition and to bring closer to modern thermal performance standards.

At roof level, the rooftop extension project over Centre Block and East Wing not only added new accommodation, but also addressed issues at that time of roof finishes and flashings to perimeter flat roof areas and gutters, so there is relatively little that needs to be done to those areas. The extensions themselves have modern roofs finished in single ply membrane, and although these will be closely inspected, they are sound and in good order.

The Link Block has been fully refurbished so will need very little further external refurbishment work in this project.

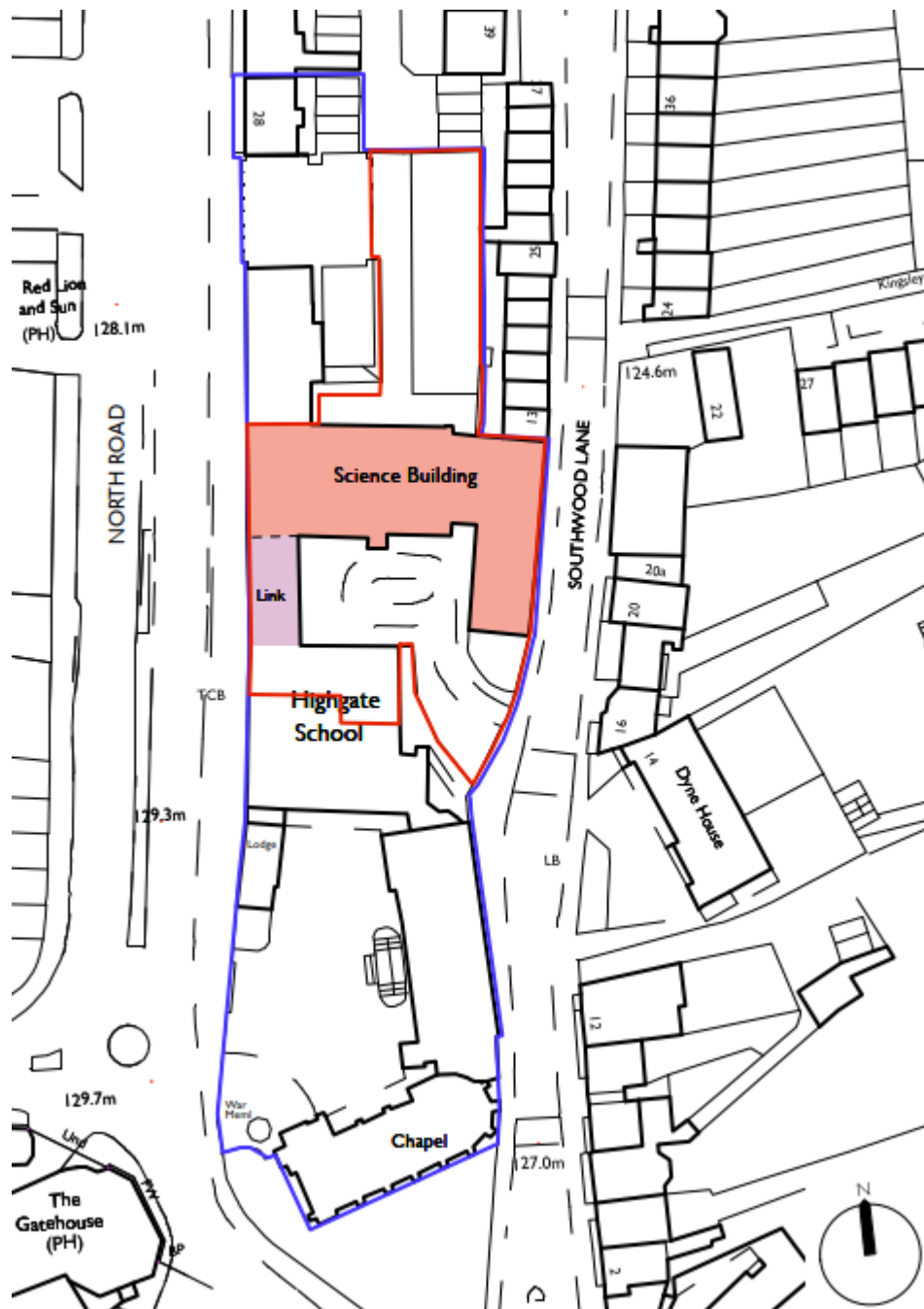
3. Proposed Works

As part of the redevelopment of the Science Buildings, the following works are proposed:

- Stripping out of interior of buildings back to original shell.
- Internal alterations including demolition of existing stair and various local alterations to change the existing layout or walls.
- Extension in Science Quad to west side of the east Science wing, comprising a 4-storey high building with basement, to include the main new lift and southern access and fire escape stairs.
- Extension in Garner Quad to north side of the Science centre block, comprising a 2-storey building at upper levels, with open colonnade at ground level and extension to ground floor offices.
- Small rooftop extension for an astronomy observatory.
- Internal alterations on the west side in the building known as “Link Block” to change existing layouts and locate a plantroom in the un-used roof space.
- Complete stripping out and replacement of mechanical and electrical building services on 3 floors.
- Retention of existing roof level 4th floor with minor external alterations to reduce solar gain to the southernmost classrooms.
- Refurbishment and cleaning of existing building exterior fabric masonry walls.
- Replacement or renovation of exterior timber windows and doors.
- Local alterations of external spaces in Science Quad and Garner Quad.

