PRE-DEMOLITION AUDIT

238-240 Kilburn High Street

Produced by XCO2 for Osel Architects

June 2024

XCO2
56 Kingsway Place
Sans Walk
London EC1R 0LU

+44 (0)20 7700 1000
mail@xco2.com
xco2.com

CONTENTS

	01					
Remarks	Draft					
Prepared by	AM					
Checked by	LK/SG					
Authorised by	SG					
Date	05/06/2024					
Project reference	10.068					

INTRODUCTION

A Pre-demolition Audit has been undertaken for the proposed development at 238-240 Kilburn High Street. The site is within the London Borough of Camden. This assessment has been carried out in accordance with the latest published *London Plan Circular Economy Statement guidance (March 2022). .*

Pre-Demolition Audits are an essential tool for understanding the types and quantities of existing materials and structures present on a development site. They set out a detailed inventory of existing materials that will need to be managed upon demolition/deconstruction, while offering routes for the reuse, repurposing, or recycling of these components, either on-site or off-site, to meet London Plan demolition waste management requirements.

This Pre-Demolition Audit has been undertaken at concept design stage for 238-240 Kilburn High Street development, to be submitted as supporting evidence for the Circular Economy (CE) statement and read in conjunction with the pre-redevelopment audit.

SITE & PROPOSAL

The site is located within the London Borough of Camden.

The proposals include demolition of the exisiting 2 storey commercial building at 238 Kilburn High Road and erection of a new four storey with a recessed rooftop mixed use development with Class E accommodation at ground floor and residential units above linked to the exisiting building at 240 Kilburn High Rd.

Though the exisiting building is occupied by a functioning commercial unit, it is observed that the site is at a prominent corner location and is not used.

The proposed building with have access from Kilburn High Road and Grangeway. The residential accommodation on the upper levels comprises a total of nine units of which five are new and the remaining four are upgraded and enlarged exisiting units if the adjacent buildings. All Utility premises are located at the rear of the building.

The proposed demolition of the exisiting building and the provision of a commercial unit with accommodation above offer a better site usage whilst retaining the exisiting use.

The approximate location and boundary of the application site is shown in Figure 1 on the page overleaf.

Figure 1: Approximate location of application site 238 Kilburn High Road

POLICY FRAMEWORK

This WLC Assessment responds to the relevant WLC Policies of the London Plan. Although it is not GLA Referable, the project follows the appropriate methodologies as established in the London Plan Guidance for Whole Life-Cycle Carbon Assessments (March 2022). The most relevant applicable embodied carbon policies in the context of the proposed development are presented below.

THE LONDON PLAN (2021)

The London Plan (2021) published 2nd March 2021 sets out the Mayor's overarching strategic spatial development strategy for greater London and underpins the planning framework from 2019 up to 2041. This document replaced the London Plan 2016.

The London Plan has a strong sustainability focus with many policies addressing the concern to deliver a sustainable and zero carbon London, particularly addressed in chapter 9 - Sustainable Infrastructure.

The following policies, related to embodied carbon are of relevance for the proposed development:

POLICY SI 7 REDUCING WASTE AND SUPPORTING THE CIRCULAR ECONOMY

The new London Plan has introduced several new policy requirements that consider circular economy principles.

Policy D3 'Optimising site capacity through the design led approach' and Policy SI7 'Reducing waste and supporting the Circular Economy' set clear policy objectives to:

- Create high quality buildings that consider practicality of use, flexibility, safety and building lifespan;
- Encourage the use of appropriate construction methods and robust materials;

- Take into account the principles of the circular economy and aim for high sustainability standards;
- Ensure that products and materials are retained at their highest value for as long as possible;
- Improve resource efficiency;
- Minimise waste (both during construction and building operation); and
- Meet or exceed the following targets:
    - Zero biodegradable/recyclable waste to landfill by 2026;
    - Municipal waste recycling target of 65% by 2030;
    - Reuse/recycling or recovery of 95% of construction and demolition waste;
    - The beneficial use of at least 95 per cent of excavation waste.

Policy SI7 requires developments that are referable to the Mayor of London to submit a Circular Economy Statement as part of a planning application; it states:

Referable applications should promote circular economy outcomes and aim to be net zero-waste. A Circular Economy Statement should be submitted, to demonstrate:

- How all materials arising from demolition and remediation works will be re-used and/or recycled;
- How the proposal's design and construction will reduce material demands and enable building materials, components and products to be disassembled and re-used at the end of their useful life;
- Opportunities for managing as much waste as possible on site;
- Adequate and easily accessible storage space and collection systems to support recycling and re-use;
- How much waste the proposal is expected to generate, and how and where the waste will be managed in accordance with the waste hierarchy;
- How performance will be monitored and reported.

Policy SI7 encourages London boroughs to set their own lower local thresholds for Circular Economy Statements.

The London Plan states that the decision tree shown in figure 2 'should be followed to inform the design process for the development from the outset. It should be informed by the **pre-redevelopment and pre-demolition audits** where possible'.

AIMS AND OBJECTIVES

This report aims to address the requirements for pre-demolition audits outlined by the previous relevant policies, in particular including;

- Explanation as to why existing buildings are being demolished
- Summary of the key existing materials and components present on site, estimations of quantities and a calculation of the associated embodied carbon
- Assessment of whether the existing materials and components are suitable for reclamation and recycling
- Outlining opportunities for reuse and recycling within the proposed development or off-site

This report will support the project's Circular Economy Statement, Whole Lifecycle Carbon Assessment, and Sustainability Statement.

The information presented in the report is based on a site visit undertaken by XCO2 on 2nd May 2024, alongside survey information supplied by the architect of the proposed development.

In addition to the above, the report will provide guidance on the following aspects;

- The amount of demolition waste
- A list of local material recycling and reclamation management facilities per material type
- Target reuse and reclamation rates in line with GLA requirements
- Ways in which the existing materials could be reused and repurposed onsite.

SCOPE

The following are requirements to be included within a pre-demolition audit:

- Photos of internal and external areas
- Existing and proposed site plans
- Justification for demolition and assessment of carbon impacts

- Inventory of key existing components and materials present onsite.
- Drawings showing extent of proposed demolition and whether any parts are being considered for retention.
- Opportunities for reuse and recycling either within the proposed development or off-site nearby/further afield
- Recommendations for recovering the value of existing building elements/materials.
- Predicted quantity of demolition waste
- Schedule of practical and realistic providers who can act as brokers for each of the reclaimed items.
- Target reuse and reclamation rates.

ACCOMPANYING REPORTS

This report accompanies, and follows on from, the Circular Economy Statement, in which the potential for the retention of the existing buildings for incorporation in the new proposals was explored. Other relevant reports submitted as part of the planning application include the Whole Life Carbon Assessment, for which this pre-demolition audit forms supporting evidence.

PROJECT TEAM

- Client: AHK Estates Ltd
- Architect: Osel Architecture Ltd
- MEP Consultant: Integration UK

PROPOSED DEVELOPMENT

The proposed development included the erection of a new four storey building with a recessed rooftop mixed-use development with Class E accommodation at ground floor and residential units above linked to the exisiting building.

The proposed building with have access from Kilburn High Road and Grangeway. The residential accommodation on the upper levels will compromise a total of nine units of which five are new and the remaining four are upgraded and enlarged exisiting units if the adjacent buildings. All Utility premises are located at the rear of the building.

The proposed demolition of the exisiting building and the provision of a commercial unit with accommodation above offer a better site usage whilst retaining the exisiting use.

