BP FINCHLEY ROAD

CIRCULAR ECONOMY STATEMENT

ISSUE AND REVISION RECORD

Revision	Date	Originator	Checked	Approved	Description
00	15/08/22	FH	NA	JALW	Issued for Planning

CONTENTS PAGE

INTRODUCTION

This report has been produced by WME to support the planning application for the proposed development at 104A Finchley Road.

The proposals are for the Demolition of existing petrol filling station and associated convenience store (sui generis), and erection of a six-storey building comprising ground floor commercial space (Class E) and flexible commercial/educational space (Class E/F1), and 31 x residential apartments above.

METHOD STATEMENT

A holistic approach has been adopted to establish the approach and targets for this project. The focus has been to create an architecture where the circular economy principles could be embedded in the design now rather than as an afterthought.

As mentioned in the supporting reports (P150051-RPT-8005) it is a requirement of Camden Local Plan 2017, *Policy CC2 Adapting to climate change* for non-domestic developments of 500m2 or above to achieve BREEAM Excellent (>/= 70%).

The BREEAM Pre-assessment report outlines a route to achieving BREEAM Excellent with a 'base case' score of 71.16%. This includes an emphasis on targeting credits within the Materials and Waste sections.

It goes a step further and identifies a number of credits (circa. Additional 6%) which are considered 'stretch' targets. These are considered achievable with additional effort and funding beyond that required to obtain those identified within the base case.

The BREEAM framework process involved a collaboration with the design team, during which circular economy principles and aspirations were discussed at meetings and workshops.

This included material efficiency and durability, pre-demolition requirements, waste and recycling targets, operational waste management, and longevity and adaptability.

Workshops will be held at the next design stages to monitor the project's progress in reaching the goals summarised in the 'Circular Economy Aspirations' section of this report.

In line with GLA policy, the report will be reviewed in full and updated if required at post completion stage.

CIRCULAR ECONOMY ASPIRIATIONS

The project team for the proposed development interpret circular economy in the following way:

- Source materials responsibly
- Design for durability and resilience
- Implement measures to optimise material use
- Carry out a pre-demolition waste audit
- Implement waste minimisation targets during demolition and construction - Contractors Site Waste Management Plan
- Ensure there is sufficient space for storage and segregation of operational waste
- Design a flexible and adaptable building

A pre-demolition waste audit has already taken place by Sustainable Construction Services and is included within the Appendix of this report.

The Pre-demolition audit concluded that there is unlikely to be able to use any of the materials on site is any realistic way to a high value. The existing structures cannot be reasonably incorporated into the new design and contamination from petrochemicals will also further inhibit the reuse of materials on site.

To construct the new build it is necessery to demolish the existing structures on the site. This has been justified in planning terms, and so now this report sets out how to minimise the impact of both the demolition and the need for new construction.

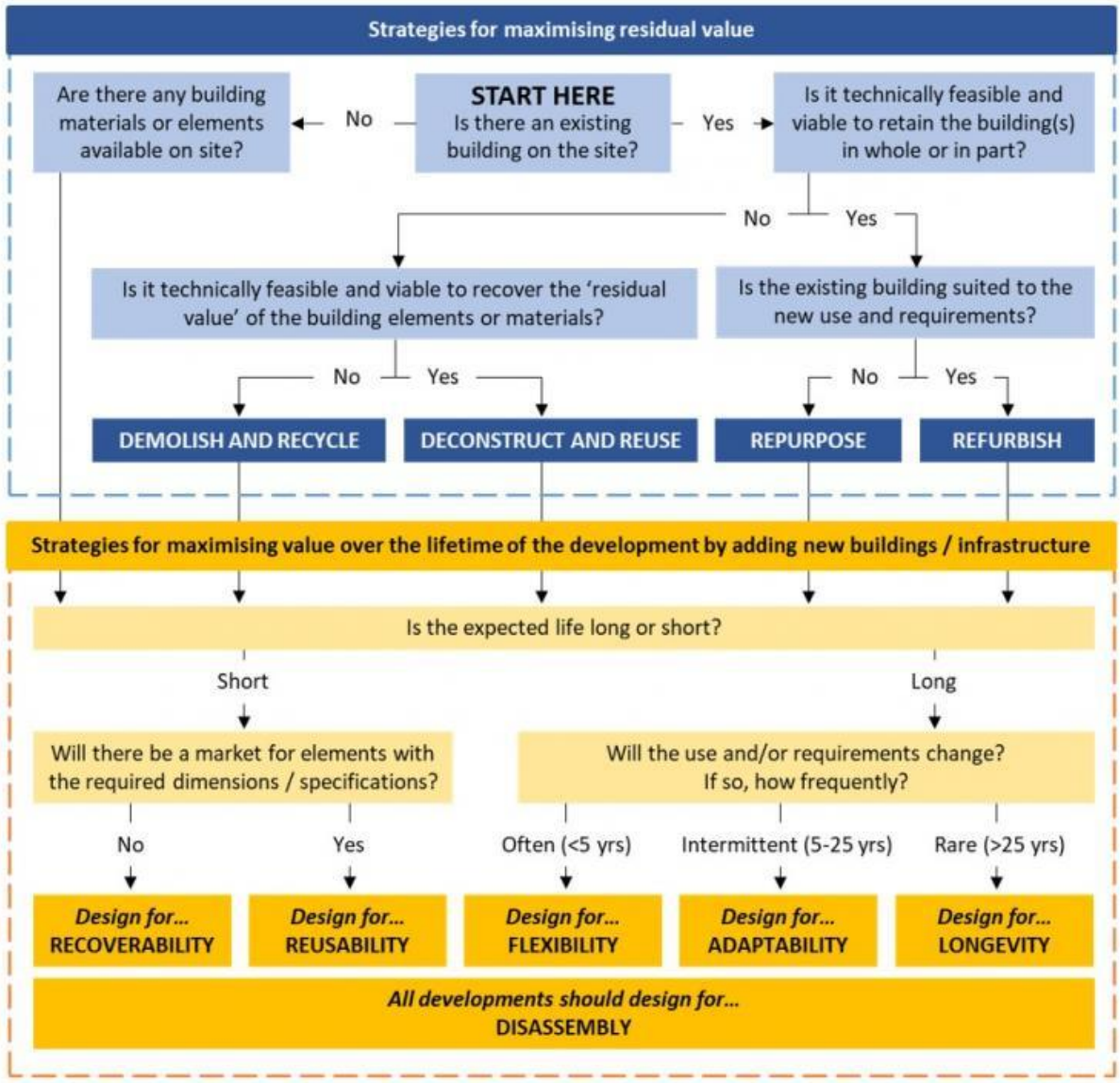
STRATEGIC APPROACH

The Pre-Demoltion Audit undertaken by Sustainable Construction Services (See Appendix) concludes that there is minimal material on site which is fit to be retained and re-used within the proposed new building.

