

Pre-Deconstruction Audit

Site Address : Alba Gate, Stoneywood Park, Aberdeen, AB21 7DZ

Site Name: Alba Gate

Report Number: 2310/0603/A

Issued: 26/10/23

Prepared for: CoCity

Report by: Material Index Ltd

Status: **Final**



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Date 25th of October 2023

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Executive Summary

The total sum weight of material identified within the site is 6.637 tonnes, with the majority of the existing building material, by weight, consisting of the concrete foundations and floor slab. The analysis suggests that 8% of material has the potential to be diverted from the waste stream through on-site and off-site reuse (Chart 1). This is considered appropriate given the challenge of the building’s materials, condition and typology.

Once the concrete foundation and slab is removed from the analysis, the percentage of material currently designated for reuse (both on and off-site) is 52% (Charts 2), potentially saving over 400 tonnes of high-value, high embodied carbon materials.

Chart 1: Total Material Pathway Distribution (kg)

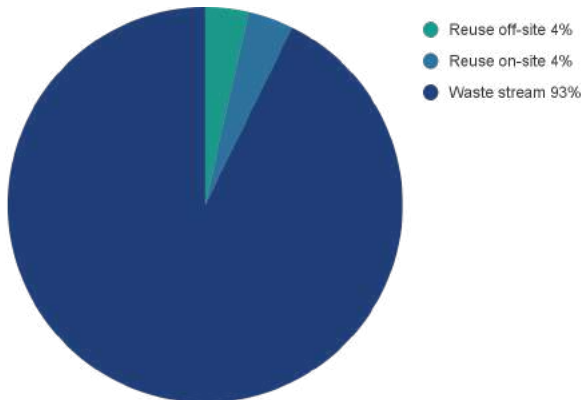
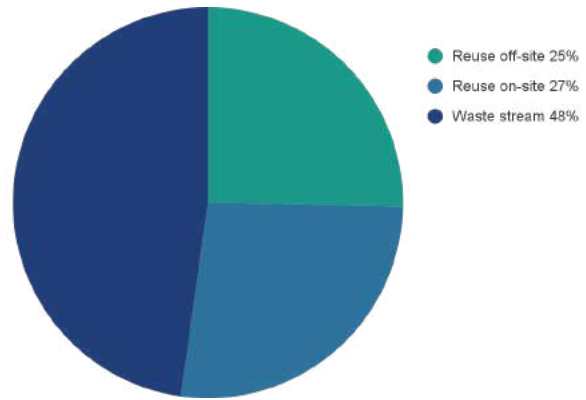


Chart 2: Pathway Distribution w/o foundation & slab (kg)



The total volume of waste arising is estimated to be 5,905 tonnes. Of the materials in the waste stream, a large percentage of the metals (Chart 4) can be recycled. Suggestions are made with regards to reducing concrete waste further in the report. Data is provided in Appendix A.

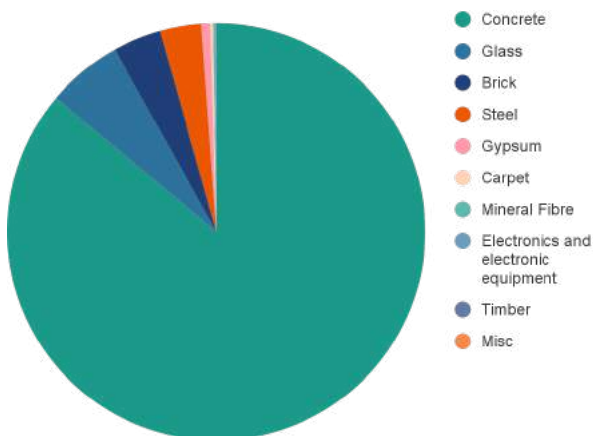


Chart 3: Distribution: Materials for Waste Stream by Weight (kg)

For the items entering the waste stream, given the current understanding of the materials on site, particularly given the relatively low amounts of insulation relative to other material categories, it is recommended the deconstruction contractor has a target of 99% diversion of waste from landfill.

Client Next Steps

Status: Outline > Status: Finalised > Status: As-Deconstructed

Material Index has categorised all the items in **Appendix: Deconstruction Asset Registers**

The Highest Pathway of each item is recorded alongside the **Designated Pathway**.