EXISTING BUILDING

The existing building at 238 Kilburn High Road is a part – one, part – two storey commercial building, housing a restaurant on the eastern side of Kilburn High Road. However, the first floor remains largely unoccupied due to the limited number of dine-in customers. The surrounding taller buildings indicate that the site is not being fully utilised.

The structure is a combination of steel frame and load bearing masonry, supported on shallow pad foundations. It is understood that the building was extended at ground floor level in 1985 and further extension works at the first floor level were carried out in 1987. The existing facade at ground floor level is mainly occupied by a large, glazed shopfront unobstructed from any structural elements.

Figure 2: Existing ground floor and first floor plan, 238 Kilburn High Road

Figure 3: Existing building, 238 Kilburn High Road

METHODOLOGY

The methodology followed in preparing this report is in line with the Royal Institute of Chartered Surveyors (RICS) professional statement (PS) and London Plan Guidance on Whole Life-cycle Carbon Assessments for undertaking detailed carbon assessments. The RICS Whole life carbon assessment for the built environment (2017), follows the European standard EN 15978.

This report summarises the actions taken during Stage 2 (Concept Design). The applicant recognises that the Whole Life-cycle Carbon calculations presented in this report will need to be revisited and if appointed, amended at post-construction stage (upon commencement of RIBA Stage 6).

AUDIT PROCESS

EXISTING DRAWINGS

An initial online search for existing information was undertaken, looking for planning applications on the London Borough of London Borough of Camden planning portal. The following entries were found relating to the existing buildings on the site:

518/A – An entry for changing the fascia sign which confirms that the commercial unit has been in use since at least 1972.

8500008 – An entry was found for a ground floor extension to the restaurant and a new shopfront in 1985. This indicates the timeframe for the initial extension that can be seen on the exisiting drawings.

8700308 - An entry was found for a first floor rear extension from 1987, making it 37 years old.

No entries could be found for the construction of the original building so the age could not be verified.

Osel Architects provided us with the following information prior to the site inspection:-

- Demolition Justification Statement (Feb 2024)
- Design & Access Statement (September 2023)
- Exisiting Drawings
    - EXE001
    - EXE002
    - EXE003
    - EXP000
    - EXP001
    - EXP002
    - EXP003
    - EXP004
    - EXS001
    - EXS002

SITE VISIT

A site visit was undertaken on 02/05/2024 by Alice McDonald and Ajjay Dhesi, who were given access to most areas of the site. Some of the rooms on the first floor were locked.

The results of the audit have been reviewed by Lewis Kelly who has appropriate knowledge of building construction, materials and waste streams through experience as a built environment professional, as required by London Plan Guidance. No demolition contractor nor main contractor had been appointed at the time of undertaking the site visit.

REUSE AND REFURBISHMENT POTENTIAL

Prior to this assessment, the quality and condition of existing structures and materials were assessed with a view to determining the potential for reuse and refurbishment of the building. This assessment formed the basis for a separate demolition justification statement and is not included within this report

IDENTIFICATION AND QUANTIFICATION OF KEY BUILDING MATERIALS AND COMPONENTS

As the key strategy proposed is to demolish/deconstruct the existing structures, this report presents a summary of the key materials present in the existing building and across the site (see page 16), with a full documentation of materials set out in Appendix B.

REUSE AND RECYCLING OF KEY BUILDING MATERIALS AND COMPONENTS

The following steps were implemented to encourage reuse and recycling of key materials and building components:

- Recommend 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.
- Identify overall recycling targets.
- Identify reuse targets where appropriate.
- Identify overall landfill diversion rate for all key materials.

TARGET SETTING

Targets are set for reuse and reclamation, and diversion of demolition waste from landfill, as outlined on page 25.

LIMITATIONS OF THE AUDIT

There were some access limitations to the site, and so it was possible not possible to survey all areas internally. These spaces included two first floor offices and a small corridor on the ground floor. For these spaces, assumptions have had to be made regarding the structure of the building, the buildups of the walls, and the foundation design, as well as the sub-layers within the external areas.

Certain areas and aspects of the site couldn't be accurately measured, for example due to inability to access roof areas and so best assumptions have been made based on other measurements and calculations. Additionally, it was not possible to establish some of the external wall, ground floor and roof build ups so assumptions have been made based upon the assumed age of the dwelling.

The audit did not include an asbestos survey, nor did it include assessment of ground conditions / soil assessment.

WASTE HIERARCHY

Defra's 'Waste Hierarchy' (fig.5) assigns priorities to different waste management options according to their beneficial impact on reducing carbon. Following this hierarchy, this report recommends direct reuse as much as possible, followed by recycling options for non-hazardous materials. Disposal of waste in landfill (or incineration without energy recovery) would always only be a last resort option once other more beneficial pathways have been fully explored.

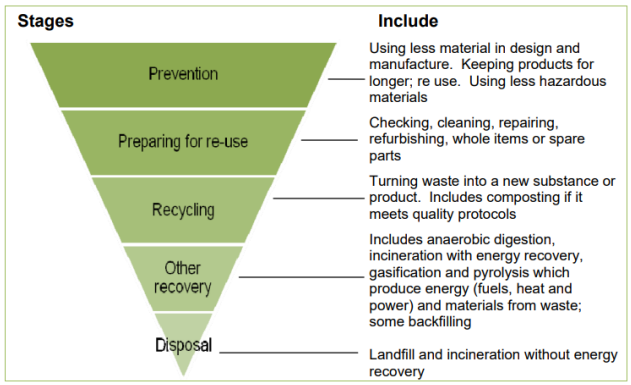


Figure 4 – Waste Hierarchy, DEFRA

KEY WASTE GROUPS

Waste groups marked in red – further assessment required to verify.

Table 1 – Key waste groups present with European Waste Codes (EWC)

EWC: 16 02	Waste from electrical and electronic equipment
16 02 09	Transformers and capacitors containing PCBs
16 02 10	Discarded equipment containing or contaminated by PCBs other than those mentioned in 16 02 09
16 02 11	Discarded equipment containing chlorofluorocarbons, HCFC, HFC
16 02 12	Discarded equipment containing free asbestos
16 02 13	Discarded equipment containing hazardous components other than those mentioned in 16 02 09 to 16 02
16 02 14	Discarded equipment other than those mentioned in 16 02 09 to 16 02 13
EWC: 17 01	**Concrete, bricks, tiles and ceramics**
17 01 01	Concrete
17 01 02	Bricks
17 01 03	Tiles and Ceramics
17 01 06	Mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing hazardous substances
17 01 07	Mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06
EWC: 17 02	**Wood, glass, plastic**
17 02 01	Wood
17 02 02	Glass
17 02 03	Plastic
17 02 04	Glass, plastic and wood containing or contaminated with hazardous substances
EWC: 17 03	**Bituminous mixtures, coal tar and tarred products**
17 03 01	Bituminous mixtures containing coal tar
17 03 02	Bituminous mixtures other than those mentioned in 17 03 01
17 03 03	Coal tar and tarred products
EWC: 17 04	**Metals (including their alloys**
17 04 01	Copper, bronze, brass
17 04 02	Aluminium
17 04 03	Lead
17 04 04	Zinc
17 04 05	Iron and steel
17 04 06	Tin
17 04 07	Mixed metals
17 04 09	Metal waste contaminated with hazardous substances
17 04 10	Cables containing oil, coal tar and other hazardous substances
17 04 11	Cables other than those mentioned in 17 04 10
EWC: 17 05	**Soil ((including excavated soil from contaminated sites), stones and dredging spoil**
17 05 03	Soil and stones containing hazardous substances
17 05 04	Soil and stones other than those mentioned in 17 05 03
17 05 05	Dredging spoil containing hazardous substances
17 05 06	Dredging spoil other than those mentioned in 17 05 05
17 05 07	Track ballast containing hazardous substances