Figure 4 shows the Red Line Boundary.

Figure 4 Red Line Boundary



Please note that this Figure is not drawn to scale.

4. Aims and Objectives

The main aim of the Report is to understand whether the existing buildings, structures and materials can be retained, refurbished, or incorporated into the new development. This report will also help to identify and quantify the materials that might be generated on-Site (if the buildings undergo demolition) and to provide the Client with this information to assist the Client in maximising the recovery of material for subsequent high grade or value applications.

The objectives of this Report are to:

- Provide brief information on the existing buildings, structures on site and their condition,
- Identify the types and quantities of key materials present in the existing buildings, structures, and hard services,
- Identify potential applications and any related issues for the reuse and recycling of the key waste/materials in accordance with the waste hierarchy,
- Identify opportunities for reuse and recycling on-Site and off-Site,
- Identify local re-processors or recyclers for recycling of materials,
- Identify overall recycling targets where appropriate,
- Identify reuse targets where appropriate, and
- Identify overall landfill diversion rate for all key materials.

5. Key Principles

The Waste Hierarchy

Clause 12 of The Waste (England and Wales) Regulations 2011 requires that anyone involved in the import, generation, collection, transferring, recovery, or disposal of waste must take all such measures available to apply the waste hierarchy.

This Report considers the waste hierarchy and encourages materials identified on-Site to be reused before they are sent for recycling, recovery, or disposal. The main principles of the waste hierarchy are summarised in Figure 5.

Figure 5 Waste Hierarchy¹



¹ Department of Environment, Food & Rural Affairs (Defra), Waste Hierarchy Guidance (updated by KaNect Limited)

The Circular Economy

A Circular Economy (CE) is a systematic approach to economic development designed to benefit businesses, society, and the environment. In contrast to the 'take make waste' linear model, a Circular Economy is regenerative by design and aims to gradually decouple growth from the consumption of finite resources. The Circular Economy activity focuses on design that is regenerative and restorative. This is based on three principles:

- Design out waste and pollution,
- Keep products and materials in use, and
- Regenerate natural systems.

This Report can help encourage a Circular Economy by:

- Influencing the wider design team to consider reclamation and reuse of waste/materials found on-Site to be incorporated in the proposed RMC development, avoiding disposal of valuable materials, and
- Identifying reuse and re-processors companies for materials found on-Site, extending the products useful life before being remanufactured.

Figure 6 demonstrates the key stages and principles used when applying the Circular Economy to the built environment.

Figure 6 Applying Circular Economy Principles to Building Design²



² Building Revolutions, David Cheshire, RIBA Publications 2016

6. Methodology

A Site visit was carried out by competent persons: ‘... who has appropriate knowledge of buildings, waste and options for reuse and recycling of different waste streams’

A Site visit was undertaken by Chartered Building Surveyor Tom Lawrence and Chartered Waste and Resource Manager Kat Lees on 20 May 2022.

The Site visit consisted of a non-intrusive visual audit of building fabric to the external and internal parts of the buildings to be demolished.

Subsequently, a workshop was held on 7 June 2022 with the Design Team to discuss the existing conditions of the buildings and the potential to reuse materials on-Site.

Exclusions and Assumptions

The following assumptions, exclusions and caveats apply to this Report:

- This Report is based purely on the findings of a non-intrusive visual survey.
- Where clear line of sight/access was not available to attain measurements e.g., thicknesses, best judgement and assumptions have been made.
- All facing bricks elevations are assumed to be brick/cavity installations.
- Where areas of build frame were not visible, the size and lengths of the columns were assumed.
- 5% of the volume of concrete reinforcement is assumed to be steel.
- Small power, data, and large specialist plants or any other mechanical, electrical, and plumbing (MEP) equipment are not considered within this Report.
- It is assumed that all furniture, equipment, and miscellaneous non-fixed items installed by the tenants will be removed by the tenants, therefore, these are not considered within this Report.
- It is assumed that there will be no insulation in the stud walls.

The information provided within this Report is based on visual inspection (non-intrusive) of the existing Site. Where elements of the Site were inaccessible, assumptions are made based on professional judgement. It is understood that the quantities provided within this Report might vary, therefore, the principal contractor will be responsible for monitoring and reporting these changes (if any).

7. Key Waste/Materials Identified

The following section describes the key waste/materials identified, their location, and images taken during the Site visit. Based on the condition of the waste/materials and their market demand, a circularity rating (i.e., how likely is the material reused on/off-Site) for the waste/materials has been provided (based on professional judgement) to determine whether they can be reused, recycled, or sent for recovery or disposed to landfill as a last resort.

The circularity rating is based on the following key shown in Table 1. The ratings and related descriptions are recommendations for the waste management route of the materials identified; the exact routes for the materials will be determined by the appointed demolition contractor (when appointed).

Table 1 Circularity Rating

Indicator	Description
	Good condition and reuse of this material is possible.
	Wear and tear – this material is likely to be recycled. Alternatively, this indicator may be used if the material is in a good condition but there is no market for reuse and therefore must be recycled.
	Poor condition/not reusable or non-recyclable material, this may be due to several reasons such as there being no end market for the material to be recycled (e.g., composite materials) or due to the small quantity of the material present, which therefore makes it unviable to recycle separately. This material is likely to be sent to landfill or energy recovery.