To that extent, the below decision tree has been used to help outline a high level strategic approach to developing a Circular Economy for BP Finchley Road, at this early design stage.

The Decision Tree is intended to prompt designers and developers to consider, in the early stages, opportunities for maximising the residual value of any buildings, materials or elements on site, before considering strategies for adding value over the lifetime of the development.

Choosing a strategic approach – Decision Tree



STRATEGIES FOR MAXIMISING RESIDUAL VALUE

1. There is an existing building on site
2. It is not technically feasible and viable to retain this building
3. It is not technically feasible and viable to recover the 'residual value' of the building elements / materials within the existing building

Therefore, a strategy of demolition and recycling is being pursued. Over 95% of all demolition waste will be recycled; as much waste as possible will be diverted from landfill.

STRATEGIES FOR MAXIMISING VALUE OVER THE LIFETIME OF THE DEVELOPMENT

1. The expected building lifespan is long (greater than 60 years)
2. The use and/or requirements of the building may change intermittently

Therefore, a strategy of design for adaptability and longevity has been pursued. The building will also be designed to facilitate disassembly at end of life.

The Strategic Approach Table can be found in Appendix.

CIRCULAR ECONOMY STRATEGY

CONSERVE RESOURCES

The proposed scheme seeks to ensure that material and resource use is minimised as far as possible, in line with the first principle of circular economy: conserve resources and source ethically. As shown below, this focus has been given to minimising the quantities of materials and other resources used, as well as ensuring materials will be sourced responsibly during construction.

MINIMISING QUANTITIES OF MATERIALS

It is not possible to refurbish the existing building as it is not fit for purpose.

Efforts will be made to recover and reuse salvaged materials from the demolition activities, where possible. However the Pre-demolition audit concluded that there is unlikely to be much use for any of the materials on-site, in any realistic way and/or to a high value.

The waste groups identified that could be separated for recycling or alternative disposal are listed within the Pre-demolition audit while the following actions to avoid waste to landfill were considered:

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

Refer to Pre-Demoltion Audit in the Appendix. Measures to minimise demolition waste are outlined in more detail in the ‘Design to Eliminate Waste’ section of this report.

The proposed scheme will be designed to utilise materials in an efficient manner; this process will be guided by a Material Efficiency Report, which will be produced for the development's BREEAM assessment post-planning. IT should be noted that material efficiency has been considered throughout the early design stages, but not yet fully documented in a BREEAM compliant format.

Material efficiency measures seek to optimise the use of materials within building design, procurement, construction, maintenance and end of life; and ultimately reduce the quantities of new materials used. BREEAM requirements state that this report is a live document that is updated at each stage of the project.

The proposed scheme will utilise the following measures to ensure materials are used efficiently and minimise the quantities of new materials brought to site:

- Design to standard materials dimensions to reduce off-cuts
- Utilise materials with a high recycled content
- Participate in take-back schemes
- Rationalise structural design to reduce the volume of structural materials
- Avoid over specification
- Optimise foundation design
- Utilise pre-assembled / pre-fabricated elements and/or off-site manufacture, where feasible

MINIMISING QUANTITIES OF OTHER RESOURCES

The proposed scheme is sited on previously developed land, thereby minimising disruption to the existing landscape.

The contractor will be required to set targets for energy and water used during construction and put in place measures to minimise consumption of these resources; these will include:

- Use of alternatives to diesel / petrol powered equipment where possible;
- The incorporation of sources of renewable energy, to offset the use of main utilities;
- Selection and specification of energy efficient plant and equipment wherever viable; and
- Implementation of staff-based initiatives such as turning off plant and equipment when not in use, both onsite and within site offices.

With regards to building operation, the scheme has been designed in line with the GLA's energy hierarchy in order to minimise operational energy use and carbon emissions.

The scheme has adopted a fabric first approach to minimise energy demand, including a highly efficient thermal envelope. Further details can be found in the accompanying Energy Statement (P150051-RPT-8001).

As stated in the Sustainably Statement, the scheme has been designed to reduce water consumption to less than 105 litres per person per day for the residential element.

RESPONSIBLE SOURCING

As part of the BREEAM assessment the contractor will be required to source materials in accordance with a Sustainable Procurement Plan. BREEAM requirements state that this must guide procurement throughout the project and include the following:

- Identification of risks and opportunities against a broad range of social, environmental and economic issues.
- Aims, objectives and targets to guide sustainable procurement activities.
- A strategic assessment of sustainably sourced materials available locally and nationally.
- A policy to procure materials locally where possible.
- Procedures to check and verify that the sustainable procurement plan is being implemented and adhered to (for example setting out measurement criteria, methodology and performance indicators to assess progress and demonstrate success).

As such, there will be a preference to source materials locally where feasible.

Other materials will be sourced in accordance with the following guidance in line with the BREEAM Mat03 Credit:

- 100% of timber will be FSC or PEFC certified.
- 100% concrete will be BES 6001 certified (Responsible Sourcing of Construction Products).
- Where possible steel will be sourced from suppliers rated under the CARES Sustainable Constructional Steel Scheme.
- Other major construction materials will be certified under an Environmental Management System (EMS) such as ISO 14001.

DESIGN FOR LONGEVITY, ADAPTABILITY FLEXIBILITY AND REUSABILITY/RECOVERABILITY

As part of the BREEAM assessment two key documents pertaining to flexibility and adaptability will be produced:

1. Design for Disassembly and Adaptability Report
2. Climate Change Adaptation Strategy

The proposed scheme has been designed to adapt to and mitigate the effects of climate change, specifically in terms of overheating and flood risks.
To mitigate the effects of climate change and resulting overheating risks, the development has followed the cooling hierarchy principles as a means of reducing the amount of solar and internal gains.

