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RIBA 3 Circular Economy Statement Planning Submission

Phoenix Academy Redevelopment

Future Academies

R001HAO-240691-CES

20 March 2026

Document History

Issue	Date	Comment	Author	Chk'd
P01	17/01/2025	RIBA 3 Circular Economy Statement – Draft Issue	HAO / JBK	JBK
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P04	20/03/3026	Revised post GLA review	HAO / JBK	JBK / JHE
P05	12/08/2026	Further revisions to GLA	HAO/JBK	JBK/JHE

Contents

Executive Summary

The statement supports the pre- and detailed- application for the redevelopment of Phoenix Academy in Shepherd's Bush, London. The proposal is for the demolition of existing buildings and construction of replacement buildings.

This statement was developed in conjunction with the design team and developer, with a workshop hosted on Monday 4th November 2024. The workshop led to a strategic approach being defined for the existing buildings, proposed new development and the approach to waste.

Throughout this report, key commitments and targets have been identified to ensure the project will contribute towards a circular economy. The 6 core principles have been addressed, which are:

1. Building in layers
2. Designing out waste
3. Designing for longevity
4. Designing for adaptability or flexibility
5. Designing for disassembly
6. Using systems, elements or materials that can be reused and recycled

The building circularity for the proposed development follows the following principles and approach:

Conserve resources, increase efficiency and source sustainably

- Minimise the quantity of the material used such that the whole life carbon does not exceed the GLA's WLC benchmarks.
- To reduce embodied carbon on the proposed development, to meet GLA benchmarks and get close to the GLA aspirational targets.
- Maximise the reuse of existing structure on site.
- Promote the use of recycled and secondary content.
- Use a sustainable procurement approach to promote use of low impact, low carbon materials. For example, all timber or timber-based products will be FSC or PEFC certified. The use of suppliers with EPD information, ISO 14001 or equivalent environmental management system will also be encouraged during material procurement.

Design to eliminate waste

- The building layers with longer life expectancy will be designed for longevity, flexibility and adaptability and layers with shorter life expectancy for ease of maintenance, recoverability and replacement.

Manage waste sustainably

- The project is targeting 95% diversion from landfill.
- A site waste management plan will be implemented on site to maximise sustainable and responsible resource management.
- An operational waste management strategy will be implemented to ensure municipal waste is managed sustainably.

1.0 Introduction

1.1 Purpose of the report

Pick Everard has been instructed to undertake a Circular Economy Statement for the phased redevelopment of Phoenix Academy (herein 'The Proposed Development') in Shepherd's Bush, London, consisting of a new multi-storey education block, which will provide general teaching, a hall, sports hall, and sports changing room. The school will accommodate 750 secondary pupils and 150 sixth form pupils.

1.2 Site context

The existing site (Phoenix Academy, Shepards Bush, London W12 0RQ) comprises of the original 1950's school buildings, refurbished facilities, the VIBE building, Technology block and the local leisure centre. The site is located in the London Borough of Hammersmith and Fulham, and owned by London Square (Figure 1).

Figure I Site Location

1.3 The proposed development

The Proposed Development features a new teaching block which includes classrooms for subjects like English and Modern Foreign Languages, with a dedicated Sixth Form Area on the floor above. The existing VIBE and Technology buildings will be refurbished to accommodate science and math laboratories as well as design and technology rooms. These buildings will be connected by a main circulation core to facilitate movement across floors and between departments (Figure 2).

The Proposed Development is approximately 7622m^2 (Total Gross Area), and the project is currently at RIBA Stage 3.

Figure 2 Proposed site layout

1.4 Scope of circular economy statement

The GLA 'Circular Economy Guidance' document published in March 2022 was used as the basis for this report. The scope of this report covers the requirements for a full application as set out in the GLA guidance and summarised as:

- The identification of relevant circular economy targets including metrics where applicable
- Identification and assessment of applicable circular economy design principles and strategic approaches applied by building layer
- To be informed by separate pre-demolition audit to identify scope for retaining and reusing existing buildings and materials (not available at time of publishing)
- To be informed by separate bill or materials and operation waste management plan to support the identification of opportunities to reduce virgin material consumption and minimise waste (not available at time of publishing).

This statement was developed in conjunction with the design team and developer, with a structured circular economy design workshop hosted on Monday 4th November 2024. The workshop led to a strategic approach being defined for the existing buildings, proposed new development and the approach to waste. Table 1 details the attendees of this workshop, and Appendix 1 includes the agenda and key outcomes from the workshop.

Table 1 CE Workshop Attendees

Name	Role	Organisation
Adam Burroughs	Senior Electrical Engineer	Pick Everard
Ahmad Taleb	Civil Engineer	Pick Everard
Akram Hamouda	Project Lead Designer	Pick Everard
Andrew Newell	Acoustician	Sharps Redmore
Craig Akhurst	Project Manager	CJA Property Consulting
David Brown	Civil Engineer	Pick Everard
Hannah Osmanski	Assistant Circular Economy Consultant	Pick Everard
Harry Burrows	Associate Director Structural Engineer	Pick Everard
Jack Rendle	Head of Estates & Facilities	Future Academies
John Thornberry	Lead Sustainability Consultant	Pick Everard
Jon Ross	Principal Mechanical Design Engineer	Pick Everard
Jonny Burke	Lead Circular Economy Consultant	Pick Everard
Mike Merton	Architect	Pick Everard
Shaheel Contractor	Intermediate Structural Engineer	Pick Everard
Steven Golding	Project Architect	Pick Everard

1.5 Policy & guidance

In the production of this Circular Economy Statement, the following policies have been reviewed:

- The London Plan
- BREEAM New Construction 2018 Version 6.1 – 'Excellent' rating.
- Social Value Charter Template
- Hammersmith and Fulham Local Plan February 2018
- Hammersmith and Fulham: Planning Guidance - Supplementary Planning Document 2018

2.0 Method Statement

A holistic approach has been adopted to establish the approach and targets for the project. The focus has been to create an architectural and design strategy where circular economy principles are embedded in the design rather than an afterthought.