Concrete

Please see Table 2 for the location and the quantities of the Concrete found on-Site. Image 1 - Image 3 shows the concrete elements found on-Site.

Table 2 Location and Quantities of Concrete

Building	Approximate Quantity (m ³)	Approximate Quantity (tonnes)
Science Block	6.90	19.32
Total	6.90	19.32

Recommendation

★ For all the concrete elements, it is recommended that the concrete is sent to a local re-processor and crushed off-Site and used as a recycled aggregate. The recycled aggregate can be further used as a construction material for the proposed redevelopment of the Site.

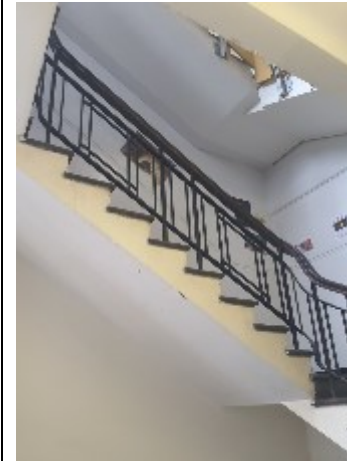


Image 1 Concrete Staircase

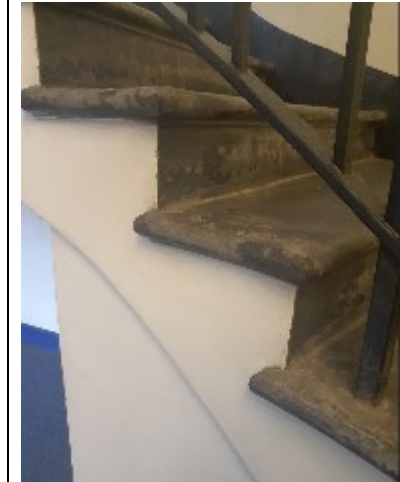


Image 2 Concrete Staircase



Image 3 Concrete Staircase

Bricks

Please see Table 3 for the location and the quantities of Bricks (including external walls) found on-Site. Image 4 shows the bricks found on-Site.

Table 3 Location and Quantities of Bricks

Building	Approximate Quantity (m ³)	Approximate Quantity (tonnes)
Science Block	59.27	134.30
Total	59.27	134.30

Recommendation

★ ★ Overall, the bricks are in good condition for reuse. However, these bricks need to be matched with the requirements of the Proposed Development (including colour) prior to reuse. Considering, these do not meet the requirements of the Proposed Development, then these bricks need to be sent off-Site for recycling or reuse (depending the needs of the development).

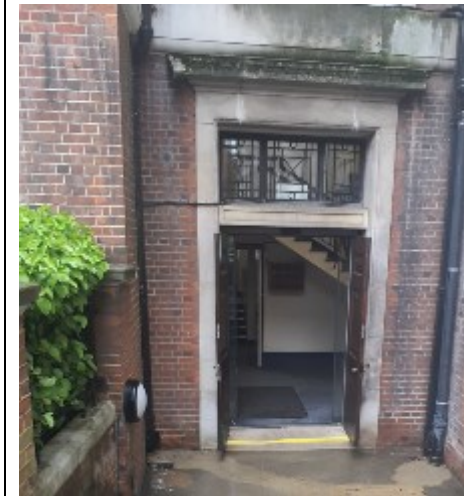


Image 4 External Brick Wall

Metals

Please see Table 4 for the location and the quantities of Metals (including aluminium frame) found on-Site. Image 5 shows the metals found on-Site.

Table 4 Location and Quantities of Metals

Building	Approximate Quantity (m ³)	Approximate Quantity (tonnes)
Science Block	1.59	4.28
Total	1.59	4.28

Recommendation

★ For all metal found on-Site, it is recommended that it is recycled off-Site.



Image 5 Metal Railing

Timber and Timber Products

Please see Table 5 for the location and the quantities of Timber and timber products (including structural timber and doors) found on-Site. Image 6 -Image 8 shows the timber and timber products found on-Site.

Table 5 Location and Quantities of Timber and Timber Products

Building	Approximate Quantity (m ³)	Approximate Quantity (tonnes)
Science Block	4.73	3.31
Total	4.73	3.31

Recommendation

★ Where high quality solid timber cannot be reclaimed, it is recommended that it is sent for recycling.



Image 6 Timber Window Frame



Image 7 Timber Window Frame



Image 8 Structural Timber

Plasterboard (Other Gypsum containing material)

Please see Table 6 for the location and the quantities of Plasterboard (other gypsum containing material) found on-Site. Image 9 shows the plasterboard (other gypsum containing material) found on-Site.

Table 6 Location and Quantities of Plasterboard

Building	Approximate Quantity (m ³)	Approximate Quantity (tonnes)
Science Block	2.28	1.37
Total	2.28	1.37

Recommendation

★ Reuse of plaster (gypsum materials) is not yet possible, assuming a best case, this material would be recycled.

★ It is currently not possible to separate and recycle plaster from walls. It is therefore envisioned this material would be disposed off.



Image 9 Plasterboard

Glass

Please see Table 7 for the location and the quantities of Glass found on-Site. Image 10 shows the glass found on-Site.