A functional adaptability study will be produced for BREEAM. The proposed scheme has been designed from the outset to serve a single purpose for residential units, however lower ground floor will be Shell & Core only, with the intention to serve commercial and an educational space.

Functionally adaptability has been considered throughout the design of both the residential and non-residential spaces.

This will include recommended measures to improve:

- Feasibility of building containing multiple or alternative building uses at lower ground level
- Accessibility and plant replacement
- Adaptability to future climate scenarios
- Refurbishment potential

A Material Durability Report should be undertaken as part of BREEAM Mat 05 credit, which outlines measures taken to ensure that vulnerable parts of the building are protected from damage. This includes measures to protect against the effects of high pedestrian traffic; potential internal movement and potential vehicular collision with the external building façade. This report may also outline appropriate design and specification measures to limit material degradation due to environmental factors; thereby improving the longevity of materials used in the building façade and roof, as well as external hard landscaping.

Furthermore, a systematic risk assessment will be carried out to identify and evaluate the impact of climate change on structural and fabric resilience. The aim of this study will be to ensure that building remains functional for as long as possible by mitigating risks posed by extreme weather conditions arising from future climate change.

DESIGN OUT CONSTRUCTION, DEMOLITION, EXCAVATION AND MUNICIPAL WASTE ARISING

The demolition and main contractor will be required to ensure that 95% of the construction and demolition waste will be reused, recycled or recovered, and at least 95% of excavation waste should be used for beneficial use, in line with the London Plan 2021. For the purposes of BREEAM, at least 90% of all demolition waste (by tonnage) should be either recycled directly on site or processed for off-site reuse and recycling in accordance with BREEAM credit Wst01. Further details (including estimated demolition waste quantities) will be reported in the Pre-Demolition Waste Audit also required for Wst01.

The principal contractor will be required to ensure that no more than 6.5 tonnes of construction waste are generated and that at least 80% of non-demolition waste (by tonnage) is diverted from landfill (required for BREEAM Wst01).
Full Circular Economy Strategy in Appendix.

POST CONSTRUCTION STAGE REPORTING

Post-construction, an update to the Bill of Materials will be provided based on the actual materials used. This will be based on as-built information and compare against the design-stage assessment, confirming whether targets have been met.

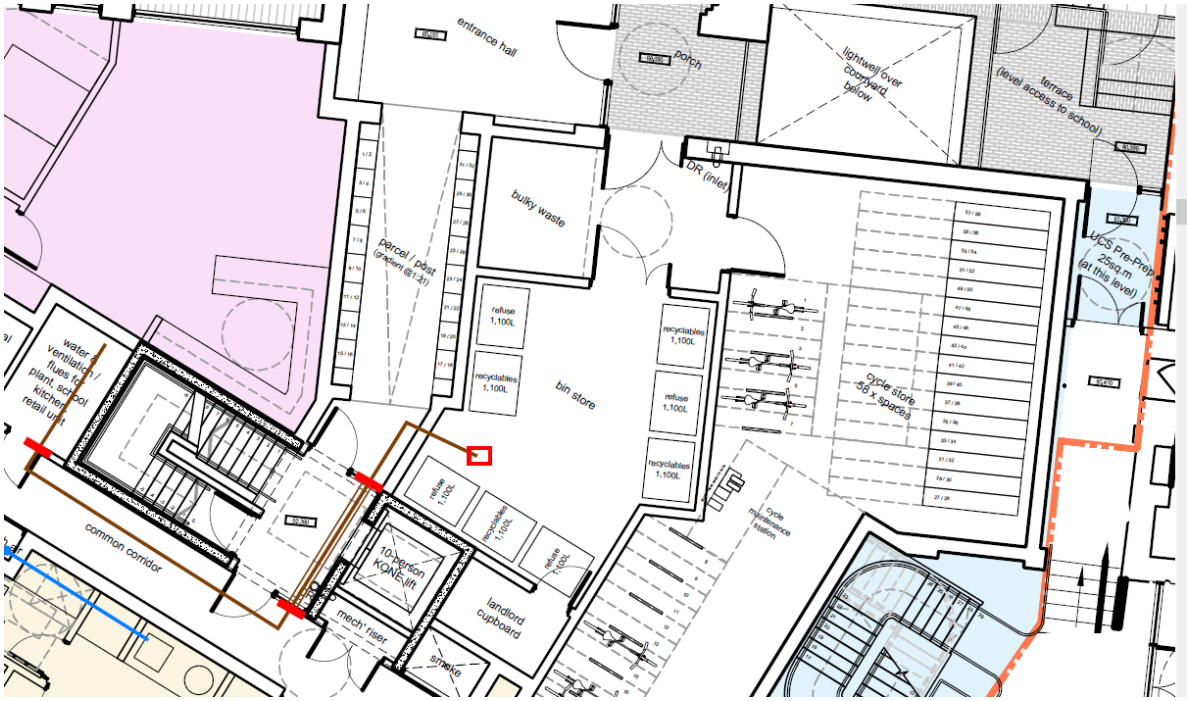
At post-construction stage, there is a commitment to submit an updated end-of-life strategy. In addition to updating the relevant sections of the planning stage submission, it will also include:

- Full as-built drawings
- Details of how the building can be disassembled (a deconstruction plan)
- Manufacturers' warranties, details, and any opportunities to return to manufacturer

WASTE MANAGEMENT STRATEGY

Waste storage was calculated based on the basis of Camden's 'Technical Waste Planning Guidance 2018' document (Section C).

We are proposing a communal collection – generally appropriate for larger and taller residential developments in Camden. The waste storage containers are kept off-street in a secure, dedicated room accessible to all residents and for council collection over level ground from the residential porch on College Crescent. Eight 1,100 litre Eurobins are shown in the proposed store, of which four are for mixed recycling (based on 140 litres per apartment: 140x31 = 4,340 litres) and four are for general waste (based on 120 litres per apartments: 120x31 = 3,720 litres). A bulky waste store is also proposed, with approx. 14 cubic metres of storage capacity.



Commercial and educational waste storage will be accommodated within their own demises.