The architectural and design approach follows the following framework:

- **Reduce**- Reduce waste arising from site and consumption of new virgin materials.
- **Reuse** – Reusing existing structure as much as practically feasible, reusing existing material, such as sending demolished concrete for crushing to produce aggregate.
- **Recover –** The project is targeting 95% diversion of waste from landfill to ensure recovery of key materials.

As the proposed development comprises existing buildings, the project team has identified how its approach supports the implementation of the following six CE principles:

1. Building in layers
2. Designing out waste
3. Designing for longevity
4. Designing for adaptability and flexibility
5. Designing for disassembly
6.

The details of this Circular Economy Statement have been developed through the following key activities:

- A pre demolition audit, undertaken by Velocity Transport Planning, which included an analysis of viable sustainable management pathways for materials on site.
- A specific circular economy workshop held with the design team at RIBA Stage 3 which covered:
  - Establishing project specific circular economy targets and metrics.
  - Identifying opportunities to embed circular economy principles into the design of the proposed development.
  - Identifying proposed new materials to be used on site and assessing options to reduce consumption and/or replace each with reused or low carbon options.

Further to workshop discussions, ongoing engagement with key stakeholders was conducted to further define proposed circular economy targets and strategies. Further workshops should be undertaken to advance these early conversations at the detailed design stages, with the client, team and main contractor present.

The following further documentation will be completed prior to the beginning of works on site:

- Sustainable Procurement Plan
- Construction Management Plan
- Operational Waste Management Strategy
- Site Waste Management Plan

3.0 Circular Economy Commitments

the project has adopted key quantifiable circular economy targets including best practice targets such as "*divert 95% of construction, demolition and excavation waste from landfill*".

3.1 Circular Economy Targets

In line with the requirements outlined within the GLA Circular Economy Statement Guidance (March 2022), The Proposed Development will adhere to the targets in Table 2.

Table 2 Proposed Development Circular Economy Target

Circular Economy Targets	Applicant Commitment	Project commitment
Demolition Waste (non-hazardous)	95% diverted from landfill (for reuse, recycling or recovery).	Yes
Excavation Waste	95% diverted from landfill for beneficial reuse.	Yes
Construction Waste	95% diverted from landfill (for reuse, recycling or recovery).	Yes
Municipal Waste	65% recycling rate by 2030.	Yes
Recycled Content	20% of the building material elements to be compromised of recycled or reused content.	Yes

These targets will be monitored throughout the project, and final compliance confirmed within the post-construction CES.

These commitments will be monitored throughout the project, and compliancy confirmed within the post-construction CE statement. In addition to the above, the development has chosen to mandate additional targets:

- Achieve a BREEAM 'Excellent' Rating – Under the New Construction Version 6.1 scheme. This includes the target of 8 out of the 10 available BREEAM Waste credits.

3.2 Key Circular Economy Commitments Narrative

The project team identified the following circular economy commitments for the project during the workshop:

- Reduce material use by optimising the design and reusing demolition waste on-site where possible
- Source materials responsibly
- Design for adaptability, durability, resilience and longevity
- Implement waste minimisation targets during demolition and construction
- Ensure there is sufficient space for storage and segregation of operational waste
- Reuse as many existing buildings as possible
- Minimise impact on local ecology and enhance where possible

These commitments will be monitored throughout the project, and compliancy confirmed within the post-construction CE statement.

The following strategic design approaches have been adopted to support achieving the CE targets. Section 4.1**Error! Reference source not found.** breaks these down per individual building layer.

Minimise material quantities

The proposed development is retaining most of the existing structure with minimal, targeted demolition. New building elements will be optimised to minimise consumption of additional materials: this will include consideration of reusing resources and componentry from either on or off-site locations.

Specifying & sourcing materials

As the design progresses, the remaining ambition for the proposed development is to ensure all architects, designers and contractors continue to collaborate to embed the agreed approach for sourcing low impact sustainable materials including reused materials where viable.

Design for longevity, adaptability/flexibility and reusability/recoverability

Materials will be specified for durability and longevity. Waterproofing detailing, profiling, drainage details, fixings and general geometry will be thoroughly assessed to ensure resilience to future climate scenarios including increased rainfall events.

Non-load bearing internal partitions are being designed so that they may be dismantled and adapted, without damaging the building structure (building in layers), to accommodate the needs of the future tenants or building uses.

Design out waste

The ‘building in layers’ approach has been followed for elements with longer life cycles (more than 25 years), to hence maximise longevity, adaptability and flexibility. Building layers with shorter life expectancy (less than 25 years) will be designed for ease of maintenance, reuse and recoverability. Building services will be made accessible for easy maintenance, replaceability and upgrade.