Table 7 Location and Quantities of Glass

Building	Approximate Quantity (m ³)	Approximate Quantity (tonnes)
Science Block	0.14	0.37
Total	0.14	0.37

Recommendation

★ It is recommended that it be sent off-Site to be crushed and recycled into new products.



Image 10 Glass Window

Asphalt (containing bituminous material)

Please see Table 8 for the location and the quantities of Asphalt found on-Site.

Table 8 Location and Quantities of Asphalt

Building	Approximate Quantity (m ³)	Approximate Quantity (tonnes)
Science Block	0.35	0.38
Total	0.35	0.38

Recommendation

★ This material should be sent for recycling off-Site. In case there is any contamination present then the asphalt cores samples can be taken and tested.

Lighting

The number of lightbulbs (fluorescent tubes) identified totalled 90. Please see Table 9 for the location and quantities. Image 11 shows the lighting found on-Site.

Table 9 Location and Quantities of Lighting

Building	Approximate Quantity No of Units
Science Block	90
Total	90

Recommendation

★ ★ The reuse of lightbulbs and their fixtures is likely impractical; it is therefore likely that LED lighting would be recycled, whereas older incandescent lightbulbs would be sent for energy recovery.

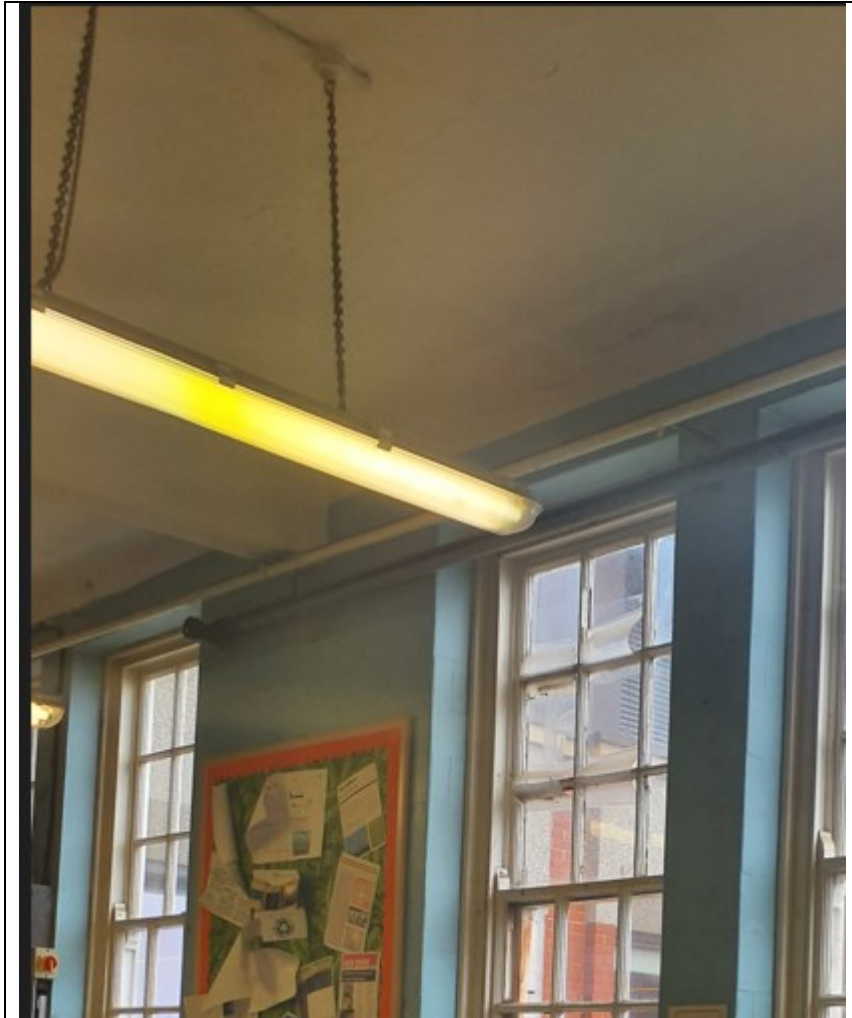


Image 11Fluoroscent Light Tube

8. Identified Materials Type and Estimated Quantities

Estimated quantities of the materials anticipated to be generated during the refurbishment process are provided in Table 10. The estimated volumes are based on the Site visit and do not consider the actual skip volumes that may result from the Site (i.e., does not account for bulking and the inevitable voids within the skip during disposal). Figure 7 and Figure 8 shows the percentage breakdown of waste identified during the Site visit.

It should be noted that the recovery potential provided within Table 10 is based on the best practices as suggested by Waste and Resource Action Programme (WRAP). Therefore, this should be used as a reference only. Whereas the % of materials to be reused or recycled in Table 12 provides the quantities the design team intend to use onsite.