Recycling and rubbish collections are made on alternate weeks for most households in Camden borough: recycling one week and rubbish the next. Food waste is collected every week.

Wheelie bins are used for containing and collecting refuse. Wheelie bins are also used for recycling. The recycled materials are co-mingled, which means they are collected together and sorted out later on at a Materials Recovery Facility (MRF).

At present the following materials are included in the collections, which can all be placed into the same bin without any need for further segregation:

- Cardboard and thin card
- Mixed paper
- Plastic bottles, pots, tubs and trays
- Food tins and drink cans, aerosol cans and clean aluminium foil
- Glass bottles and jars
- Food and drink cartons

An individual food waste bin is provided for recycling food waste, collected on a weekly basis. Newspaper or compostable liners can be used and the following items can be recycled:

- Tea bags and coffee grounds
- Fruit and vegetable peelings
- Leftovers and plate scrapings
- Dairy, fish, egg shells
- Meat and bones
- Bread and pastries

So each dwelling has three bins of different sizes, a general waste bin, a recycling bin and a compost caddy. These are emptied into the bin store into suitably labelled wheely bins suitable for their purpose.

BILL OF MATERIALS

Bill of materials table below, as extracted from the Oneclick software.

Layer	Material Quantity (kg)	Material Intensity (kg/m2 Gross Internal Area)	Estimated recyclable materials (kg) (kg/m2)
1 Substructure	36075	9.73	9.73
2 Superstructure	392794	105.9	102.91
3 Finishes	3840	1.04	
4 Fittings, furnishings & equipment			
5 Services (MEP)	3997.2	1.08	1.08
6 Prefabricated buildings and building units			
7 Work to existing building			
8 External works	13060	3.52	0.07
0 Unclassified / Other	5613554	1513.5	1513.5
Total	6063320	1634.76	1627.28

Note: this is based on the information available to date and should not be considered complete.

APPENDIX

1. Pre-Demo Audit
2. Strategic Approach Table
3. Circular Economy Table

TECHNICAL NOTE

Job	Finchley Road Petrol Station Site	**Job**	31766
Subject	Pre-demolition Audit	**Date**	13th June 2022
To	Design Team	**From**	Matthew Edis

INTRODUCTION

This pre-demolition technical noted for the Finchley Road Petrol Station Site is based on the site visit undertaken on the 13th June 2022. This was carried out by Matthew Edis [SCS] who is a suitably experienced person to undertake the audit.

The current site use is a petrol station with the proposed use being a new accommodation block.

As part of this assessment, to achieve the credit 'WST 01', a pre-demolition audit must be undertaken to maximise the recovery of material from demolition for subsequent high-grade or high-value applications. This must occur prior to demolition, refurbishment or strip-out.

This audit is intended for use within the Main Contractor's Resource Management Plan so that the demolition/refurbishment waste can be managed most effectively, as part of the whole waste management process.

The site was conducted with Chandram Patel, site manager, in the company of Matthew Edis.

The pre-demolition audit occurred before the end of RIBA Stage 2, so the document had the ability to influence the design, consideration of material use, and the setting of targets for waste management.

Following the site visit, the key recommendations and issuers were communicated by Matthew Edis to the project team for consideration and review.

It is also the intention of the team to ensure that this document will also be passed onto the future Main Contractor once appointed.

SITE OVERVIEW

The site is currently being used as a BP petrol garage. It is located close to West Hampstead and Swiss Cottage.

Figure 1: Phot of site from A41 showing slope around site

Figure 1: Phot of main building on site

The site is triangular with the front joining directly onto the pavement adjacent to the A41 in central London. The site is flat, but the road on the second side wraps around the site (College Crescent) and rises from grade to circa 5m high at the rear of the site. This allows access to the main building on site at the first floor from College Crescent.

College Crescent is supported by a brick and concrete retaining wall.

The final side of the stie has a four-story brick building directly behind it, acting as the main boundary line.

Externally the site has three sets of two-sided fuel pumps and a large standard concrete forecourt, including BP signage. It is mainly concrete in-situ with concrete pavers and curbs in some areas.

Covering a large area of the forecourt is a metal sheet canopy with integral lighting. There is also a single lamppost on site adjacent to the air and water dispensers.

On the forecourt are storage / shelving areas selling gas, charcoal etc. There is also a fenced off area (timber fence) that hides the bin storage area, A/C units, and minimal levels of rubbish.

Externally there are circa 45m of 1.5m high metal opening railings along Crescent College. There is also a small metal gantry that provides access to the building from Crescent College. This is fixed and supported by the retaining wall and building.

Customers are served in a small building at one end of the site. There is a serving area on the ground floor and office and storage areas on the first floor.

The main building is a brickwork & blockwork cavity wall with circa 25-50mm thick insulation. The ground and first floor are concrete.

The roof is a timber truss structure with felt and slate tiles. It has a wooden clock on the roof, but this is of poor quality and therefore not an architectural feature of merit.

There are domestic windows at the first floor that are metal frame double glazed. The shop front has a large metal frame glazed opening onto the shop.

There is a dumb waiter serving the two floors.

The first floor has staff areas including a toilet, small kitchen and office. There is also a stock room and items of note include two large safes and a number of commercial fridges.

The internal partitions between walls appear to be blockwork with some but not all plaster skimmed.

Internal doors are generally timber, although doors to outside are metal.

The main shop is a typical petrol station layout with metal shelfing displaying the stock, and a sales counter at one end. The shop includes fridges and a costa coffee vending machine.

Lighting is generally LED.

Flooring is a mix of carpet tiles, vinyl and ceramic tiles.

The proposed site is going to be residential block accommodation. This is unlikely to be able to use any of the materials on site is any realistic way to a high value. The existing structures cannot be reasonably incorporated into the new design and contamination from petrochemicals will also further inhibit the reuse of materials on site.

AUDIT DETAILS

Based on the site inspection undertaken and knowledge gained from other projects, the waste groups identified that could be separated for recycling or alternative disposal are listed in the table below.

The following actions to avoid waste to landfill were considered:

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

This audit identifies the key demolition materials and suggests who and by whom waste should be segregated and recycled in order to maximise the recovery of material from demolition for subsequent high grade/value applications in accordance with the waste hierarchy.