Manage waste sustainably and at the highest value

A site waste management plan and an operational waste management plan will be prepared by the contractor to ensure optimum management and auditing of demolition, construction and municipal waste.

4.0 Strategic approach

This section details the key design approaches being applied to promote circular economy principles and outcomes for the Proposed Development.

4.1 Building in layers

The proposed development design has been broken down into building layers to design out waste, optimise material use and keeping building elements/materials in use at the end of their first life.

The design objective for the elements with longer life cycle (more than 25 years) is to design for longevity, adaptability and flexibility. Building layers with shorter life expectancy (less than 25 years) will be designed for ease of maintenance, reuse and recoverability.

The plant will be made accessible for replaceability and maintenance.

Opportunities will be explored for reusing hoardings and scaffoldings. Discussions with suppliers with regards to the possibility of sending back the packaging for reuse will be explored.

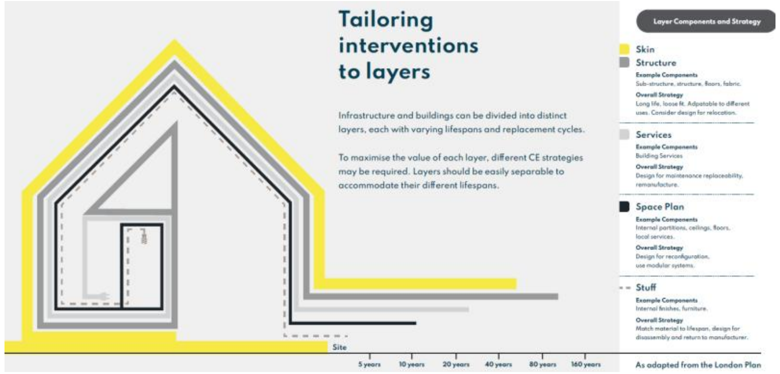


Figure 3 Overview of building layers and circular economy strategies

Table 3 Strategic approach by building layer

Layer	Summary and Constituent Elements	Strategies	Recycled content targets
Site	The geographic setting, urban location and external works	Retain and Reuse – Utilising existing site.	n/a Existing site is being retained
Sub-structure	Excavations, foundations, basements and group floors	Retain and Reuse – Partial reuse for main building substructure. Longevity – Durable and resilient, to improve ground conditions to ensure longevity.	20%
Super-structure	Load-bearing elements above the plinth including roof supporting structure	Longevity – Durable and resilient. Structurally sound to enable solar PV and future technologies to be installed.	20%
Shell/Skin	The layer keeping out water, wind, heat, cold, direct sunlight and noise	Longevity – Durable and resilient construction materials. High levels of insulation. Adaptability/Flexibility – Allowance for reconfiguration.	20%
Services	Installations to ensure comfort, practicality, accessibility and safety	Longevity – Specified to enable efficient running of the site. Adaptability/Flexibility – Building services located in accessible locations for removal and replacement.	TBC – as building service suppliers are identified-consideration will be made to levels of recycled content
Space	The layout of internal walls, ceilings, floors, finishes, doors, fitted furniture	Longevity – Durable finishes to be specified, given high level of wear-and-tear from building users as per the Department for Education (DfE) specification. Adaptability/Flexibility – Design team have reviewed opportunities to reconfigure spaces, to allow for a degree of flexibility with the building design, to suit building users or a change of use. Disassembly – The design encompasses welded elements to facilitate disassembly at the products end-of-life for future reuse.	20%
Stuff	Anything that could fall if the building was turned upside down	Longevity – Durable fittings to be chosen, to allow for high usage from building users. Adaptability/Flexibility – Furniture will be movable where appropriate.	20%

4.2 Proposed strategy for existing structures/buildings

The CE design approaches for the existing structures on site has been guided by the decision tree shown in Figure 4.

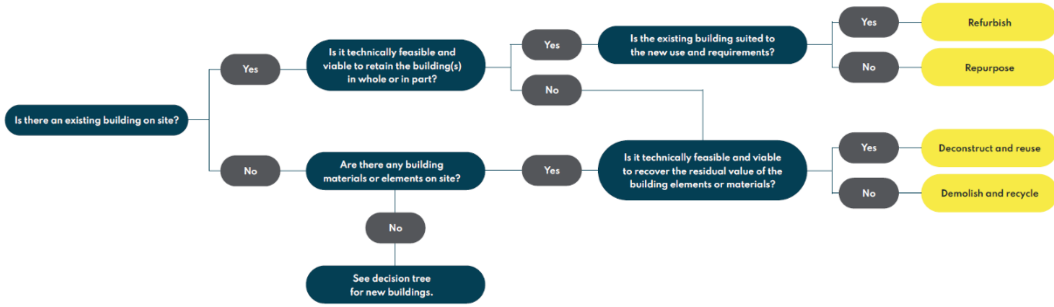
Using the decision tree provided in the GLA Circular Economy Guidance document, three key strategies have been identified.

- In the first instance, the '**retain and retrofit**' approach has been taken forward. The Proposed Development has a strategic focus on maximising the reuse of existing buildings wherever possible with approximately 46.4% of the Total Gross Area being retained

- Where this has not been possible, the '**partial retention and refurbishment'** option has been deemed appropriate as the project team have identified the potential to re-use the existing shell of the sports hall, with this being repurposed as a storage facility for bicycles and air source heat pumps, thus supporting the principles of the circular economy.