Table 10 Estimated Quantities of Materials

Material	European Waste Catalogue Code (EWC)	Volume (m³)	% of Total Volume (m³)	Tonnes (t)	% of Total Tonnage (t)	Recovery Potential (%) (Best Practice) i.e. % diverted from landfill	Recovery Potential (i.e., m³ diverted from landfill)	Disposal to Landfill/ Energy from Waste (m³)	Recovery Potential (i.e., Tonnes diverted from landfill)	Disposal to Landfill/ Energy from Waste (Tonnes)
Concrete	17-01-01	6.90	9%	19.32	12%	100%	6.90	-	19.32	-
Bricks	17-01-02	59.27	79%	134.30	82%	100%	59.27	-	134.30	-
Metals	17-04-05	1.59	2%	4.28	3%	100%	1.59	-	4.28	-
Timber and Timber Products	17-02-01	4.73	6%	3.31	2%	95%	4.49	0.24	3.14	0.17
Plasterboard (other gypsum containing materials)	17-08-02	2.28	3%	1.37	1%	95%	2.16	0.11	1.30	0.07
Glass	17-02-02	0.14	0.2%	0.37	0.2%	100%	0.14	-	0.37	-
Asphalt (containing bituminous material)	17-03-02	0.35	0.5%	0.38	0.2%	95%	0.33	0.02	0.36	0.02
Total		75.25	100%	163.32	100%		74.88	0.37	163.07	0.25

The % might not add up to 100% due to rounding

The numbers may not add up due to rounding

Figure 7 Approximate Quantities of Materials (%) by Volume

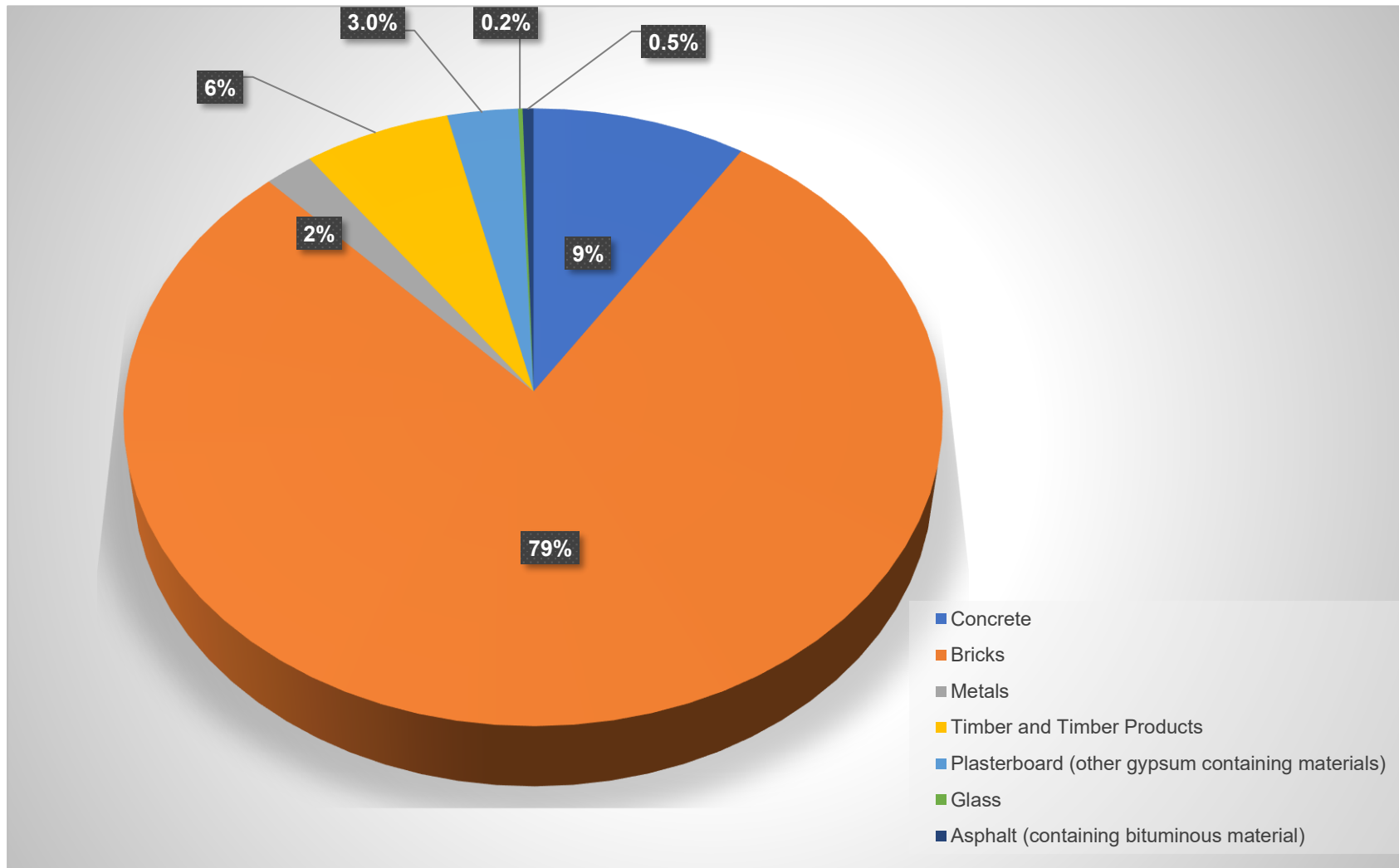
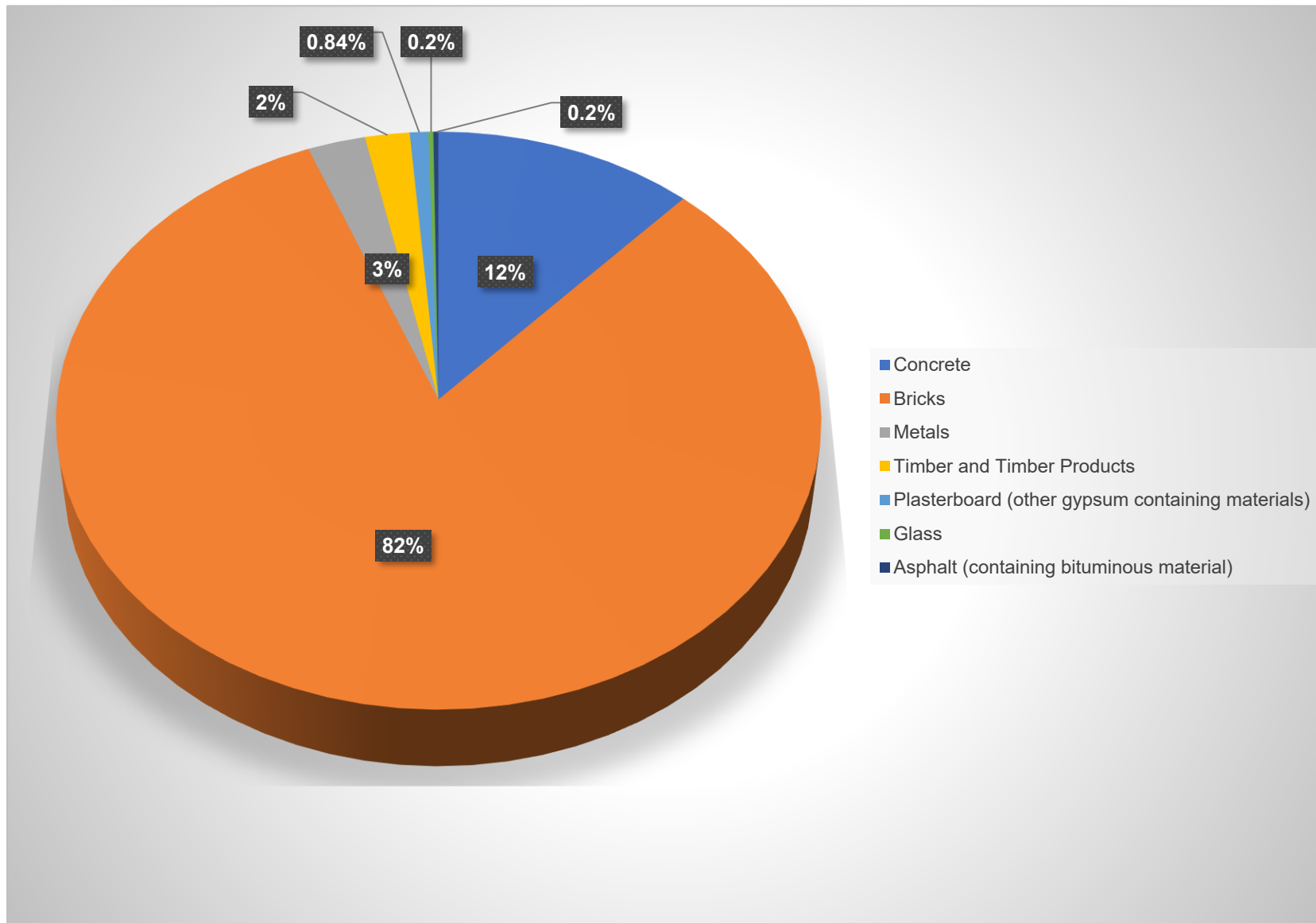