The client should review the **Designated Pathway** of all the materials in **Appendix B+C: Deconstruction Asset Registers**. The current document status is **Outline**. After the client has reviewed pathways this report will be reissued as **Finalised**.

Project Description

Details

Site visit date:	Single site visit on 10th October 2023
Site visit undertaken by:	Rob Smith (MI)
Site Contact:	Jack (client rep)
Project information available:	Basic Site Drawings + Visual inspection. No measured survey or invasive surveys have been undertaken.
Project Status:	Pre-deconstruction.
Site area:	Approximately 72,118.2ft ² / 6,700m ²



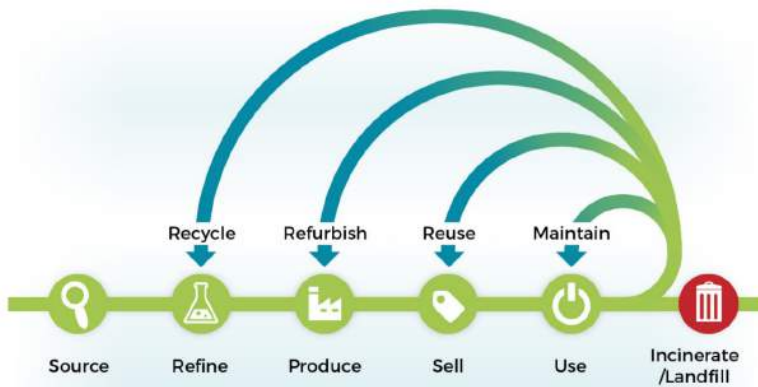
Purpose

This report is a pre-deconstruction audit to produce an asset register of materials that will be removed during the deconstruction phase. It is primarily focused on components which are suitable to retain in-situ, or reuse either within the client portfolio or resale.

The report also recommends recycling pathways within the waste stream. The intention is to maximise the management of material in line with the principles of the circular economy waste hierarchy, whereby it is best to maximise retention in situ, then reuse either within the client's portfolio, then recycling, and then waste to landfill.

This report should assist in the contractor's site waste management plan. Material Index can assist the contractor/client if it wishes to divert any materials from waste-stream to value stream. This report could be used to help with the development of a client waste management plan or internal reporting.

Material Index welcomes the opportunity to work with CoCity and the wider project team and feedback is greatly appreciated.



Reuse Hierarchy Diagram: Diverting material from end of life scenario: BS 8001

Not Covered in Report

This report should not be considered to be a *pre-redevelopment audit* because the next life of the space has already been designated.

This report is intended to satisfy BREEAM BRE Wst 01 Construction waste management. Targets for recycled content to be used (% by value) in the next phase of work have not been set. Material intensity (kg/m² GIA) of the existing or proposed work has not been set. These are all optional if required by the client.

Report Scope

Material Index recognizes that many of the components have indeterminate status - i.e. they could be resold or retained if a buyer is found quickly enough. Material Index is available to discuss the status of components with development managers/facilities managers or third party contractors. Material Index can engage in deconstruction tender specification if required by the client.

Report Status

Current status: **Outline**

Methodology

The site visit involved inspection, measurement and condition surveys of materials from visual inspection and drawings. The volume of different materials has been estimated, based on measurements, drawings and cross-referencing manufacturers data from schedules of materials. The BRE green guide has been consulted in preparation of this report. Where direct measurement has not been possible the results include some margin of error.

The weight of the different materials has then been estimated using commonly accepted densities, or from manufacturers and material suppliers.

Structural drawings and measured survey drawings of existing buildings were not provided, but at this stage are not necessary.