- For the remaining buildings on the site, the 'demolish and recycle' design approach was selected for the buildings. A big motivator as to why the buildings are not suitable for refurbishment are their poor building condition meaning their remaining lifetime is limited. Further, there are limited opportunities to reuse and recycle demolition materials due to the presence of asbestos contamination. Asbestos is present throughout the old 1950s building, with the majority of the contamination found in the shuttering and sheeting between the flooring. This significantly restricts the sustainable options for material recovery and reuse. Noting that the principles in the waste hierarchy will be followed

Figure 4 GLA Decision tree for existing buildings



Circular Economy Adopted Design Approach: Existing Site	
Building	VIBE and Technology buildings
Design Approach	Retain and retrofit
Strategic response	Refurbish and repurpose Designing out waste Using systems, elements or materials that can be re-used and recycled
Proposed outcomes	The Proposed Development has a strategic focus on maximising the reuse of existing buildings wherever possible to minimise the total volume of waste and the Academy's carbon emissions. Several buildings and structures, including the VIBE and Technology buildings, will be retained on-site. The Schedule of Accommodation confirms that 46.4% of the Total Gross Area is being retained. This includes the following spaces: circulation spaces, plant and server rooms, toilets, storerooms, meeting rooms, staff rooms, dining hall, design and technology rooms, art rooms, science laboratories and classrooms.

Table 4 Summary of Circular Economy strategy for the existing building

4.3 Proposed strategy for new buildings and buildings layer over the lifetime of the development

The adopted design approach to circular economy for the new structures on site has been guided by the decision tree shown in Figure 5. As noted previously, the design approaches adopted directly support the implementation of the six CE principles.

Further detail on how the design approaches proposed support the implementation of the six CE principles and in particular the below principles is outlined in the relevant sub-sections below.

- Designing for Longevity
- Designing for Adaptability and Flexibility
- Designing for Disassembly

Design for longevity: The Proposed Development will be a long-life development, with a designed lifespan of 60 years. The Proposed Development is unlikely to change use/function within its design life and hence the design approach will be led by the longevity principle, designing to avoid a premature end-of-life for all components through the consideration of maintenance and durability.

Design for recoverability: Through reviewing material specifications for this project consideration has been made as to the end-of-life use of proposed materials and elements to identify opportunities to promote recoverability at end of life. This includes sanitary ware, steel and timber products.

Design for Adaptability and Flexibility: Although change of use is unlikely, the design team have identified spaces which could be adapted for change of use, enabling partitions to be moved to suit an alternative building type as well as a flexible and repeatable grid pattern. The **flexible** design principle can be further facilitated through the design's spacious floor plate which can be adapted to suit the vibrations of an office environment

Design for Disassembly: To **minimise waste** during construction, in line with the targeted BREEAM 'Excellent' rating, a Resource Management Plan will be produced and a target of <7.5m^3 of waste generated per 100m^2. The Proposed Development also features methods of **disassembly**, which seek to minimise the volume of waste at the development's end-of-life.

The use of low embodied carbon concrete and steel beyond standard practice will be explored at later stages but cannot be committed to at this stage due to potential viability and program implications. This includes undertaking further engagement with Cleveland Steel to identify feasibility or sourcing surplus steel to reduce the use of virgin steel within the new buildings which can realise 96% carbon savings compared to virgin steel. Third party material brokers such as Material Index will also be engaged to determine the viability of sourcing reused materials within the construction of the new buildings and their respective layers.

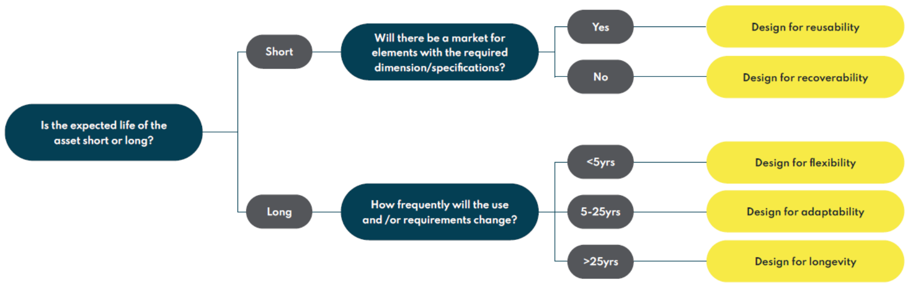


Figure 5 GLA Decision tree for new building elements

Circular Economy Adopted Design Approach: Existing Site	
Building	Whole site
Design Approach	Retain and retrofit
Strategic response	Longevity Recoverability Design for adaptability and flexibility
Proposed outcomes	The design approach is being led by the longevity principle, designing to avoid a premature end of life for all components through considering maintenance and durability. The design is also adhering to Department for Education (DfE) standards which set out requirements for durable design for instance in the provision of internal finishes such as door plates and no-scratch surfaces..

5.0 Pre-demolition audit

A pre demolition audit of the Phoenix Academy site was undertaken in March 2025 by Velocity Transport Planning. The scope of the audit included all existing buildings due for either demolition or refurbishment as part of the redevelopment of the site.

The pre demolition audit determined 'extremely limited' reuse potential for existing buildings due to key factors including, current structure, age and construction approach and expectation that a significant asbestos contamination risk is present for existing buildings.