Figure 8 Approximate Quantities of Materials by Weight (tonnage)



It can be noted from Table 10, that approximately 99% of the demolition and refurbishment waste can be recovered.

9. Waste Management Opportunities

A workshop was held with the design team (including but not limited to the structural engineers, landscaping architects and the design team) on 7 June 2022. The purpose of the workshop was to discuss the condition of the existing buildings to understand whether these buildings or any components can be retained. Within this workshop information on the materials identified was also discussed along with the potential of reusing and recycling these materials during the redevelopment of the Proposed Development.

The key provided in Table 11 has been adopted to show the opportunity of each waste/material identified.

Table 11 Opportunities Key

Key	Description
	Reduction in landfill costs
	Reduced environmental impact
	Less carbon/energy intensive
	Preserve natural resources
	Corporate social responsibility

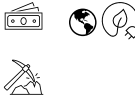
Based on the discussions undertaken during the workshop, the potential opportunities for reusing and recycling the waste/material generated on-Site as well as the benefits of such initiatives have been identified in Table 12.

There are several opportunities to apply the waste hierarchy and Circular Economy to the buildings being refurbished and examples of local reprocessing and recycling facilities have been identified, where appropriate, in this Report. However, these facilities suggested in Table 12 are not an exhaustive list. The final choices of the recommendations made within this Report will need to be determined by the demolition contractor, based on the costs and benefits of the options presented. There are clear benefits to implementing waste reduction initiatives, these include:

- Reducing costs associated with disposal,
- Realising financial benefits by diverting waste from landfill, and
- Environmental and social benefits of implementing the waste hierarchy and Circular Economy.