17 05 08	Track ballast other than those mentioned in 17 05 07
EWC: 17 05	**Insulation materials and asbestos-containing construction materials, stones and dredging spoil**
17 06 01	Insulation materials containing asbestos
17 06 03	Other insulation materials consisting of or containing hazardous substances
17 06 04	Insulation materials other than those mentioned in 17 06 01 and 17 06 03
17 06 05	Construction materials containing asbestos
EWC: 17 06	**Gypsum based construction materials.**
17 08 01	Gypsum-based construction materials contaminated with hazardous substances
17 08 02	Gypsum-based construction materials other than those mentioned in 17 08 01

EWC: 17 09	**Other construction and demolition wastes construction materialssites), stones and dredging spoil**
17 09 01	Construction and demolition wastes containing mercury
17 09 02	Construction and demolition wastes containing PCB (for example PCB-containing sealants, PCB-containing resin-based floorings, PCB-containing sealed glazing units, PCB-containing capacitors)
17 09 03	Other construction and demolition wastes (including mixed wastes) containing hazardous substances
17 09 04	Mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03
EWC: 19 12 04	**Plastic and rubber**
19 12 04	Plastic and rubber and is classed as a Absolute Non-hazardous code

JUSTIFICATION FOR DEMOLITION

CLIENT BRIEF

The client proposes to improve the usage of this site through a process of densification, thereby proposing a new four storey building with a recessed rooftop mixed-use development with Class E accommodation at ground floor and five additional residential units.

The proposed demolition of the exisiting building and the provision of a commercial unit with accommodation over, offer a better site usage whilst retaining the exisiting use.

FINDINGS OF DEMOLITION JUSTIFICATION STATEMENT

A Demolition Justification Statement was produced by Osel Architects for the planning application. For this report, an extensive analysis of the site was conducted to evaluate all the development options. The GLA's Decision Tree for design approaches to exisiting buildings is shown in Figure 7 below and this is the approach follows the circular economy principals outlined by the GLA. XCO2 has also considered development options when visiting site. The key findings are as follows:

1. Based on XCO2's site audit, the building is nearing the end of its service life (at least 52 years).

2. Much of the roof and the masonry walls are in poor condition and would require replacement. Additionally the first floor timber windows are rotten. Certain services and internal finishes would need replacement.

3. The construction appears to be of poor energy efficiency and so a deep retrofit would be required with external insulation, replacement of all glazing and external doors, and solutions to the thermal bridging of the floor slab.

4. In terms of meeting the client brief, it would not be possible to convert or expand the existing building into a five storey block, as neither the structure nor the foundations are deemed adequate to accommodate the loads of the proposed building.

RETAIN AND RETROFIT

It was not deemed possible to retain and retrofit the existing building while also meeting the client's brief on the site, as the footprint and density is smaller than is required for the proposed development. Retention would mean that the number of apartments required by the brief could not be met on the rest of the site.

PARTIAL RETENTION AND REFURBISHMENT

The existing building structure and foundations are not judged to be structurally capable of supporting the vertical extension required. Given the structural inadequacy, there is no clear way that any of the structure could be retained in part to be integrated into the proposed building.

DISASSEMBLE AND REUSE

The possibility of disassembling and reusing the entire structure or parts of it, such as the foundations alone, has been ruled out due to the building's reinforced concrete construction. Additionally, the exisiting foundations are insufficient to support the proposed development. Additionally, components like mechanical systems and window units are outdated, rendering their reuse unfeasible.

However, opportunities for disassembly have been identified including reusing structural steel components (to be confirmed) and bricks. Some findings might also be suitable for donation to charities utilising platforms like Globechain. These opportunities will be explored as the design develops and when a demolition contractor has been appointed.

DEMOLISH AND RECYCLE

Demolish and recycle has been established as the most feasible design approach for the project and with material recovery being prioritised within this approach. A number of elements cannot be disassembled easily, including the concrete floor slab and foundations, associated steel reinforcement and masonry items. These could be recycled following demolition of the building.

WHOLE LIFE CARBON (WLCA)

A Whole Life Carbon Assessment has been undertaken for the proposed development at 238-240 Kilburn High Road. Utilising the same software as was used in that assessment (ETool), this report has calculated the embodied carbon associated with the existing materials.

Measuring the production emissions only (Modules A1-A3) these figures help understand the carbon emissions that could be saved by reusing and recycling the materials either on-site or off-site, captured within Module D, or 'Benefits beyond the System Boundary'. The savings from this reuse and recycling would be captured within Modules A1-A3 of the development utilising them.

As it wasn't possible to reuse the existing building in its current form within the new building, no embodied carbon optioneering was undertaking with a view to integrate this into the proposed development.

Figure 4: Decision tree for design approaches for existing structures/buildings

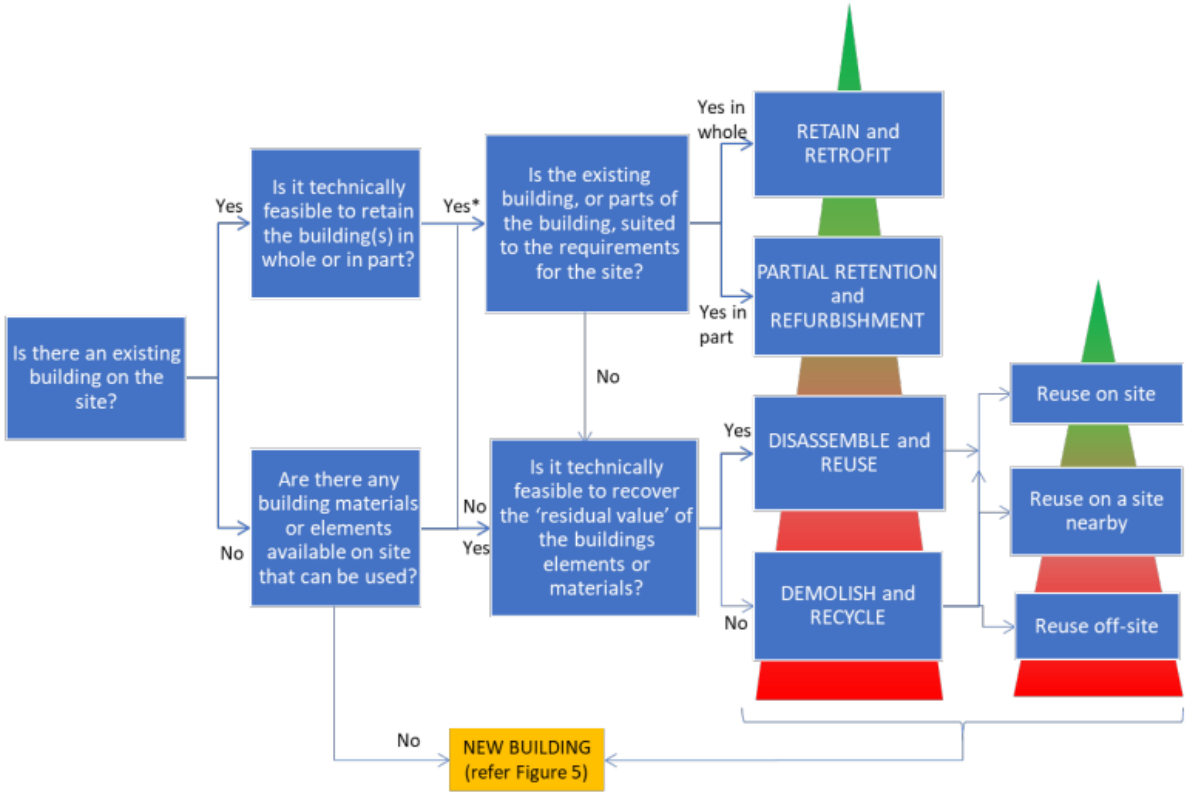


Figure 5: Decision tree for design approaches for existing structures / buildings, GLA

IDENTIFICATION AND QUANTIFICATION OF KEY MATERIALS

KEY MATERIALS

At the time of the site survey the building was in use and still furnished, including a working commercial kitchen, restaurant area with chairs and tables. It is expected that all of this, with the exception of the fitted seating, will be removed prior to demolition and so it doesn't feature in the calculation as demolition material.