Key limitations to the reuse of existing buildings are summarised in the PDA and have bene extracted here:

- It was not possible to survey all of the existing structures;
- The materials used as part of the construction of the building are predominantly low quality in nature;
- Due to period during which many of the structures were constructed, it is anticipated that a proportion of the materials on site may contain asbestos;
- Structures have not been built for disassembly – extracting potentially reusable elements is not feasible in many instances;
- It would not be possible to prove that light fittings were safe and compliant without individual testing and certifying by an electrician;
- Fire performance of existing doors cannot be ascertained and are likely to have been trimmed and repaired rendering them unsuitable for potential reuse; and
- It is unlikely that windows and glazing will meet current thermal or sound insulation standards.

5.1.1 Demolition waste calculations

For the purposes of the audit, it was assumed that all recycling would be conducted as per best practice offsite, and that all unrecyclable material would be diverted from landfill

Material	Best Practice Recycling Rate (%)	Tonnes	% By Weight	Recycled Material (Tonnes)	Material for Disposal (Tonnes)
Glass	100	62.9	0.82	62.9	0
Mixed Metals	100	1,191.1	15.58	1,191.1	0
Steel	100	383.8	5.02	383.8	0
Mixed Plastics	95	199.4	2.61	189.5	10
Tiles & Ceramics	100	73.6	0.96	73.6	0
Wood / Timber	95	587.1	7.68	557.7	29.4
Concrete / Binders	100	3,393.7	44.4	3,393.7	0
Bricks / Inert	100	1,344.3	17.59	1,344.3	0
Gypsum	95	100.5	1.31	95.4	5
Insulation	95	3.1	0.04	3	0.2
Carpets / Vinyl / Flooring	95	49.9	0.65	47.4	2.5
Electricals and Electronics	90	18.5	0.24	16.6	1.8
Asphalt	100	235.7	3.08	235.7	0
Total		**7,643.6**	**100**	**7,594.8**	**48.8**

Figure 6 Summary of demolition waste arisings

5.2 Key opportunities for reuse

Table 7 details the initial findings for specific material types with potential for reuse either on or off site.

These pathways will be confirmed through RIBA Stage 4.

Table 5 Summary of potential reuse opportunities

Material	Description	Opportunity for reuse	Photograph
Internal/ External walls- bricks/clay bricks	Externally much of the façade comprises of the brick or masonry wall for the buildings across the site. There may be a value to these bricks if recovered as part of the demolition process due to their uniformity across the site.	Medium- dependent on the exact demolition methodology, it is anticipated that due to the location of the brickwork on much of the external façade, it could be possible to recover the bricks for reuse.	
Copper sheet roof	Copper sheet roofing is present on the roof and façade of the assembly hall, theatre, sports hall and west wing teaching block extension.	Subject to proper removal these components are inherently reusable, and this will be explored further at Stage 4.	
Steel fencing	Steel fences and gates are present on the site, such as those adjacent to the admin building and have potential to be adapted for future reuse.	Identify options to reuse either on site or externally.	
Roller shutters	Metal roller shutters are present on the ground floor access doors or windows of some blocks.	These could be demounted for use on another project	
Wooden boards	Tongued and grooved hardwood boards were found on the wall and ceiling of some buildings, such as the assembly hall and west wing teaching block.	Assess condition of material extracted and explore options for reuse	
Steel banister	Steel banisters are found in some multi-story buildings, such as the west wing teaching block.	These materials could potential be reused on another site upon careful removal.	
Ceiling tiles	Suspended ceiling panels are predominantly used within the teaching blocks on the site. They are mainly made of composite materials typically with aluminium frames.	Assess condition and compliance of ceiling tiles and identify reuse opportunities. Alternatively consider sending to a manufacturer take back scheme.	

Material	Description	Opportunity for reuse	Photograph
Sanitary ware	There are several toilets and washbasins present in each of the existing buildings on the site	Explore options to remove and store for reuse on site	

5.3 Next steps

Key next steps to confirm material pathways will include:

- More detailed surveys to establish asset conditions. For instance mortar surveying to confirm ease of brick dismantling
- Developing an on site storage plan to identify where items identified for reuse can be stored prior to collection and or use on site.
- Review of alignment between sourcing materials and key project constraints such as programme and budget.

6.0 Approach to waste management

6.1 Operational waste management plan

An Operational Waste Management Strategy (OWMS) was developed by Velocity Transport Planning limited in September 2025.

Operational waste volumes arising from the school have been based upon a weekly waste metric of 12.7 litres per pupil, equating to a total weekly generation of 11,431 litres The DMR waste stream is assumed to comprise 70% of the overall waste generated by the school and is expected to include:

- Glass bottles and jars;
- Paper and cardboard;
- Plastic bottles, tubs and trays;
- Tins, cans and empty aerosol cans;
- Kitchen foil and foil meal containers*; and*
- Cartons and Tetrapaks.

The exact composition of the DMR waste stream will be dependent on the appointed commercial waste contractor and their Materials Recycling Facility (MRF).

The OWMS proposes daily waste collections from a licenced commercial waste contractor once operational and that this service should ensure a minimum recycling rate of 75% is met in accordance with the London Environment Strategy.