Table 12 Waste Reduction Opportunities

Material Type	Circularity Rating	Suggestion					Opportunity	Constraints	Example Reprocessors
		on-Site reuse	on-Site recycling	off-Site reuse	off-Site recycling	off-Site Disposal			
Concrete	★	Due to the small quantities of concrete, at this stage it is assumed that 0% (by volume) of concrete will be reused on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be reused on-Site.	It is envisioned that approximately 0% by volume of the concrete material will be crushed on site and tested, for new slab, road, and path bases.	0% (by volume) will be reused off-Site	Based on the condition and quality (subject to testing) - 100% (by volume) of the remaining material would be recycled off-Site	At this stage it is assumed that 100% of this material would be recycled and therefore not be subject to disposal to landfill.		Additional space to keep materials segregated.	A list of recycling companies that collect crushed aggregate are provided in Table 13.
Bricks	★ ★	It is envisioned that approximately 25% by volume i.e., approximately 15 m³ of the bricks will be reused on site for garden walls and concealed walls.	At this stage it is assumed that 0% (by volume) of bricks will be recycled on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be recycled for use on-Site.	Based on the condition and quality (subject to testing) approximate 50% (by volume) of the remaining material would be – Reuse off-Site.	Based on the condition and quality (subject to testing) approximate 50% (by volume) of the remaining material would be recycled off-Site.	At this stage it is assumed that 100% of this material would either be re-used or recycled and therefore not be subject to disposal to landfill.		Additional space to keep materials segregated to then transport off-Site for crushing. Additional time in the demolition programme will have to be allowed and it is likely to incur increased demolition costs, however, there will be a resale value for the bricks, and it would considerable reduce the amount of material that is downcycled for secondary aggregates.	Globe Chain is a reuse marketplace that connects companies with charities, Small and Medium size Enterprises (SME) and individuals to redistribute unneeded construction material while collating social, environmental and economic data GlobeChain https://www.globchain.co.uk Salvage opportunities for bricks: https://www.salvoweb.com

Metals		At this stage it is assumed that 0% (by volume) of this material will be reused on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be reused on-Site.	At this stage it is assumed that 0% (by volume) of this material will be recycled on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be recycled for use on-Site.	0% (by volume) will be reused off-Site	Based on the condition and quality (subject to testing) - 100% (by volume) of the material would be recycled off-Site	At this stage it is assumed that 100% of this material would be recycled and therefore not be subject to disposal to landfill.		Additional space to keep materials segregated.	EMR Scrap Metal http://www.emrgroup.com/
Timber and Timber Products		It is envisioned that approximately 10% by volume (i.e., approximately 0.5 m ³ of this material will be reused on-Site.	At this stage it is assumed that 0% (by volume) of this material will be recycled on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be recycled for use on-Site.	0% (by volume) will be reused off-Site	Based on the condition and quality (subject to testing) - 100% (by volume) of the remaining material would be recycled off-Site	At this stage it is assumed that 100% of this material would be reused or recycled and therefore not be subject to disposal to landfill.		Additional space to keep materials segregated. .	Globechain https://www.globchain.co.uk Community Wood Recycling can reclaim wood and reuse it: https://www.communitywoodrecycling.org.uk/
Plasterboard (other gypsum containing materials)	 	At this stage it is assumed that 0% (by volume) of this material will be reused on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be reused on-Site.	At this stage it is assumed that 0% (by volume) of this material will be recycled on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be recycled for use on-Site.	0% (by volume) will be reused off-Site	Based on the condition and quality (subject to testing) - 100% (by volume) of the material would be recycled off-Site	Based on the condition and quality (subject to testing) – some material may be disposed off-Site		Additional space to keep materials segregated. .	British – Gypsum https://www.britisht-gypsum.com/about-us/csr/environmental-challenges/plasterboard-recycling

									Junk Removal London provides collection services for plasterboard: http://junkremovalsolutions.com/plasterboard-collection/
Glass	★	At this stage it is assumed that 0% (by volume) of glass will be reused on-Site.	At this stage it is assumed that 0% (by volume) of this material will be recycled on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be recycled for use on-Site.	0% (by volume) will be reused off-Site	Based on the condition and quality (subject to testing) - 100% (by volume) would be recycled off-Site	At this stage it is assumed that 100% of this material would be recycled and therefore not be subject to disposal to landfill.	  	Additional space to keep materials segregated. .	May Glass Recycling: https://www.mayglassrecycling.co.uk/services Nationwide Waste Services: https://www.nationwidewasteservices.co.uk/recycling/ Guardian Glass https://www.guardianglass.com/gb/en Pilkington Glass Manufacturing https://www.pilkington.com/
Asphalt (containing bituminous material)	★	At this stage it is assumed that 0% (by volume) of asphalt will be reused on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be reused on-Site.	It is envisioned that approximately 0% by volume asphalt material will be crushed on site and tested, for new slab, road, and path bases.	0% (by volume) will be reused off-Site	Based on the condition and quality (subject to testing) - 100% (by volume) of the remaining material would be recycled off-Site	At this stage it is assumed that 100% of this material would be recycled (on and off-Site) and therefore not be subject to disposal to landfill.	  	Additional space to keep materials segregated.	A list of recycling companies that collect crushed aggregate are provided in Table 13