The materials onsite were quantified via the visual survey, with aid from the existing floor plans, and a measuring tape and laser measure onsite to use wherever possible to more accurately capture lengths and sizes. The materials were then organised into a 'bill of quantities' style spreadsheet to record the estimated volume of each type of material. The key materials are as follows:

BRICKWORK

The external walls of the main building are brick clad in render. The overall quantity of brickwork is estimated to be 160m^2.

Figure 6: External brickwork covered in render on Southern Elevation

Figure 7: Close up on Exterior wall

CONCRETE BLOCKWORK

The external wall features an internal build-up composed of blockwork with a decorative plasterwork.

Internal walls of the building are all formed of 100mm thick single leaf concrete blockwork. These have varying finish treatments, including tiled and painted in the bathrooms, and plastered and painted/wall paper finish elsewhere.

The overall quantity of blockwork is estimated to be 319.1 m^2.

Figure 8: Concrete blockwork on East Elevation

CONCRETE FOUNDATIONS & SLAB

Due to the non-intrusive nature of the survey, it wasn't possible to form trial pits to investigate the type of foundations used. However, the architect has advised that it is likely that shallow pad foundations were used. These have been estimated to total 80.3^3.

Similarly, it wasn't possible to establish the construction of the first-floor or roof slabs. It has been assumed that these would be concrete slabs.

Figure 9: Ground floor concrete slab visible on the exterior of the building.

STEEL FRAME

Due to the non-intrusive nature of the survey, it is difficult to know the exactly structural frame but the architect has advised in the Demolition Justification Statement expected that that the frame is made up of part steel reinforcement. The quantities for this have been estimates based on the total concrete and total 22875 kg.

BITUMEN ROOF

Bitumen roofing can be seen across the extent of the existing building estimates to be 165m^2.

Figure 10: Bitumen Roof

GLAZING

All the glazing on the ground floor is for the commercial unit and is aluminium framed and double glazed. The total area for this is 31.9m^2.

Figure 11: Ground floor commercial windows

On the first floor there are six windows on the West and South façade that are low quality, double glazed with a metal frame. The area of these windows totals 17.3m^2.

Additionally on the first floor there is 1 uPVC window and three timber framed windows on the East Elevation.

Figure 12: First floor metal framed windows

A total of fourteen windows are to be removed from the south façade of 240 Kilburn High Road to facilitate the vertical erection of the proposed development. These windows are all double-glazed uPVC windows, totalling 17.2m^2.

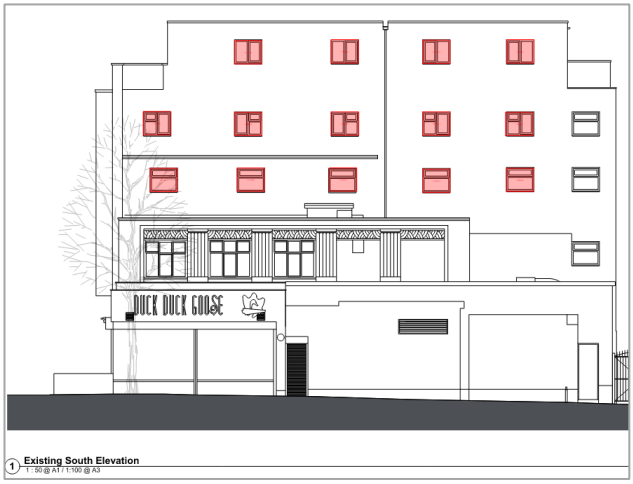


Figure 13: South Elevation of 240 Kilburn High Road. Windows being removed are highlighted in red.

STONE MASONRY

The first floor compromised mainly compromised of load bearing stone masonry. It is also anticipated that a number of the internal walls are also have a stone masonry build up. The total mount of stone masonry is estimated to be 201^2.

Figure 14: Stone Masonry on South Elevation

GYPSUM

Internal walls are plastered in a number of rooms, and the internal faces of the external walls are lined with plasterboard. The commercial kitchen and the bathrooms have suspended plasterboard ceilings.

TIMBER

There are three timber framed windows on the first floor WC's and timber trusses form part of the roof build up. There are also 17 solid timber internal doors and the back of house stairway is timber clad.

Figure 15: Timber door and timber clad walls

PREDICTED WASTE STREAMS

See Appendix C for the detailed predicted waste streams identified for the existing building and site.

EMBODIED CARBON OF KEY MATERIAL

The tool used for the assessment of embodied carbon of existing materials was eTool, which follows BS EN 15978, is IMPACT-compliant, BRE certified, and listed in the GLA Life-Cycle Carbon Assessments Guidance. Appendix 1 as an acceptable tool for undertaking whole-life-carbon assessments.

Table 1 Embodied carbon of estimated key materials (A1-A3)

Material	A1-A3 Embodied Carbon (tCO_2e)
Brickwork	13,708
Concrete blockwork	508
Steel	10,795
Concrete	16,411
Glass	610
Plasterboard	2,797
uPVC	1,224
Aluminium	2,263

MATERIALS IDENTIFIED FOR REUSE

Materials in Appendix C are colour coded green, orange and grey based on their suitability for reuse as summarised in Table 2 Classification definitions of potential for reuse and recycling – see Appendix C

Table 2 Classification definitions of potential for reuse and recycling – see Appendix C

Level	Definition
Reuse	Materials with potential for direct reuse without significant additional processing
Recycle	Materials with potential for recycling or manufacturing into new products. Suitable for components which may be damaged during disassembly process.
Landfill	Last resort disposal of materials into landfill sites. Only should be targeted for materials that cannot be recycled due to damage or toxicity.

UNKNOWN WASTE QUANTITIES

Due to the non-intrusive nature of the site survey, it was not possible to ascertain certain material quantities during the inspection, meaning that a number of assumptions had to be made, including the following;

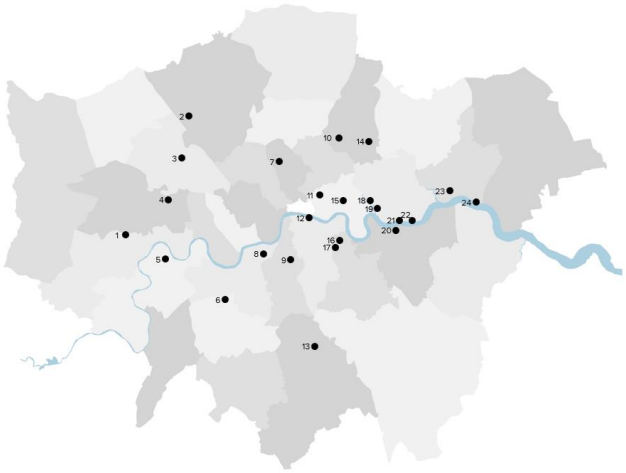
- Foundations – there were no foundation drawings available and it wasn't possible to excavate, thus high-level assumptions had to be made.
- Part Masonry / Part Steel structure – No drawings were available of the existing structural frame structural and so assumptions had to be made.
- Two first floor office areas were inaccessible so the finishes were assumed.
- Below-ground drainage

WASTE PROCESSING

The following sections identify local recycling and waste processing facilities that could be utilised to aid with the recycling of demolition waste on the project.