Figure 7 School Waste Store Location (source: Velocity Transport Planning)

6.2 Waste during demolition and construction

The Site Waste Management Plan was prepared by Velocity Transport Planning limited in September 2025. This classified the volumes and types of waste likely to arise from demolition and construction. In addition to the demolition waste identified in Figure 6, 405 tonnes of waste are estimated to arise from the construction of the new academy (assuming best practice performance is realised).

Where reuse or recycling construction waste is not feasible, contractors will be expected to divert all non-hazardous materials from landfill to recovery routes such as Energy from Waste.

Key targets and objectives should be determined for the avoidance, minimisation, reuse, and recycling of any waste materials during earthworks and construction. To enable this a clear management plan should be developed that sets out management approaches for specified types and quantities of materials identified for each of the construction stages. These targets will be agreed at the inaugural meeting between the Principal Contractor, the subcontractor and LBHF

7.0 Bill of materials

As part of the GLA guidance, the applicant should demonstrate that they have considered opportunities to conserve resources by applying lean design principles, and to source materials sustainably. A detailed Circular Economy Statement must include a completed Bill of Materials to evidence this.

The Bill of Materials in the CE spreadsheet covers the new build elements only, specifically the sports hall and the multi-storey teaching block, which have a combined Gross Internal Area (GIA) of 4,393m^2. This aligns with the Whole Life Carbon Assessment (WLCA), as mandated by Section 4.7.4 of the London Plan CE Guidance.

Several assumptions have been made to populate the Bill of Materials, as detailed below.

- Building lifespan: Estimated in accordance with guidance on indicative component lifespans in RICS 1st Edition Professional Statement on WLCAs.
- Design for disassembly: Information provided by the design team during the CE workshop was utilised.
- End-of-life: Percentage reuse, recycling, and landfill rates are based on estimates found in RICS Professional Statement 2nd Edition, which offers more up to date end-of-life assumptions for each material category compared to RICS Professional Statement 1st Edition.

The design team are aware of the mandatory GLA target set for this area, which is that materials have a minimum of 20% recycled content and are easily re-used or recyclable at the end-of-life stage to minimise the quantity of virgin materials used.

8.0 End of life strategy

It is crucial to consider the end of the life of the scheme from the project outset, to ensure it is simple to deconstruct, and to maximise opportunities to reuse and recycle building elements, where feasible.

The Proposed Development utilises mechanical and reversible fixings to allow for future reuse once the building reaches its end-of-life. For instance, welded composite flooring has been proposed, which can be disassembled for future reuse. Noting that The Proposed Development is being designed to a 60-year lifespan, in accordance with RICS professional standards and guidance for the UK.

When dissembling the building, the key structural materials are expected to be recyclable, or reusable, or can be reused as crushed aggregate for future developments. Guidance on disassembly and disposal of key materials will be provided in the O&Ms.

At the post-construction stage, the contractor will confirm that this information has been made available within the O&Ms, and this will be evidenced for submission to the GLA.

Table 6: Summary of End of Life Opportunities by Building Layer

Layer	Summary and Constituent Elements
Site	The design will seek to maximise the lifespan of external facades and building skin through taking a designing for longevity and designing for maintenance approach. Where feasible facades will be standardised and demountable allowing for easier upgrade /future replacement and ease of recycling/reuse.
Sub-structure	New structures will be steel framed providing an opportunity to design in future demount ability through consideration of reversible structural connections. Composite flooring proposed with will facilitate easier future dismantling and material recovery
Super-structure	Services have been designed to enable easier future maintenance, upgrade and replacement of services to minimise any waste associated with upgrades and promote longer lifespan of existing assets. During procurement consideration should be made of suppliers with recognised take back scheme for key items such as Air Source Heat Pumps.
Shell/Skin	Proposed new buildings are using a standardised grid approach to floorplans which can facilitate easier future internal layout updates without need for significant internal demolition and associated waste.
Services	All internal furniture and finishes will be required to meet DfE standards for durability promoting asset life. Procurement strategy should consider opportunities to source from reused suppliers and consider use of refurbishment shoes to extend life of furniture items.
Space	The design will seek to maximise the lifespan of external facades and building skin through taking a designing for longevity and designing for maintenance approach. Where feasible facades will be standardised and demountable allowing for easier upgrade /future replacement and ease of recycling/reuse.
Furniture and finishes	New structures will be steel framed providing an opportunity to design in future demount ability through consideration of reversible structural connections. Composite flooring proposed with will facilitate easier future dismantling and material recovery

9.0 Conclusion

9.1 The biggest opportunites for this project

This report has identified the top three opportunities to enhance the circularity of the current design at RIBA 3. These opportunities include the following:

- A strategic opportunity exists in the **reuse and repurposing of existing products and materials on-site**. This approach not only promotes sustainability and cost efficiency but also aligns with a more resource-efficient approach.
- **Liaise with the supply chain and local systems** to facilitate the sharing of resources across projects. This collaborative approach promotes the reuse and circulation of materials within the local area, while also reducing transport emissions by sourcing products and materials locally.
- Explore opportunities to promote use of l**ow carbon, or low impact (e.g. water and energy efficient) materials** through a sustainable procurement plan to minimise consumption of virgin materials and whole life carbon of the project.

To date, some of these opportunities have been overlooked and should be implemented where possible. This will contribute significantly to the overall sustainability of The Proposed Development.