Lighting	 	At this stage it is assumed that 0% (by weight) of lighting will be reused on-Site.	At this stage it is assumed that 0% (by weight) of concrete will be recycled on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be recycled for use on-Site.	At this stage it is assumed that 0% (by weight) of metal will be recycled on-Site.	Only low energy light bulbs and fluorescent light tubes are recyclable. Incandescent (old-fashioned) light bulbs cannot be recycled. Therefore, 100% (by weight) would be recycled off-Site	Based on the condition and quality (subject to testing) – some material may be disposed off-Site	  	Additional disposal costs.	Recolight: https://www.recolight.co.uk/ BPR Group https://www.bprgroup.co.uk/ Globechain https://www.globechain.co.uk Salvo https://www.salvoweb.com/
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Waste contractors in the area that collect multiple construction streams (segregated) are shown in Table 13. This list is not intended to be comprehensive, and waste generators will need to meet their legal duty of care by making sure that any waste produced is managed responsibly and only given to businesses authorised to take it. The presence of a company on the list below does not remove the requirement for waste generators to carry out their own duty of care checks.

Table 13 Waste Companies in London, which collect multiple Construction, Demolition and Excavation (CD&E) Waste Streams

Waste Company
Capital Waste www.Capwaste.co.uk
London Waste Removal Service www.Londonwasteremovalservic.co.uk/demolition
O'Donovan Waste Disposal https://www.odonovan.co.uk/
Junk Bunk Limited https://junkbunk.co.uk/
Swift Waste Management https://swiftwaste.co.uk/
Powerday https://powerday.co.uk/
Bywaters https://www.bywaters.co.uk/

10. General Guidance for Management of Demolition Materials and Waste

This pre-demolition and pre-redevelopment audit have been conducted to allow material and waste management to be considered in the early stage of the project. The Client, Architect and Demolition Contractor should be involved in the material and waste management process from the offset. This will allow for effective planning to realise the value of materials on-Site and their subsequent management (i.e., consideration of the waste hierarchy).

The reuse of material on-Site or on a nearby similar project is the ideal option from an environmental and economic perspective. The Client and Architect are best positioned to consider these options and enable these initiatives. Doing so also often results in reduced transportation, reducing embodied CO₂ emissions and costs associated with material management on the project. To maximise this opportunity, it is advised that the following are considered:

- Opportunities for reuse on-Site,
- Safe storage of these items on-Site, in a separate storage area if feasible,
- Opportunities for reuse by the Client on other projects,
- Opportunities for reuse on local/similar projects,
- Advertisement of specific items on websites (e.g., www.salvo.co.uk),
- Contacting local architectural salvage merchants about specific items, and
- Selling or gifting items locally.

Waste arisings during refurbishment works should be continually monitored to provide a thorough understanding of the types and amounts of waste coming from the Site. This data collection will help with the continual improvement of material and waste management on-Site. Data collection can also be used to help set more demanding waste segregation targets for future demolition and refurbishment projects.

11. Recommendations and Next Steps

The type and quantities of material present on-Site have been identified, and opportunities to apply the principles of waste hierarchy and Circular Economy applied to different material types, with local reprocessing and recycling facilities identified. Ahead of construction works taking place, the following recommendations and next steps are suggested:

- Lifecycle analysis of new construction materials for the Proposed Development, in conjunction with the reuse/recycling of materials as identified in this Report.
- Embed the recommendations within this Report in the design process at pre-tender stage so the measures in relation to reuse and recycling targets are included in the awarded construction contract.
- Engagement with construction material suppliers to explore opportunities for takeback schemes.
- Where takeback schemes with suppliers are not possible, it is recommended that early engagement with reprocessing and recycling companies take place, to best capture recyclable materials and avoid downcycling.
- It is recommended that the materials identified within this Report are incorporated into a Site Waste Management Plan (SWMP)/Construction Resource Management Plan (CRMP) for effective management of waste. This is considered good practice on all construction projects and is a key step in facilitating diversion from landfill.
- Identify storage areas on-Site as appropriate for the types and quantities of waste anticipated to be produced during construction works. These areas should allow for the successful segregation of waste, as appropriate to avoid contamination of the different waste and material streams.
- All staff should have appropriate levels of training to enable the segregation of waste is achieved. Waste management information should be included within the Site induction for all personnel. It is recommended that a Reporting procedure SWMP/CRMP is put in place to catalogue the materials/waste produced, which is regularly updated. This will allow for the appropriate organisation of the transport for materials/waste on-Site and prevent stock piling.
- Further to this, it is recommended that a Waste Champion is nominated by the principal contractor to facilitate management of the SWMP/CRMP. This role would also aim to allow that the waste hierarchy is always considered, with the emphasis being on reducing, reusing, and recycling before landfill disposal is considered.

Once the principal contractor is commissioned to undertake the construction works, the following should be considered:

- The principal contractor should engage all contractors in the process of maximising high-grade reuse and recycling opportunities, and
- The principal contractor should refer to the Pre-Demolition and Pre-Redevelopment Audit Report in the SWMP/CRMP.

12. Further Information

In addition to the resources detailed in Table 12, further information pertaining to the sustainable waste management for construction projects can be found through the following sources:

- Bioregional, Reclaimed Buildings Product Guide:
<https://www.bioregional.com/resources/reclaimed-building-products-guide>

13. References

- Ref. 1 Greater London Authority (GLA), (2022); London Plan Guidance – Circular Economy Statements
- Ref. 2 GLA, (2021); The London Plan – The Spatial Development Strategy for Greater London