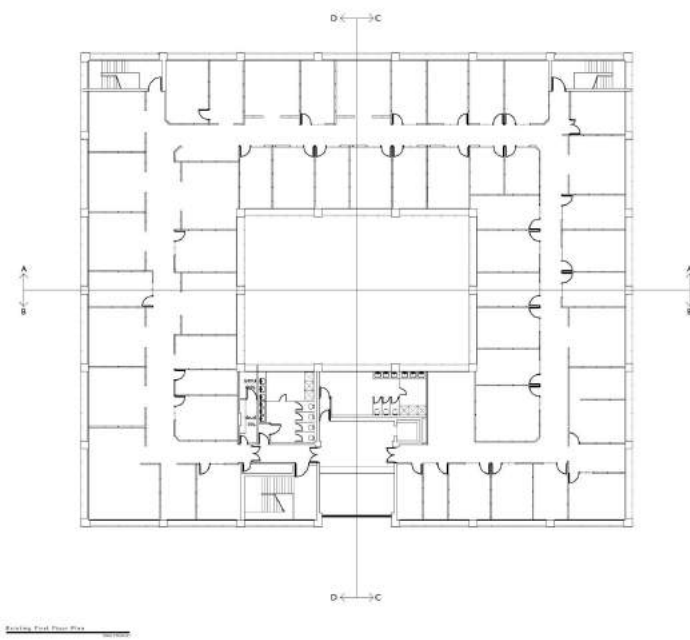
Disclaimers

Companies who may be able to provide services, or sale, are given for information, but do not constitute an endorsement or recommendation. The Environment Agency website provides a certification directory to confirm if a waste management facility has the appropriate permit in place. This audit does not constitute a report on potential hazardous material on site. On-site reuse of non-hazardous materials is highly recommended in-line with the hierarchy of reuse laid out in circular construction guidance. Items sent off site as waste shall be delivered to a suitably licensed (or exempt) facility.

Site Overview



Existing Site Aerial Photo



Site Plan

Existing Site Plan

History

Alba Gate was built in 1974 and the building fabric has been unchanged since that date. The building does not lie within a conservation area and does not hold any historical listing or special architectural interest.



Exterior_Credit Material Index



Exterior_Credit Material Index

Condition

The glass facade construction of Alba Gate has unfortunately left the site vulnerable to unauthorised entries. Despite attempts to secure the site, there is evidence of repeated break-ins and attempted fires. The building is in a state of serious disrepair and particular care was required due to the amount of broken glass, and falling roof panels/partitions and is a general risk to the public. The building is uninhabitable in its current state and should be considered a dangerous building. The owner should be aware that a dangerous building enforcement notice could be served at any time due to this. It is our understanding that the client does hope to replace the building with a high-quality mixed-use development of amenities, which will focus on supporting the local community, residents and workforce visiting the area.



Lobby_Credit Material Index



Office Hall_Credit Material Index



Lobby_Credit Material Index



Office_Credit Material Index



Toilets_Credit Material Index

Pre-Deconstruction audit findings

A Deconstruction Asset Register has been prepared itemising the types and amounts of different materials likely to be removed during the deconstruction phase of the redevelopment.

An estimate of the overall volume and tonnage of materials likely to be generated during the deconstruction phase of the redevelopment is shown in Table 1.

Overall Distributions

Table 1: Deconstruction Asset Register: Distribution by material

Existing building deconstruction: Distribution by material				
Material	Total Weight (kg)	Total Volume (m3)	Total Weight (%)	Total Volume (%)
Concrete	5,480,722	2,284	86.07%	79%
Glass	372,276	149	5.85%	5%
Brick	238,342	113	3.74%	4%
Steel	203,465	26	3.20%	1%
Gypsum	43,603	38	0.68%	1.3%
Carpet	13,434	10	0.21%	0.3%
Mineral Fibre	6,458	108	0.10%	3.7%
Electronics and electronic equipment	5,689	142	0.09%	4.9%
Timber	3,750	9.38	0.06%	0.3%
Ceramics	125	0.05	0.00%	0.0%
	6,367,865	2,879	100%	100%

Deconstruction Asset Register: Items for retention and reuse by material: pending review

Items for Retention

The building is to undergo full demolition, as a result no items are to be retained in-situ.

Opportunities for On-site reuse

Bricks: Site-wide

The majority of the brick on site was present in the hard surfaces surrounding the building. This blockwork all appeared to be in good condition and presents an obvious opportunity for reuse on-site.

Proposed Landscaping

Many items in the landscaping proposal could potentially be sourced from secondary stock. This includes 400m² of permeable paving on the ground floor, over a mixture of two paving types, porcelain paving on the roof plan, raised planters and timber seating. Raised brick planters and the wall along the South West boundary could potentially be constructed with bricks from the existing site.