9.2 Next steps

- The project team has been made aware that a post-construction circular economy statement will be required, upon commencement of RIBA Stage 6, and prior to the building being handed over, to confirm compliance with the target and approach outlined within this document.
- To meet the full planning application requirements for a GLA compliant Circular Economy Statement, an operational waste management plan must be developed.

9.3 Conclusion

This report has outlined the Circular Economy approach for the proposed Phoenix Academy development in order to meet the requirements of the GLA London Plan Policy SI7. The guidance in the ‘Circular Economy Statements guidance document’ has been followed to ensure compliance.

Following a workshop with the design team and client in November 2024, a strategic approach to the existing and proposed buildings has been outlined. Throughout the report, key commitments and targets have been identified to ensure the project will contribute towards a circular economy

- Building in layers
- Designing out waste
- Designing for longevity
- Designing for adaptability or flexibility
- Designing for disassembly
- Using systems, elements or materials that can be reused and recycled

Appendix A – CE Workshop Meeting Notes

Attached separately

Appendix B – Recycled content by value

To determine the recycled content by value an analysis has been undertaken of the total cost of a material multiplied by the recycled share divided by 100 to provide a recycled content by value figure.

To determine this value the OneClick LCA Building Circularity Tool has been used supported by offline MS Excel calculations as advised by OneClick LCA[1]

Key data sources for this analysis include:

- Stage 2 cost plan
- Bill of Material data
- Any gaps in costing have been addressed either through using OneClick standard UK Costing or use of Spons industry cost data where this was not available.

The total recycled content by value for the education buildings are estimated to be about 22%. This exceeds the GLA target of 20% recycled content by value. Calculations.

[1] UK: Completing the GLA Templates for LCA | One Click LCA

Material	Total Cost (£)	Recycled Content (%)	Recycled content by value (£)
Acoustic glass mineral wool roll insulation, 0.043 W/mK, 1.7 m2K/W, 75 mm, 0.75 kg/m2, 10 kg/m3, Lambda=0.043 W/(m.K), Isover Acoustic Partition Roll (APR 1200) (Saint-Gobain Isover UK Limited)	12086	52	6285
Acrylic emulsion paint, 0.073 kg/m2, 1180 kg/m3, Johnstones Trade Acrylic Durable Matt Base L, Base M, Base D, Base Z, Base Z2 (PPG Architectural Coatings UK (2023))	5175	0	0
Aggregate for asphalt and construction, subbase gravel, quality 1, 1700 kg/m3 (Nymølle Stenindustrier A/S)	16684	0	0
Aggregate, compacted Type 1	4469	0	0
Aluminium façade cladding panel, anodized, 2.5 kg/m2, 70% recycled content (One Click LCA)	213136	70	149195
Aluminium framed windows, double leaf, 26.55 kg/m2 (SNFA)	280948	0	0
Asphalt concrete base course, aggregate size 32 mm, 150 kg/m2, thickness 60 mm	79248	0	0
Asphalt concrete for heavy load bearing applications, hot mix, 2 % bitumen, aggregate size 31 mm, ABK 31 RC 50 BitumenMix 2 (Asfalttikallio)	4800	50	2400
Asphalt concrete surface course for heavy traffic, aggregate size 22 mm, 120 kg/m2, thickness 50 mm	223288	0	0
Asphalt pavement (asphalt concrete) base course, hot mix, 2330 kg/m3, 0% recycled bitmuen binder (One Click LCA)	10472	20	2094
Asphalt pavement mixture, 10% RAP, 98 kg/m2, Reconophalt AC10 C320 R10 (Downer)	377259	11	41498
Asphalt pavement mixture, 30% RAP, 97 kg/m2, Reconophalt AC10 C320 R30 (Downer)	5294	31	1641
Asphalt road - Hot construction method	26295	20	5259
Asphalt, Arlanda plant, Green Asphalt2 ABT 11 160/220 (NCC Industry)	10092	20	2018
Automatic swing door operator, single or double leaf, 13.54 kg/unit, UniSwing Compact (KONE)	15000	0	0
Bitumen-polymer membrane roofing, 1 layer, fully torched (EWA)	742	50	371
Brick slips for exterior or interior wall cladding, 14 mm, 24 kg/m2, 2100 kg/m3 (Bundesverband der Deutschen)	307	0	0
Broadloom carpet with nylon 6.6 pile material, 2.43 kg/m2, maximum surface pile weight 1000 g/m2 (One Click LCA)	105138	25	26285
Ceramic bathroom washbasin, 16.7 kg/unit, 850 × 460 × 150 mm (One Click LCA)	15000	0	0
Ceramic toilet set, 26.93 kg/unit (Ideal Standard International)	20500	0	0
Concrete and concrete products, unreinforced, 2403 kg/m3 (VOB BETON)	419	0	0
Concrete internal wall assembly, incl. reinforcement and Render, 152 mm, for UK	123780	0	0
Concrete paving, 15.4 m2/m3, 96 units/m3, Andover Textured (Aggregate Industries)	59065	0	0
External gypsum-based sheathing board, 2400 x 1200 x 12.5 mm, 11.3 kg/m2, G-board (Klasse)	13516	25	3379
Finish plaster, 2 mm, 921 kg/m3, Skimcoat, Skimcoat Short Set, Carlite, Carlite Ultra (Gyproc (2021))	29562	0	0
Finishing wall mortars, French average, 3 mm, 4.2 kg/m2, Mortiers de ragréage muraux (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT)	7416	0	0
Fire and smoke protection steel frame doors, 46.2 kg/m2, U=1.4-1.7 W/m2K, Feuer- und Rauchschutz Rohrrahmentüren aus Stahl (Hörmann Legnica)	2654	30	800
Fire resistant glass, U=5.3 W/m2K, 4 mm, 10 kg/m2, 2500 kg/m3, Pyrobel 8 EG, Pyrobelite 9 EG, Pyrobelite 12, Pyrobelite 12 EG, Pyrobel 16, Pyrobel 16 EG, Pyrobel 19H (AGC France SAS)	17271	0	0
Fire-protection cement board, 15.5 kg/m2, 20 mm, 775 kg/m3, applicable for range: 640 - 980 kg/m3, 0,15 - 0,2W/(mK), Lambda=0.175 W/(m.K), AESTUVER (Fermacell GmbH)	1230	0	0
Floor decking with EAF steel, R733, TR60+, TR80+, R51+ (Firth Steels Ltd)	1636831	25	409208