It is currently understood that a New Build 2018 BREEAM assessment is required on the proposed development.

The items noted in Table 1 are not an exhaustive list of every material. However it does record the materials noted during the site visit. Quantification of materials are also based on site visit estimates rather than take-offs from drawings.

Therefore any Contractor reviewing this document should only read it in tandem with their own site inspections and quantifications to satisfy themselves of the materials, volumes and risks associated with the demolition of the site.

Material	Items Noted Examples listed below	Volume / Number / Area	Comment	Actions
Special Item of Note Sales Stock	Sales stock (food etc)	Not quantified	Range of perishable and non-perishable goods, typical of petrol station	Stock to relocated to separate site or sold off once service station no longer in use
Special Item of Note Forecourt Canopy	Forecourt Canopy	Circa 200m^2	Valuable asset	Canopy should be advertised for sale either as a whole or for spares for other petrol stations
Special Item of Note BP Fixtures and Fittings	Forecourt Sign, Signs, Petrol Pumps, Air and Water Pumps, Advertising sign, Internal BP fixtures and fittings	1no. Forecourt Sign, 3no. Signs, 3no. double Petrol Pumps, 1no. Air Pump 1no. Water Pump, 1no. Advertising sign, Multiple internal BP fixtures and fittings	Forecourt Sales Signs, Petrol Pumps, Air and Water Pumps, Advertising sign are also viable for reuse by BP. Remaining items to be removed by site manager before leaving site.	Contact BP to offer these materials for collection and reuse. If not reclaimed, recommended recycle off site by waste management contractor.
Special Item of Note Storage tanks	Storage tanks	5no.	High level of contamination which will likely require removal and therefore surrounding earth also likely to be contaminated with petrochemicals	Likely that all excavation will be contaminated by petrochemicals so specialised removal required. Review ground investigation reporting for further details.
Special Item of Note Dumb waiter	Dumb waiter	3no.	Valuable asset	Contact manufacture for removal for resale of reclaiming for spare parts. If not, recommended recycle off site by waste management contractor.

Bricks	Bricks – retaining wall Bricks – main building	Retaining Wall circa 200m^2 Building circa 300m^2	Assumed retaining wall to be retained. Brickwork is bonded with cement so not economically viable for reuse.	Building brickwork to be crush and reuse on site for infill of tank excavation if possible. If not, crush for reuse off-site for low grade aggregate. If not, recommended recycle off site by waste management contractor.
Blockwork	External walls, internal partitions and lift walls.	Circa 500m^2	Blockwork is bonded with cement so not economically viable for reuse.	Building brickwork to be crush and reuse on site for infill of tank excavation if possible. If not, crush for reuse off-site for low grade aggregate. If not, recommended recycle off site by waste management contractor.
Concrete	Concrete forecourt, First floor concrete floor beneath vinyl flooring Paving slabs, Concrete curbs	Circa 650m^2 of forecourt and building base Circa 75m^2 first level floor Circa 15m^2 first paving slabs Circa 120m^2 concrete curb	Unlikely viable for reuse on site. Risk of contamination from petrochemicals where in contact with ground.	Likely that all excavation will be contaminated by petrochemicals so specialised removal required. Review with ground investigation reporting for further details. Where not contaminated, unlikely to be easily possible to segregate. Recycle off site by waste management contractor.
Insulation	Circa 25-50mm thick rigid insulation in walls. Circa 100m think in loft	Wall insulation circa 300m^2. Loft Insulation circa 75m^2	In poor state.	Unlikely to be easily possible to segregate. Recommended recycle off site by waste management contractor.
Packaging	Cardboard packaging	Minimal	N/A	Unlikely to be easily possible to segregate. Recycle off site by waste management contractor.

Timber external	Timber fencing	1m x 1.8m wooden gate. 4m x 1.8m wooden fence + 2m double wooden gate with metal frame.	Due to small volume unlikely viable for reuse	Unlikely to be easily possible to segregate. Recycle off site by waste management contractor.
Timber internal	Domestic shelving and kitchen cupboards, skirting boards, doors, stair	12no. doors Circa 200m^2 skirting and architrave, 4no. kitchen cupboards, 1no stair, circa 10no. timber roof trusses	In all cases damaged and / or of poor quality.	Unlikely to be easily possible to segregate. Recycle off site by waste management contractor.
Oils	N/A - none noted during site visit	N/A	N/A	N/A
Tar and Asphalt	N/A - none noted during site visit	N/A	N/A	N/A
Tiles and Ceramics	Toilets, sinks, floor tiles.	1no. sink 1no. toilets Circa 50m^2 of tiles	Poor state	Unlikely to be easily possible to segregate. Recycle off site by waste management contractor.
Glass	Domestic windows 1st floor, commercial shop front	3no. domestic windows circa 8m x 2.4m glazed metal double glazed window including metal framed glass entrance door	Poor state	Unlikely to be easily possible to segregate. Recycle off site by waste management contractor.
Electrical Lighting	Light Fittings including lamps and suspended ceiling squares.	Circa 25no.+ light fittings	Fittings of poor quality	Unlikely to be easily possible to segregate. Recycle off site by waste management contractor.

Metals	Metal external door, commercial safes, metal treads on stair, commercial shelving gnd. floor, commercial racking upstairs, metal sink, external metal gantry, copper pipework, cast iron or similar manhole covers & access covers in forecourt, trench gutter, gas tank cage, metal ceiling tiles, metal opening railings, general wiring.	2no. Metal external doors, 2no. commercial safes, Circa 2no. metal treads on stair, 100m commercial shelving gnd. Floor, 80m of commercial racking upstairs, 1no. metal sink, 5m^2 external metal gantry, circa 50m copper pipework, circa 25no. cast iron or similar manhole covers & access covers, circa 25mm of trench gutter, 1.8 x 1m x 2m gas tank cage, circa 50m2 metal ceiling tiles, 45m of 1.5m high metal opening railings general wiring throughout building.	Generally in poor state and with the exception of the commercial safes, and shelfing, generally unlikely for reuse.	Ensure inspection of metals for removal prior to demolition and remove if of value and safe to do so structurally / asbestos-wise. However, in general, recommended, metal to be recycled off-site by waste management contractor.
Gypsum	Cement skim, plasterboard ceiling first floor	Throughout Internal walls, 75m^2 ceiling	Integral to wall build up so refer to blockwork above	Integral to wall build up so refer to blockwork above. Ceiling recommended for recycling off site by waste management contractor.