Fig 2. Example of Brick reuse - Brick Facade Panel - Source: Lendanger, Resource Rows
Brick mounted on-cement board panel. This could be an option for re-using the existing brick wall if disaggregation to brick is not effective.



Fig 3. Example of Crushed Brick in a Gabion wall product - source: Dekorative Ziegel
Crushed concrete can also be used in a gabion product for planters.

Bike Racks

A number of bike racks were identified on site, which could easily be incorporated into the proposed design.

Off-site Reuse Items

Bricks:

Given the age of construction it is unlikely that the mortar type will permit the easy separation of bricks within the structure without damage in any of the building structures.

Often it is with the landscaping of the scheme that there are the best opportunities for brick reuse, such as brick used in the fill for gabion walls or used whole in reconstituted boundary walls. Demolished brick can be crushed to make a useful aggregate, for example around foundations, either on site or off-site. Material Index can support assessments for on-site foundation fill requirements or landscape elements if required.

Raised Access Flooring

In the past five years there has been an increase in the availability of take-back schemes for raised modular flooring. This exists throughout Alba Gate and this pathway could be explored by MI, if so desired.

Metal and Structural Steel

For structural steel members, Cleveland Steel and Tubes, and EMR can collect steel and sell it for reuse. There are a number of large steel i-beam sections that appear suitable for reuse, however, the quantity may not be sufficient commercially. Steel is becoming reused more frequently and if steel reuse is to be explored then there is guidance available from the Steel Construction Institute.

Furniture

Where the existing furniture has been deemed sufficient quality for commercial resale MI has been in touch with commercial resellers. There exist 29x desks and 25x drawer units of sufficient quality for reuse. An email inquiry has been made with:

<https://www.greenwell.co.uk/office-furniture/>

Timber

Much of the timber across the site could be reused. The asset register of timber items can be shared with resellers and community wood recycling organisations prior to deconstruction appointment for verification.

Partitions and Internal Timber Doors

Whilst there isn't an established marketplace for internal office partitions and timber doors, more cases of reuse are appearing in London. These items carry reuse potential, but may be limited by the available reuse market in Aberdeenshire.

Recycling and Responsible Demolition

If items cannot be reused they should be sent to specialist commercial waste management companies where recycling options exist.

Suez is large recycling and waste management company with 300 sites across the UK, with the nearest to Alba Gate being just 5 minutes drive away.

Specialist firms can be contacted. See below

Foundations and Concrete elements

Concrete comprises the highest material volume by weight and there do not currently exist any direct reuse pathways for concrete. Downcycling the concrete through crushing it for aggregate remains a possibility and should be considered.

Lights

Given the age and specification quality of the existing buildings it is unlikely that there is sufficient residual value in any of the existing light fittings to merit the logistics of reuse.

Glass

Recommendations: A specialist glass recycler is contacted to see whether any of the glass is suitable for recycling into new flat glass, or if the glass can be collected for recycling into lower grade applications such as glass bottles. The glass should be separated on site and sent to a licensed waste management contractor for recycling.

Potential waste management contractors: EIS offer a glass collection service for all types of glass - <https://eiswaste.com/services-3/>

Metal

Metal should be segregated on site. Any non ferrous metals (e.g. stainless steel) should be separated from other metals as they have a higher resale value. The metal should be removed by a licensed waste management company for recycling.

Potential waste management contractors:

RAM Tubulars & Recycling
<https://www.ramtubulars.co.uk/recycling>
01224 790013

Carpet

Recommendations: All carpets and carpet tiles (consultant rooms) should be recycled.

Ceramics

All ceramic bathroom units had already been removed from site.

Timber

Timber should be segregated on site by timber-based manufactured boards or solid timber, as MDF and other manufactured boards are harder to recycle due to the adhesives. Solid timber unable to be reused can be recycled for chipboard, and the manufactured boards can be sent for energy recovery. Most solid timber can be recycled, usually into chipboard. Following new guidance from the Construction Demolition Waste Forum new guidance has been produced on hazardous wood waste where timber coated with preservatives prior to 2007 in large quantities should be tested.