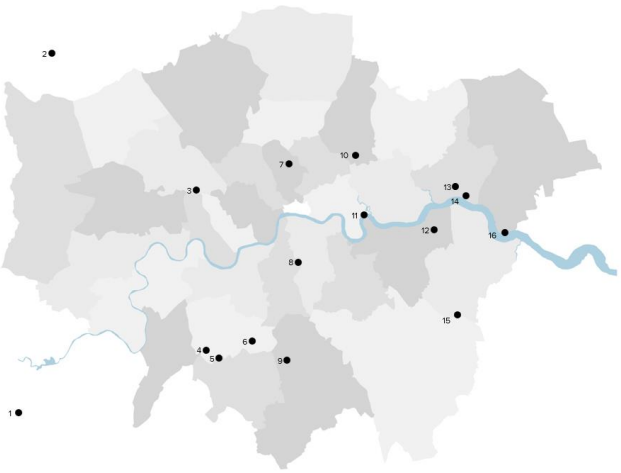
LOCAL MATERIAL RECOVERY FACILITIES

METAL



1. EMR Brentford 020 8847 2417
2. The Metal Recycling Group (Edgware) 020 8450 5445
3. EMR Neasden 020 8459 5141
4. Horn Lane Metals 020 8992 4609
5. Sullivans Scrap Metal Merchants 020 8654 8465
6. Powerday Wimbledon 020 8960 4646
7. Islington Hornsey Street Reuse and Recycling Centre* 020 7464 2225
8. EMR Wandsworth 020 7622 4498
9. Gordon Grove Metal Company 020 7737 3886
10. Argall Metal Recycling Ltd 020 8558 3223
11. Burdett Metals 020 7739 3951
12. Bermondsey Metals Recycling Ltd 020 7407 2999
13. Sullivans of Mortlake Scrap Metal 020 8878 3393
14. T & C Metal Recycling 020 8558 2720
15. Bow Metals Recycling Centre 020 8981 7642
16. Deptford Metals 020 8692 3755
17. Southwark Metals Ltd 020 7732 0001
18. R&N Metal Recycling 020 7473 5444
19. Royal Docks Metals 020 7476 0820
20. Copia Metals & Waste ltd 020 8293 0892
21. Connolley Metals Limited 020 3621 7644
22. The Metal Recycling Group 020 7511 7294
23. Suez Barking* 020 8594 3625
24. HKS The Metal Company 020 8984 1888

PLASTIC



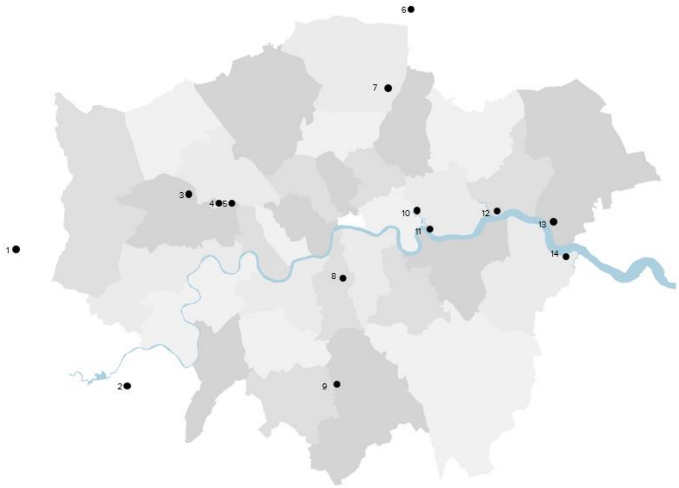
1. ENF Recycling* 07555155172
2. Anchor Recycling & Waste Management Ltd* 01923 940 691
3. Powerday Willesden* 020 8960 4646
4. SUEZ recycling and recovery UK (Morden)* 020 8329 1030
5. Garth Road Reuse and Recycling Centre* 020 8274 4902
6. City and suburban* 020 8642 4762
7. Islington Hornsey Street Reuse and Recycling Centre* 020 7464
8. 2225
9. Powerday Brixton* 020 8960 4646
10. Factory Lane Reuse and Recycling Centre* 020 8726 6200
11. Bywaters Waste Management Centre* 020 7001 6000
12. Tower Hamlets Re-use & Recycling Centre* 020 7364 5004

13. PlasRecycle Ltd 020 3327 2720
14. Titan Waste Solutions recycling 020 8432 2225
15. Veolia Dagenham 020 7812 5000
16. Maidstone Road Re-Use and Recycling Centre* 020 8303 7777

TIMBER

1. The Useful Wood Company 01483 714362
2. The Yard Recycling Centre 01895 239607
3. Townmead Road Re-use and Recycling Centre* 020 8876 3281
4. Western Road Reuse & Recycling Centre* 020 7464 2225
5. Islington Hornsey Street Reuse and Recycling Centret 020 7464 2225
6. Solo Wood Recycling 07444 729521
7. Forest Recycling Project 020 8539 3856
8. Riverside Timber Recycling Project 07874 207822
9. Enviroclear* 0800 038 8632

MIXED



1. Biffa plc Slough* 01753 580135
2. Biffa plc Walton on Thames* 02392 001330
3. Biffa plc Wembley* 0800 307307
4. Biffa plc* 0800 307307
5. Powerday Willesden* 020 8960 4646
6. Glassbusters 020 8450 5066
7. Biffa plc North London* 0800 307307
8. Powerday Brixton* 020 8960 4646
9. Factory Lane Reuse and Recycling Centre* 020 8726 6200
10. Bywaters* 020 7001 6000
11. GB Skips Ltd* 020 8501 0100
12. London Recycling Solutions* 020 8989 0449
13. May Glass Recycling 020 8524 5500
14. Veolia* 01708 632020

PROCESSING ROUTES

Current waste processing routes for each key waste group are identified throughout the next section. Landfill should be treated as a last resort option for waste disposal and should only be used for hazardous materials that can't be disposed of in any other way.

CONCRETE

Waste Processing Routes;

1. REUSE: Sections of concrete cut for direct reuse as paving, lintels, coping stones, gabion walls. Concrete panels and paving could be sold for reuse
2. CRUSH & RECYCLE; Break down concrete for use in aggregate and hardcore

In the majority of cases, concrete needs to be crushed to produce recycled concrete aggregates. This can then be reused within new concrete mixes, onsite or offsite. The breaking down of concrete will also facilitate the reclamation of steel reinforcement bars.

The priority of reuse would be to retain onsite and integrate into the new development. This could take the form of utilising the recycled aggregates within new concrete mixes, and given that the new building is planned to be built of a concrete frame, this would be a beneficial source of aggregate material.

Alternatively, the existing concrete could be cut into small sizes onsite and reused for down-cycled functionalities such as kerb stones, coping stones or lintels. This would rely upon there being space onsite for the crushing and processing of the concrete.