Plastics	Light fittings, conduit, electrical outlets, PVC drainage pipes	Not possible to quantify all plastics throughout building	Fittings of poor quality	Unlikely to be easily possible to segregate. Recycle off site by waste management contractor.
Soils	Soils, clays, sand, gravel, natural stone	N/A – all below ground	Assumed to be retained where not contaminated	Retain where not contaminated
Liquids	Domestic Cleaning products	Less than 10no. bottles	Assumed viable for reuse in other buildings	Recommended that site manager to remove before site handover to main contractor
Floor Coverings	Carpets, vinyl flooring	Circa 50m^2 Vinyl flooring Circa 50 m^2 tiles (see ceramics above	Many areas are adequate but showing their age.	Unlikely to be easily possible to segregate. Recycle off site by waste management contractor.
Architectural Features	Roof tiles	Circa 100m^2+	Appear to be in good state	Recommended for reclaim before demolition.
Electrical equipment	A/C unit, computers sales machines, Costa Coffee vending machine, cash machine, fridges, CCTV system, domestic water heater, domestic dish washer	4no. A/C unit, 1no. computers 1no. sales machines, 1no. Costa Coffee vending machine, 1no. cash machine, 7no. fridges 1no. CCTV system, 1no. domestic water heater, 1no domestic dish washer	Throughout building and typically in good order.	Recommended for reuse or sale prior to demolition. Alternatively contact relevant companies in relation to WEE directive to return to manufacturer.

Fixtures and fittings	Tables and desks. Chairs Shelving. Lockers. Curtains. Blinds.	2 desks 2 chairs 10 lockers	Adequate but not good quality	Recommended that site manager to remove before site handover to main contractor. Where not removed, recommended to recycle off site by waste management contractor.
Hazardous	As defined in the Hazardous Waste List (HWL) of the European Waste Catalogue (EWC), e.g. Asbestos	Refer to asbestos survey where available	Further survey required by specialist if hazardous materials are anticipated it is suspected that hazardous materials might be present on site.	If necessary, specialist contractor to remove off site to appropriate disposal facility
Mixed/ Other	Mixed/ Other	N/A	Efforts should be made to categorise waste into the above categories wherever possible. However in reality it is more appropriate to collect this in its entirety and recycle off site at a waste transfer station. Fixtures, fittings and furniture should be required for removal by the University prior to demolition.	As noted

Table 1: ***Waste groups identified during Site Visit***

RECOMMENDED WASTE TARGETS

General Recycling Targets

Reuse of materials on-site

- Although encouraged, no minimum targets set due to limitation of site area and likely volumes of materials involved.

Where take-back services are available for recycling of materials

- Air conditioning units

Reuse off-site – 100% (if possible)

- Shop stock
- BP specific fixtures and fittings

Construction Specific Targets

Amount of waste generated per 100m² (gross internal floor area)

- No greater than 13.3m³ (actual, not bulk volume)

  AND / OR

- No greater than 11.1 tonnes

Non-demolition Waste to be diverted from landfill

- 70% by Volume

  AND / OR

- 80% by Tonnage

Demolition Waste to be diverted from landfill

- 80% by Volume

  AND / OR

- 90% by Tonnage

LOCAL RECYCLING OPPORTUNITIES AND WASTE PROCESSORS IN AREA

PB Donoghue

Donoghue Business Park, Claremont Rd, London NW2 1RR

020 8208 2211

Skip Hire MER Hampstead

Finchley Rd, London NW3 5JS

020 3984 9538

All Clear Waste

44 Buckley Rd, London NW6 7LU

020 8200 6446

A useful directory for reclaimed building materials can be found at https://www.salvoweb.com/salvo-directory

RECOMMENDATIONS AND NEXT STEPS

The proposed site is going to be residential block accommodation. This is unlikely to be able to use any of the materials on site is any realistic way to a high value. The existing structures cannot be reasonably incorporated into the new design and contamination from petrochemicals will also further inhibit the reuse of materials on site. However the recommendations are as follows:

- The prioritisation should be on health and safety concerns rather than material retention which is likely to limit the ability to recycle and reuse materials. These risks include:
    - The contamination of the ground from petrochemicals associated with the tanks in the ground.
    - The proximity of the public and major highway, retaining wall and adjacent building.

      (please refer to specialist reports on risks by other members of the project team for more details)
- However, where possible, the aim should be to try to retain existing materials in design where possible. This is likely to be limited to the railing and retaining wall adjacent to College Crescent.
- Materials located on site within the demolition scope of work to be recycled where there is possibility for re-use on site i.e. crushing concrete and masonry for use as hardcore/sub base.
- Excavation material is unlikely to be possible due to contamination.
- BP company property and stock should be related to a separate site or sold to avoid being sent to landfill.
- All other materials which form part of the demolition contract should to be recycled by the demolition contractor or on their behalf by a dedicated waste contractor for segregation and recycling off site.

The recommended next steps are as follows:

- This document must be incorporated into the Resource Management Plan (which is a specific requirement of BREEAM compliance).
- The comparison between actual waste arisings and waste management routes used with those forecasts will be drawn by re-visiting the pre-demolition audit, following completion of the relevant work.
- Commentary needs to be provided by project team if significant deviations from planned targets occur.
- If all of the above occurs, then the 'Wst 01' BREEAM credit associated with pre-demolition should be achieved.

APPENDIX A – BREEAM 'COMPETENT PERSON'

The people inspecting the site are deemed to be suitable to undertake the work in accordance with the BREEAM requirements for Pre Demolition audits (BRE Reference: QN-14101-MOD7D1).

Matthew Edis has knowledge and experience in the construction and waste sector. This includes:

- Formally acting as an advisor to Envirowise (subsequently absorbed into WRAP in 2009) on waste minimisation and assisted in developing a waste reduction guidance document for construction.
- Holds a degree recognised by the institute of structural engineers and institute of civil engineers.
- CIBSE chartered building services engineer.
- CEEQUAL, SKA and BREEAM AP qualified assessor under which he has undertaken a numerous waste audits.
- 20 years' experience working in the construction industry.