Plasterboard

Recommendations: Waste must be segregated (either onsite or offsite) and either recycled by a licensed waste company or sent to landfill where it must be deposited in a separate cell where no biodegradable waste has been accepted. Further guidance on the disposal of plasterboard waste is available from the Environment Agency and CIWM.

Insulation

The partition walls were found to have insulation in bags and were generally in good condition. These have the potential for re-use, and have been assigned appropriately so, although the difficulty of extraction plus the limited secondary market for 'non-natural' insulation materials makes it unlikely they could be re-used off-site. A licensed waste management company should be used during demolition to assess if insulation should go to energy recovery or to landfill. The determining factor is often the presence of foam insulation which is typically a hazardous waste and require high temperature incineration.

Hazardous materials

Fluorescent tubes and CFL bulbs: These should be separated on site, collected and disposed of by a licensed hazardous waste carrier.

Asbestos: If an asbestos survey has not been undertaken it is recommended. All asbestos materials should be managed according to the Control of Asbestos Regulations 2012. Detailed information is available from the Health and Safety Executive (www.hse.gov.uk) about how to manage asbestos including when licensed contractors must be used, training of operatives and how to dispose of the waste material.

General advice for increasing retention and reuse

Longer sales time: If it is possible to enter a property earlier to conduct a PDA, the longer sales time would allow a greater chance of a buyer being found. In this scenario we have placed many of the components in a single batch so they could be sold quickly prior to the contractor entering the building.

Portfolio index: Often there are possibilities for reuse within the portfolios of building owners, or within the portfolios of the designated design teams on projects. The advantages of this approach is that it provides traceability and accountability on components, thereby lowering risk. Typically the more of a client's portfolio is indexed the greater the percentage of materials that can be reused. Material Index can advise on storage and certification options.

Deconstruction care: Material Index are more than willing to consult the client on the findings of this report and consider any options for closed loop reuse in a similar project. If there is a chance materials can be reused but their status is indeterminate, the recommendation is to ensure that items are removed and stored in such a way that all components remain together, e.g. windows in their frames.

Information on deconstruction/construction proposals: Decisions on future pathways for materials within a space are always client prerogative. Provision of design information on the next life of the space (demolition and/or design drawings) can assist Material Index to make assessments on which components can be reused. Material Index is willing to coordinate with design teams and contractors to ensure as many components as possible are retained/reused or recycled at their highest value.

Conclusion and Recommendations

Reusing materials is part of the transition to a circular economy. The overarching ambition is to decouple economic growth from resource consumption, by keeping resources in use for as long as possible and trying to reuse and regenerate them at the end of their life. The ambition is to minimise waste and reduce the environmental impacts of new materials.

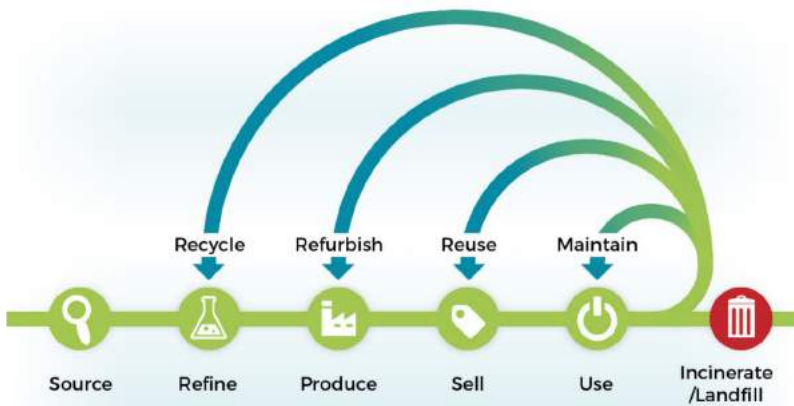
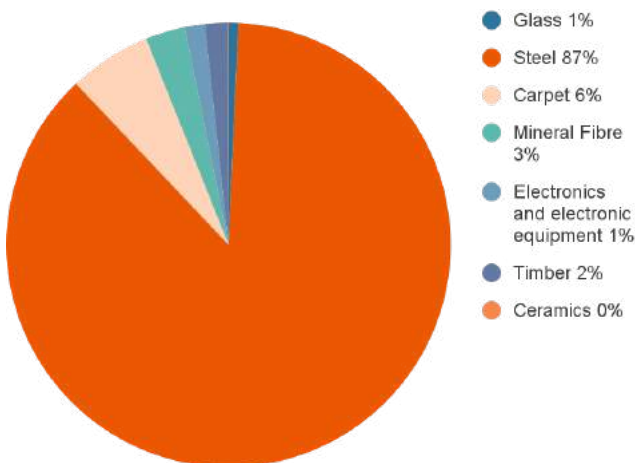