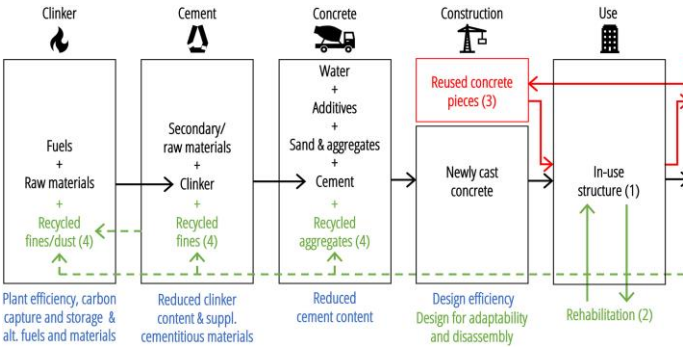


Figure 3: Concrete reuse and recycling pathways Küpfer et al., 2022.

Looking at the embodied carbon of transporting materials, it would likely not be beneficial to reuse the material onsite if it needs to be transported long distances for processing before being returned to site, as transporting concrete is very energy intensive.

Potential applications for recycled concrete onsite include;

- Aggregate for new concrete mixes
- Base course and binder course for ground works and external landscaping
- Pipe bedding
- Coping stones and lintels
- Embankments and fill, levelling works
- Infill to gabion wall structures

Figure 2: Reusing broken up concrete within landscaping, paving and kerbs is a good way to promote direct reuse onsite – Image: https://www.terranovalandscaping.com/90/

STEEL

Waste Processing Routes;

1. REUSE: Reclaim steel and repurpose within proposed design
2. RECYCLE: Send to metal recycling facility.

The main source of steel within the building is from the structural members forming the frame from extension of bridge house and stell frame and purlins across the external walls and roof of Wickes building, as well as reinforcement within the concrete foundations and ground slab.

Reinforcement bars cannot be reused directly, and typically are separated from concrete waste and sent to a steel mill to be recycled into new steel.

The steel portal frame structure will need to be assessed by structural engineers to evaluate the potential for it to be reclaimed and reused directly. In terms of reuse onsite, the proposed development does not feature a steel frame, though there may be opportunities for use of steelwork within landscaping. Offsite it may be possible to reclaim the steelwork for reuse in other projects employing a steel frame structure.

Below is a table of the relevant recycling centres and distance from site.

Metal recycling centres	Distance from site
European Metal Recycling	3.3 miles
Regis Road Reuse and Recycling Centre	3.9 miles
L&B Recycling Depot	4.6 Miles

BRICK

Waste Processing Routes;

1. REUSE: Reclaim brick and repurpose within proposed design
2. RECYCLE: Crushed and used as ground cover

Reclaimed bricks can be integrated into new batches of brickwork for external wall, adding contrasting colours and patterns to the new external walls. Inside buildings, reclaimed brickwork can serve as striking feature walls in reception areas.

TIMBER

Waste Processing Routes;

1. RECLAIM; Reuse timber doors, windows, fencing and other joinery onsite, or sell for offsite reuse
2. RECYCLE FOR LOCAL USE; Donate for community workshops
3. DOWNCYCLE; Send to processing facilities for remanufacture into chipboard etc.
4. FUEL; Sent to facility to produce biomass fuel pellets for energy production.

The timber elements in the building such as the external fencing, door and window frames, and threshold beams could be reused onsite, or sold for reuse on other projects.

Timber doors, windows and other joinery could be salvaged and reused, either directly or following refurbishment. Other timber such as the fencing could be reused in landscaping features, for example in forming external decking areas or benches, or new fences around water features for example.

Fig 18 – EU Headquarters famously incorporates a patchwork of 3,750 recycled wooden window frames procured from

innovation or demolition sites across Europe in its façade. – Image: Dezeen[1]

GYPSUM

Waste Processing Routes;

1. RECYCLE; Salvage and send to plasterboard recycling services

Plasterboard and other high sulphate bearing wastes are no longer permitted in general landfill and can only be landfilled at a mono-cell at a landfill site (a separate cell which only accepts high sulphate waste). Presently the only two options for disposing of plasterboard waste are to recycle / recover or to dispose in a mono-cell landfill site (landfill which only accepts high sulphate waste). Due to the rising cost of landfill, in many cases the costs associated with recycling plasterboard are much lower than those associated with monocell disposal.

Recycling is the recommendation and mono-cell disposal is last priority. There are many plasterboard recycling services available locally, including that of British Gypsum's Plasterboard Recycling Service (PRS)[2], who will collect the waste and recycle into new board at their dedicated plasterboard recycling facilities.

SMALL ELECTRICAL ITEMS

Waste Processing Routes;

1. REUSE; Assessment of condition and reuse wherever feasible
2. RECYCLE; Send to facilities to sort into constituent parts for recycling.

The demolition works are also likely to yield significant quantities of small electrical items, such as light switches, wiring and sockets. It is recommended that these are reused wherever feasible. Larger electrical items such as hot water tanks and storage heaters should be sent to a specialist recycling facility to be broken out into their constituent parts for manufacture of new products.

REUSE AND REYCLING TARGETS

The development will be required to complex with London Plan Policy SI 7 (reducing waste and supporting the circular economy) which includes the following requirements;

- Zero biodegradable or recyclable waste to be sent to landfill by 2026
- At least 95% of construction and demolition waste diverted from landfill.

It is recommended that all waste is sorted into separate waste groups either on-site or through a licensed contractor for recovery.

All contractors involved in the project (including enabling works, site clearance, demolition works and main construction contract) will be required to collect waste data including;

- Total quantity of waste generated for each key waste group (m^3 and/or kg)
- Percentage of waste diverted from landfill.
- Waste collection tickets confirming end-destination of all waste removed from site.
- Evidence that waste has been sorted and segregated on-site of off-site by a licensed contractor.
- Evidence of waste contractor's license to operate.

[1] https://www.dezeen.com/2016/12/16/european-union-headquarters-offices-curvaceous-glowing-lantern-glass-box-brussels-belgium/

[2] https://www.british-gypsum.com/sustainability/our-sustainability-services/our-plasterboard-recycling-service

CONCLUSIONS & RECOMMENDATIONS

The most significant waste streams predicted to arise from the demolition works are;

- Concrete
- Brick / Stone Masonry
- Steel / metal
- Gypsum-based materials
- Timber
- Glazing
- uPVC

Concrete from foundations, ground floor slab and external surfaces should be crushed and stockpiled onsite to be reused as aggregate for the new development.

Similarly the stone masonry could also be crushed onsite and used as aggregate,

Steel components from the frame structure have potential for reclamation and direct reuse, either onsite for any steel structures, such as rooftop plant structures, or sold for offsite reuse in other steel frame construction projects. Concrete reinforcement bars should be reclaimed and sent to steel reprocessing facilities to recycle into new steelwork.

Plaster and plasterboard should be sent to a specialist recycling facility such as British Gypsum's Plasterboard Recycling Service (PRS)

Timber should be considered for reuse onsite wherever possible.

The uPVC windows should be considered for recycling as the material can be easily used to create other uPVC products.

Small electrical items, such as light switches, wiring and sockets should be reused wherever feasible. Larger electrical items such as hot water tanks, fan coil units and storage heaters should be sent to a specialist recycling facility to be broken out into their constituent parts for manufacture of new products.