Aspect	Areas	Steering Approach	Explanation	Target	Supporting Analysis / Studies / Surveys / Audits
CE approach for new development	Full Development	Manage Construction Waste	Contractor to operate a Sustainable Procurement Plan. Materials to be sustainably sourced. Local suppliers to be preferred where possible to reduce material transport distances.	Concrete, including concrete blocks to be sourced from BES 6001 Very Good accredited suppliers. Insulation to be sourced from suppliers holding ISO 14001 accreditation. Key building services (e.g. pipework, ductwork and key plant) aim to be sourced from suppliers holding ISO 14001 accreditation. All timber products to be FSC certified.	BREEAM Pre-assessment Evidence for Mat 01, Mat 03 Contractor's Resource management plan
		Sustainable Sourcing of Materials	Designed for the periodic refurbishment of the tenant areas.	95% diversion from landfill at end of life	Contractor's Site Waste Management Records
		Manage construction Waste	Contractor to monitor and record total construction waste generated and how this waste will be disposed of. Measures to be implemented to manage and reduce construction waste.	Tbc	Contractor's Site Waste Management Plan
		Optimise Material Use	Contractor to record total construction waste generated and how this waste will be disposed of. Measures to be implemented to manage and reduce construction waste.	A target benchmark for resource efficiency, i.e. m3 of waste per 100m2 or tonnes of waste per 100m2 (7.5m3/11.1 tonnes of waste per 100m2 GIA). Potentially aspiring for a target of 3.4 m3/100m2 GIFA or 3.2 tonnes/100m2 GIFA	Contractor's Site Waste Management Records

		Functional Adaptability	Design for adaptability and flexibility – to increase building lifespan		BREEAM Evidence in relation to Mat 05, Mat 06, Was 05, Was 06
CE approach for the existing site	Existing building	Maximise recovery, reuse and recycling of demolition waste	Concrete will be crushed, grated and stockpiled on site prior to being reused then ultimately reused on site. In the event of contaminated material being identified, the contaminated material will be segregated and removed from site to a suitable landfill.	≥95% of demolition waste to be reused and/or recycled.	Pre-demolition waste audit (TBC) Site Waste Management Plan
CE approach for municipal waste during operation	Whole development	Storage and segregation of operational waste	On-site bin store to accommodate sufficient storage for recyclable and landfill waste as well as food waste.	≥65% municipal waste to be reused, recycled or composted	Site Waste Management Plan Waste Management Delivery and Servicing Plan BREEAM Pre-Assessment

	Site	Substructure	Super Structure	Shell/Skin	Services	Space	Stuff	Construction Stuff	Summary	Challenges	Counteractions + Who + when	Plan to prove and quantify
Principle 1: Conserve Resources												
Minimise the Quantities of Materials Used	A Pre-demolition Audit has taken place (Refer to Appendix) and outlines what materials may be reused. Unfortunately photochemical contamination may restrict some re-use.	Seeking to embed high cement replacement with alternatives.	Lean design principles targeted. Post tensioned slabs to reduce concrete fraction to be considered at the appropriate stage of design.	Robust and long-lasting finishes will be selected reducing the need of frequent maintenance and replacement. Consideration of high quality materials palette. (in line with BREEAM Mat 01 Considerations)	Where possible, items are to be prefabricated or assembled off-site. Including services. Services capacity is to be sized to ensure thermal comfort.	Avoid installing finishes in the non-domestic areas prior to lease agreement	To be considered with tenant as part of incoming fitouts.	'just-in-time' material delivery to minimise stockpiling and related risk of damage and disposal as waste; close attention to material quantity requirements to avoid overordering and generation of waste; reuse of materials where feasible.	Lean design principles adopted, and elements prefabricated offsite where possible.	Refinement of material quantities will be reviewed as design proceeds. Ensuring sub/structure material quantities are minimised whilst dealing with below ground site constraints.	Ensure structural design is optimised for substructure and superstructure (Structural engineer)	Material efficiency review exercise at next stage of design. Bill of quantities analysis against material benchmark.
Minimising the quantities of other resources used (energy, water, land)	A Whole Life Carbon Assessment has been undertaken (P150051-RPT-8004) taking a holistic view to reducing embodied and operational carbon emissions	A Whole Life Carbon Assessment has been undertaken (Appendix A), taking a holistic view to reducing embodied and operational carbon emissions	A Functional Adaptation Strategy Study considering Feasibility, Accessibility, Versatility, adaptability, convertibility, expandability and refurbishment potential to be produced at next stage. A WLC Assessment has been undertaken, with a view to reducing embodied and operational carbon emissions	A Functional Adaptation Strategy Study considering Feasibility, Accessibility, Versatility, adaptability, convertibility, expandability and refurbishment potential to be produced at next stage. A WLC Assessment has been undertaken, with a view to reducing embodied and operational carbon emissions	Residential areas will target a water consumption of 105 l/p/day or less. The development is being designed to be highly energy efficient, as confirmed within the Energy Strategy, (P150051-RPT-8001)	Non-residential units designed to accommodate a variety of uses.	To be considered with tenant as part of incoming fitouts.	The contractor will be required to monitor and report energy and water use during construction works on-site. (Man 03)*	A Functional Adaptation Strategy Study and Plan will be adhered to. Monitoring and reporting of energy and water use during construction works	Maturity of the market /design solutions. Specific site constraints driving bespoke solutions.	Ensure structural design is optimised (Structural engineer) Preconstruction supply chain engagement	Review exercise at next stage of design.
Specifying and sourcing materials responsibly and sustainably	Sustainable procurement plan established across the development. (in line with BREEAM Mat 03)* Prioritise locally sourced materials where possible	EPDs - ISO14001 - BES6001 - FSC - PEFC - CARES (Mat 03)* Concrete GGBS content to be optimised. Target to use materials that can be reused at end of life.	Prioritise products certified with BES6001 'Good' certification. (Mat 03)* Concrete GGBS content to be optimised. Recycled content of structural steel to be maximised	Prioritise façade systems with EPDs. Review equivalent façade manufacturers and their associated product stage carbon emissions.	Recycled content of ductwork to be maximised.		To be considered with tenant as part of incoming fitouts.	Sustainable Procurement Plan has been developed. To be reviewed with contractor during preconstruction supply chain engagement	Materials to be responsibly sourced, and locally sourced where possible. Structural elements to have high recycled content or cement replacement levels.	Potential cost premium. Higher recycled content targets may limit supply chain. Structural constraints for higher GGBS content.	Ensure structural design is optimised (Structural engineer) Preconstruction supply chain engagement	Review exercise at next stage of design