Fig1. Reuse Hierarchy Diagram: BS 8001

Reuse Targets

An estimate of the total percentage of waste materials that can be diverted and recycled on this project is 8% (pending discussion).

For the purpose of setting reasonable but ambitious goals for this project we recommend analysing the re-use content without reference to the concrete foundations and slab. The current reuse level is 52% by weight in this scenario. We recommend a target of over 20% as being good and over 30% as being excellent. It is recommended that the targets below are communicated to the demolition contractors to ensure that maximum reuse and recycling is achieved.



Potential Materials for Reuse off-site

Recycling

It is recommended that the targets below are communicated to the demolition contractors to ensure that maximum reuse and recycling is achieved.

Comparison of Actual/Forecast Rates

Material Index can record how much waste is diverted from waste during the deconstruction operation and re-issue report **As-Deconstructed**. In accordance with the BRE Code of Practice Pre-redevelopment Audit (2017) we seek to measure actual performance versus estimated. Following project completion Material Index can issue recommendations for improvements to diversion to reuse procedure. Reused items as a percentage of materials in the proposed building could also be estimated, with total volumes extracted from a bill of quantities provided by the Cost Consultant or BIM model, if required.

Deconstruction activities

It is recommended designated areas be established for storage of materials during sorting. Skips and waste vans should be loaded with one designated waste stream at a time. The deconstruction training on Environmental Issues, or Monitoring and Record Keeping of waste transfer during construction.

Induction training should be carried out to site shall include Environmental issues, Inductions will specifically include a reminder to all staff on the expected levels of recycling and waste control and the standard of segregation required for acceptable disposal.

Material Index can undertake deconstruction tender advice and monitoring around the dismantling of components for reuse and resale.

Site Separation

It is recommended that items to be reused off-site are protected during site deconstruction. It is recommended that items set aside for reuse through resale are arranged for pick-up.

Material Index can help coordinate pick-up. For other items in the recycling/waste stream the following items should be site separated: timber; ferrous metals (steel); non-ferrous metals (stainless steel, copper); plasterboard; ceramic items and /porcelain tiles. Hazardous waste should be segregated and must be removed by a licensed hazardous waste contractor.

Designing for reuse

MI can assist in sourcing from the reclaim industry, set targets for recycled content to be use (% by value) and calculate the material intensity (kg/m² GIA) if required.

Additional resources

LETI, Climate Emergency Design Guide, 2020

[BS8001 Circular-Economy Standard](#)

Destinations

Name: Suez

Web: www.suez.co.uk/

Address: Sclattie Quarry Industrial Estate, Off Bankhead Ave, Bucksburn, Aberdeen AB21 9EG

Suitable for Construction and Deconstruction Waste: Yes

Speciality: Reuse, Recycling, Including Construction and demolition (C&D) waste

Phone: 01224716576

Name: Panda Rose Metals

Web: <https://www.pandarosametals.co.uk/>

Address: 44 Canal Rd, Aberdeen AB25 3TL

Suitable for Construction and Deconstruction Waste: Yes

Speciality: Metal Recycling

Phone: 01224632218

Name: RAMS Tubular Scotland

Web: <https://www.ramtubulars.co.uk/>

Address: Kinellar, Aberdeen AB21 0SH

Orion House, Cody Dock, South Crescent, Canning Town

Suitable for Construction and Deconstruction Waste: Yes

Speciality: Construction Waste

Phone: 01224790013

The Wood Shop

Web: <https://shopwood.co.uk/>

Address: Cloisterseat Croft, Udny, Pitmedden, Aberdeenshire, AB41 7PR

Suitable for Construction and Deconstruction Waste: Yes

Speciality: Wood

Phone: 01651 842876

Email: info@shopwood.co.uk