KEY WASTE GROUPS

Following the GLA Whole Lifecycle Carbon assessments guidance, the estimated embodied carbon has been compared against the benchmark provided by the GLA in the WLC assessments guidance, shown in Appendix B. The results of Modules A1-A5 and B & C, have been compared against the WLC benchmark for apartments, and the Aspirational WLC benchmark which is based on the World Green Building Council's target to achieve a 40%

CIRCULAR REUSE

Construction, demolition, and excavation represents 64% of total annual UK waste. Although a large proportion of this waste is diverted from landfill, most building components are recycled or downcycled, which in turn reduces their value. By reusing existing buildings and the materials held within them we can keep these circulating at their highest value and prevent the need to source new manufactured materials and reduce the amount of energy (and carbon) expended on recycling processes.

Table 5 – Reuse onsite / recycling offsite

Material	% Reuse onsite	% recycled / diverted from landfill
Concrete	50	50
Steel	25	75
Timber	25	75
Plaster & Plasterboard	0	100
Rubber	0	100

Throughout the report recycling routes have been presented for all major non-hazardous materials. This report has identified the following items as being potentially suitable for reuse;

- Crushed concrete

- Crushed Brick / Stone masonry
- Structural steel
- Light switches and electrical sockets
- Internal timber doors
- Plaster and plasterboard

It is also important that any proposed development is designed to facilitate future adaptability and disassembly. The key aim is to ensure that the building lifespan is prolonged as much as possible, so that the material values are maximised before being disassembled and recycled. It is also very important that the building is designed to facilitate the easy disassembly of components in order to maximise recovery and direct reuse, and minimise damage to elements which would necessitate lower-value recycling and the additional energy involved in the recycling processes.

WASTE TARGETS

As noted previously it is a policy requirement of the GLA that 95% of demolition waste is diverted from landfill (reused, repurposed, recycled etc.), excluding all hazardous waste arisings. It may be possible for the project to improve on this figure, following consultation with the appointed demolition contractor(s).

As outlined through this report, thefollowing materials should be diverted from landfill and either recycled or reused on the proposed development, whether through direct reuse or temporary structure during the construction processes.

- Brick
- Concrete
- Steel
- Plasterboard
- Metal cladding
- Electrical equipment
- Glass

The following recommendations may assist in maximising recycling;

- Engage with demolition contractor(s) and understand their proposal for waste management
- Set aside an area of the site for storage and segregation of salvaged materials and items
- Advertise specific salvage items using online marketplaces designed for material reclamation, such as Enviromate[3], Salvoweb[4], or via the Material Reuse Portal[5].
- Contact local architectural salvage merchants about specific items
- Ensure that salvaged items are removed and stored in such a way that all component remain together (eg. doors in their frames)

NEXT STEPS

It is recommended that the following steps are taken during RIBA Stage 3 to firm up on the potential for reuse of the materials identified in this report.

- Undertake façade surveys to determine the buildups of the existing facades and confirm the extent of materials within the façade, including the sizes of the steel frame, purlins and insulation.
- Investigate and survey the internal walls to determine the quantities of plaster and plasterboard.
- Undertake detailed foundation investigations to confirm the size and type of foundations and sub-layers to external landscaping.
- Explore whether small electrical items could be reused in back-of house areas
- Consider ways in which existing steelwork and timber elements could be incorporated into the proposed scheme.
- Liaise with demolition contractor to discuss a plan for crushing of the existing concrete elements and how/ where this will be reused.
- Undertake façade surveys to determine the buildups of the existing facades and confirm the extent of materials within the façade, including the sizes of the steel frame, purlins and insulation.
- Investigate and survey the internal walls to determine the quantities of plaster and plasterboard.

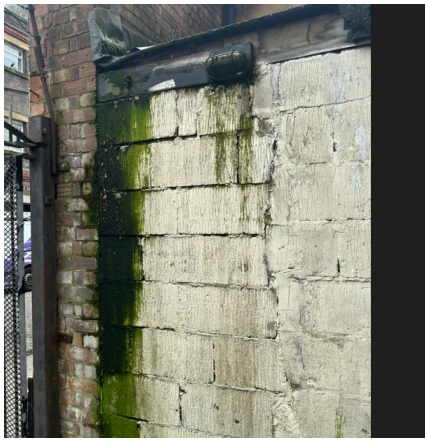
[3] https://www.enviromate.co.uk/

[4] https://www.salvoweb.com/

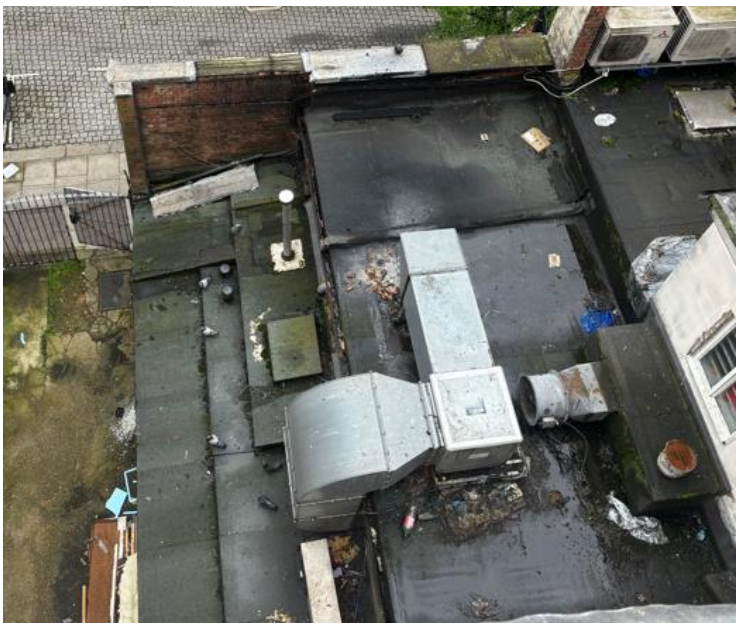
[5] https://materialreuseportal.com/

- Undertake detailed foundation investigations to confirm the size and type of foundations and sub-layers to external landscaping.
- Explore whether small electrical items could be reused in back-of house areas
- Consider ways in which existing steelwork and timber elements could be incorporated into the proposed scheme.
- Liaise with demolition contractor to discuss a plan for crushing of the existing concrete elements and how/ where this will be reused.

APPENDIX A – PHOTOS

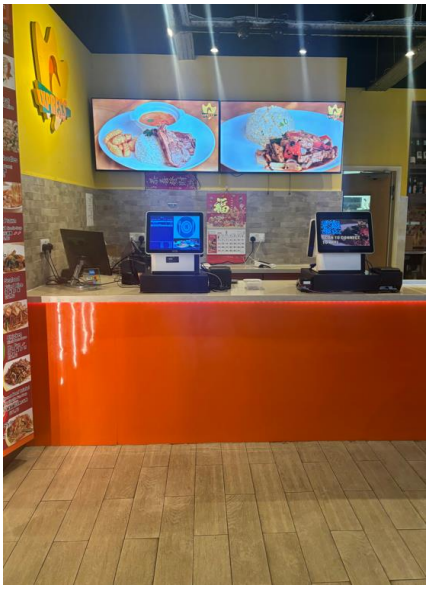
		
Front of 238 Kilburn High Road	South Elevation external wall	South Elevation – Metal Shutter
		
South Elevation – Metal shutters over the glazed areas. Timber cladding above the windows.	Concrete blockwork on East Elevation	Concrete blockwork and brick wall on East Elevation