SECTION B: DESIGN TO ELIMINATE WASTE (AND FOR EASE OF MAINTENANCE												
Designing for reusability / recoverability / longevity / adaptability / flexibility			The following aspects have been considered: - Flexible floorplates layouts / structural grids - Avoidance of toxic treatments and finishes. - Standardised components (in line with BREEAM Mat 05/Wst 06)*	The following aspects have been considered: - Modular assembly of curtain walling - Off-site fabrication - Disassembly strategy - Standardised components (Mat 05/Wst 06)	The following aspects have been considered: - Flexibility / adaptability - Metering / split tenancies - Standardised components - Disassembly strategy (Mat 05/Wst 06)	The following aspects have been considered: - Flexible floor plates and layout of core (Mat 05 / Wst 06)	To be considered with tenant as part of incoming fitouts.	Sustainable Procurement Plan has been developed. To be reviewed with contractor during preconstruction supply chain engagement	Design spaces for flexibility whilst enabling access to all elements that could be reused/replaced.	Avoiding design solutions which constrain disassembly / recoverability	Disassembly / recoverability review during detailed design (structural engineer, architect, contractor input)	
Designing out construction, demolition, excavation, industrial and municipal waste arising		The following have been considered: - Modular construction - DfMA approaches - Supplier take-back schemes (in line with BREEAM Wst 01/06)	The following have been considered: - Modular construction - DfMA approaches - Supplier take-back schemes - Just-in-time delivery (in line with BREEAM Wst 01/06)	The following have been considered: - Modular construction - DfMA approaches - Supplier take-back schemes - Just-in-time delivery (in line with BREEAM Wst 01/06)	The following have been considered: - Modular construction - DfMA approaches - Supplier take-back schemes - Just-in-time delivery (in line with BREEAM Wst 01/06)	The following have been considered: - Supplier takeback schemes - Just-in-time delivery - Minimising Packaging (in line with BREEAM Wst 01)	To be considered with tenant as part of incoming fitouts.	Accurately forecasting the amount of materials needed, using larger pack sizes to reduce the amount of packaging per unit and by using cardboard packaging instead of plastic where possible.	Designing out waste through regular / modular design. Consideration for just-in-time delivery, reducing packaging, and supplier takeback schemes	Supplier takeback schemes still an immature market for certain materials in the UK.	Review during detailed design	Review procurement plan with contractor during preconstruction supply chain engagement
SECTION C: MANAGE WASTE												
Demolition waste (how waste from demolition of the layers will be managed)	Aim to achieve 95% diversion from landfill	Building brickwork to be crush and reuse on site for infill of tank excavation if possible. If not, crush for reuse off-site for low grade aggregate. If not, recommended recycle off site by waste management contractor.	Building brickwork to be crush and reuse on site for infill of tank excavation if possible. If not, crush for reuse off-site for low grade aggregate. If not, recommended recycle off site by waste management contractor.	95% of the waste will be reused or recycled in line with the London Plan guidance.	95% of the waste will be reused or recycled in line with the London Plan guidance.	95% of the waste will be reused or recycled in line with the London Plan guidance.	Tenant's responsibility	95% of the waste will be reused or recycled in line with the London Plan guidance.	Maximise reuse and recycling of demolition and waste	Some building materials may not be recyclable on site	Contractor during demolition and construction stages	A detailed pre demolition audit has been carried out

Excavation waste (how waste from excavation will be managed)	Aim to achieve 95% diversion from landfill	Likely that all excavation will be contaminated by petrochemicals so specialised removal required.	Likely that all excavation will be contaminated by petrochemicals so specialised removal required.	Likely that all excavation will be contaminated by petrochemicals so specialised removal required.	Likely that all excavation will be contaminated by petrochemicals so specialised removal required.	N/a	N/a	N/a	N/a	N/a	Contractor during demolition and construction stages	Contractor's Sustainable Design & Construction Strategy Site waste management plan
Construction waste (how waste arising from construction of the layers will be reused or recycled	A target benchmark for resource efficiency, i.e. m3 of waste per 100m2 or tonnes of waste per 100m2 (7.5m3/11.1 tonnes of waste per 100m2 GIA). Potentially aspiring for a target of 3.4 m3/100m2 GIFA or 3.2 tonnes/100m2 GIFA						Tenant's responsibility	To be reviewed with the contractor. Contractor will segregate and monitor waste generated during construction	Reduce waste arising during construction. Segregating waste and reducing waste going to landfill	Logistics of waste storage and segregation may be a challenge	Contractor during demolition and construction stages	
Municipal and industrial waste (how the design will support operational waste management)												

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		Sustainable Sourcing of Materials	Designed for the periodic refurbishment of the tenant areas.	95% diversion from landfill at end of life	
		Manage construction Waste	Contractor to monitor and record total construction waste generated and how this waste will be disposed of. Measures to be implemented to manage and reduce construction waste.		
		Optimise Material Use	Contractor to record total construction waste generated and how this waste will be disposed of. Measures to be implemented to manage and reduce construction waste.		
		Functional Adaptability	Design for adaptability and flexibility – to increase building lifespan		
		Reuse and Recycling at End of Life			
CE approach for the existing site	Existing building	Maximise recovery, reuse and recycling of demolition waste	Concrete will be crushed, grated and stockpiled on site prior to being reused then ultimately reused on site. In the event of contaminated material being identified, the contaminated material will be segregated and removed from site to a suitable landfill.	≥95% of demolition waste to be reused and/or recycled.	Pre-demolition waste audit (TBC) Site Waste Management Plan
CE approach for municipal waste during operation	Whole development	Storage and segregation of operational waste	On-site bin store to accommodate sufficient storage for recyclable and landfill waste as well as food waste.	≥65% municipal waste to be reused, recycled or composted	Site Waste Management Plan Waste Management Delivery and Servicing Plan BREEAM Pre-