Bitumen Roof



Bitumen Roof with AHU

Internal commercial space



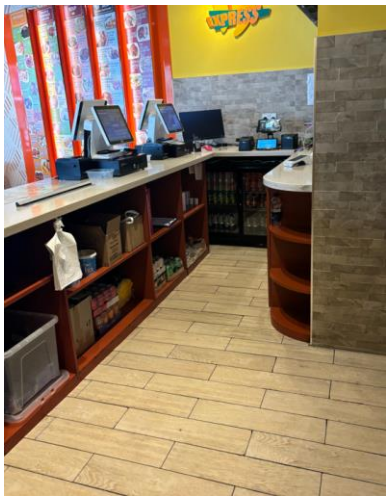
Linoleum flooring and PVC counter

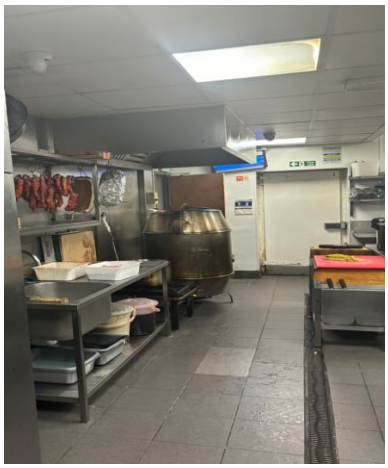
Internal Fan Coil Unit

Restaurant and counter space

Stairs and hallway showing linoleum flooring

Counter Area

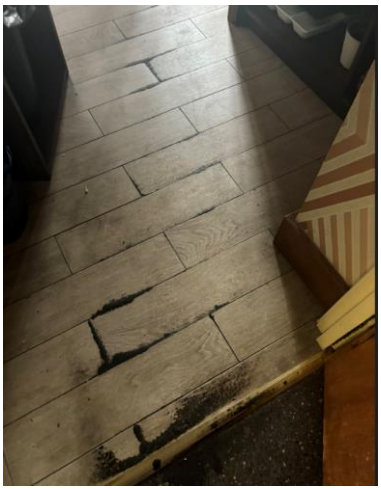




Commercial Kitchen

Commercial kitchen showing suspended kitchen and panel lights

Wooden cladding



First Floor linoleum windows

First Floor metal windows

First floor restaurant area

Type of wooden rood seen throughout the building

Timber framed windows in WC

Tiling in the bathroom

APPENDIX B – ESTIMATED QUANTITIES

Waste Group	European Waste Code	Description	Predicted Quantity	Unit	Recommended waste processing route
Concrete	17 01 01	In-situ concrete ground floor slab	54.11	M^3	Insitu concrete will be crushed and reused as sub-base or hardcore or reused as aggregate in new concrete mixes.
		In-situ concrete foundations - assumed	24.07	M^3	
		Reinforced in-situ concrete ground slab	187	M^2	
		Upper floors concrete slab	111	M^2	
		Concrete Blockwork	160	M^2	Blockwork could be dismantled where possible and reused within landscaping of new development, although likely damage due to cement mortar binding. Could be crushed and reused as aggregate, sub-base or hardcore
Timber	17 02 01	Solid timber internal doors	17	Nr	Timber doors, skirting and cladding and cabinetry could be easily salvaged and reused on-site or sold to be reused on other projects.
		Timber framed windows	1.4	M^2	
		Timber internal wall cladding	42.3	M^2	
		Timber external wall cladding	12.7	M^2	
		Timber roof trusses	2.3087	M^3	
Metals	17 04	Steel rebar reinforcement in ground floor concrete slab	735	Kg	All reinforcement metal should be salvaged and sent to recycling facilities for processing into new steel.
		Reinforcement Bar Upper Floors	1096.13	Kg	
		Steel grid Supports for suspended ceilings	67.7	M^2	
		Frame structural steel	2428	Kg	The main structural steel and purlins should be salvaged and could be reused directly onsite if there is opportunity or sold on to third parties for direct reuse offsite. They could also be used for temporary structures or support elements during construction.
		Steel Shade Awning	155.29	Kg	Metal grilles and awning is likely bespoke sizes and unlikely to be used directly elsewhere, but should be salvaged and sent to recycling facilities to be broken
		Metal Grill	1.4	M^2	
		Metal Framed Windows	17.29	M^2	The metal framed windows should be salvaged and sent to recycling facilities for processing.
		Aluminium Framed Windows	31.9	m2	
Electrical and Electronic equipment	16 02	ASHP - Indoor & Outdoor Units	3	nr	It may be possible to salvage and reuse the ASHP indoor and outdoor units on other sites.
		Ceiling lights - Spot Lights	21	nr	It may be possible to salvage and reuse light fittings, depending on their age and condition.
		Track Lights	37.2	lm	
		Ceiling lights - Panel Lights	8	nr	
		External Lighting	12	nr	
		Electricity sockets	Unknown		It may be possible to salvage and reuse electricity sockets and switches, this should be investigated by the demolition contractor. These can be sent to recycling facilities such as Islington Household Reuse and Recycling Centre.
Tiles and Ceramics	17 01 03	Tiling	164.09	M^2	Tiles are likely to break during the demolition works, and so it's unlikely that these can be reclaimed intact for direct reuse
Inert	17 01	Ceramic - Toilet	3	Nr	Ceramic toilets, urinals and sinks may be possible to salvage and reuse if in good enough condition. If not they can be broken down and recycled.
		Ceramic - Urinals	1	Nr	
		Ceramic - Bathroom sinks	7	Nr	

Waste Group	European Waste Code	Description	Predicted Quantity	Unit	Recommended waste processing route
Bituminous mixtures	17 03	Bitumen sheeting	165	M^2	Bitumen roofing sheets can be sent to local recycling facilities who will break the material down, reprocess it and manufacture new roofing sheets or other bitumen-based products
Gypsum	17 08 02	Plasterboard internal wall finish	410.6	M^2	Plasterboard and other high sulphate bearing wastes are no longer permitted in general landfill and can only be landfilled at a mono-cell at a landfill site (a separate cell which only accepts high sulphate waste). Presently the only two options for disposing of plasterboard waste are to recycle / recover or to dispose in a mono-cell landfill site (landfill which only accepts high sulphate waste). Due to the rising cost of landfill, in many cases the costs associated with recycling plasterboard are much lower than those associated with monocell disposal. Recycling is the recommendation and mono-cell disposal is last priority
		Plasterboard internal ceiling finish	164.4	M^2	
		Plasterboard suspended ceilings	37.7	M^2	
Insulation	17 06 04	Insulation - Floors - est 75mm thick	187	M^2	Depending upon the type of insulation material used, insulation board may be easy or challenging to recycle. Certain facilities offer specialist collection of certain materials, such as Ecogen who collect EPS - Once compacted, expanded polystyrene is 100% recyclable and can be efficiently and effectively transformed into useful household goods in the same way as other types of plastic
		Insulation - glasswool ceiling batts	165	M^2	
		Insulation - External walls - est 100mm thick	126.5	M^2	
Plastics	17 02 03	uPVC Windows	15	Nr	UPVC can be recycled many times without a significant reduction in quality. Once processed, it can be put straight back into the manufacturing line and used to make new window frames and other products
		uPVS on Walls	34.63	M^2	
		UPVC gutters / pipes	35	lm	
		Synthetic Linoleum	171.24	M^2	Vinyl and lino can be sent to recycling centre and remade into other materials. It's unlikely it could be reused due to the condition of the flooring, which is likely to be further damaged during demolition works.
Stone	17 05 04	External Masonry Wall	126	M^2	Aggregates can be collected, reused as aggregate onsite or offsite, or utilised in landscaping elements
		internal Masonry Wall	46.2	M^3	

XCO2
56 Kingsway Place, Sans Walk
London EC1R 0LU

+44 (0)20 7700 1000
mail@xco2.com
xco2.com