Material	Total Cost (£)	Recycled Content (%)	Recycled content by value (£)
Galvanized profiled steel decking, for roof, 1.25 mm sheet thickness, 19.19 kg/m2, RoofDek D159 1.25mm (Tata Steel Europe (2023))	20959	70	14671
Glass wool insulation for external wall structures, unfaced, L=0.033 W/mK, R=3 m2K/W, 100 mm, 2.52 kg/m2, 25.2 kg/m3, Lambda=0.033 W/(m.K), Trestenderplate 33 (Knauf)	17711	71	12575
Glass wool insulation in bats or rolls, unfaced, L = 0.037 W/mK, R = 2.7 m2K/W, 100 mm, 1.5 kg/m2, 15 kg/m3, (Range: 10-20kg/m3), 80% recycled glass content (One Click LCA)	1759	80	1407
Glass wool insulation, for wall application, L = 0.041 W/mK, R = 2.2 m2K/W, 90 mm, 1.06 kg/m2, 11.76 kg/m3, R2.2 Pink Batts Wall Insulation (Tasman)	854	81	692
Glassfibre Reinforced Concrete (GRC) panel, 65 kg/m2, 12 mm + 3 mm GRC thickness (Ibstock Telling GRC Ltd)	1288827	0	0
Glued Laminated Timber (Glulam)	12005	0	0
Gypsum plasterboard with tapered or square edges, fire resistant, 12.5 mm, 10.2 kg/m2, L= 0.190 W/m.K, Fire resistance class : A2-s1, d0, Lambda=0.19 W/(m.K), Gyproc FireLine (Saint-Gobain Construction Products UK Limited t/a British Gypsum (2024))	20812	25	5203
Gypsum plasterboard, fire and sound resistant, 12.5 mm, 11.1 kg/m2, L=0.25 W/mK, Fire resistance class: A2-s1,d0, Lambda=0.25 W/(m.K), Gyproc SoundBloc (Saint-Gobain Construction Products t/a British Gypsum)	83084	25	20771
High-density polyethylene above ground drainage system, 1.485 kg/m, Terrain FUZE (Polypipe Building Services)	2	0	0
Hinged double steel doors, per m2, 38.5 kg/m2, HD 100-2/ HD 110-2 (Hellbergs Dörrar i Mellerud AB)	4564	0	0
Hollow core concrete slabs, generic, C30/37 (4400/5400 PSI), 0% (typical) recycled binders in cement (300 kg/m3 / 18.72 lbs/ft3), incl. reinforcement (One Click LCA)	7608	1	76
Hot rolled asphalt, hot mix, 14 mm nominal aggregate size (One Click LCA)	10439	20	2088
Impact resistant gypsum plasterboard, calculated average for United Kingdom, 12.5 mm, 11 kg/m2 (One Click LCA)	14256	6	855
Insulating vapour control layer and air barrier, 0.148 kg/m2, Protect VC Foil Ultra (Building Product Design Ltd)	11314	0	0
Joinery strip seal, 2.75E-3 kg/ml, Fabricant Références commerciales ISO CHEMIE SO-ZELL FOND DE JOINT SIKA FONDS DE JOINTS SIKA TRAMICO TRAMICORD TREMCO ILLBRUCK AZ102 FOND DE JOINT PE/PR102 CORDE PE (SFJF DTSB)	4546	0	0
Laminated safety glass, 7.78 mm, 19.46 kg/m^2, 2500 kg/m3, LamiGlass® ExtraClear & UltraClear (Standard), LamiGlass® Acoustic, LamiGlass® Colored, LamiGlass® Structural (XT), UltraClear® LamiGlass™ Neutral, LamiGlass® Transwhite, AntiReflective Lami, Diele	63902	0	0
Light-gauge hot-dip galvanized steel framing products, 0.5 mm, 7750 kg/m3, Gypframe® metal profiles from Carbon Low steel (Saint-Gobain Construction Products t/a British Gypsum)	8201	80	6561
Mineral fibre suspended ceiling tile, 12 mm width, 2.8 kg/m2, D, A2-s1, d0, E1, Scalacoustic (Zentia)	30784	0	0
Passenger elevator car , electrical controls, counter weight, drive and motor of traction (cable) type, 630 kg (8 persons) load capacity, 1.0 m/s speed, 1587.7 kg/unit (USE ONLY WITH Elevator hoistway) (One Click LCA)	75000	0	0
Paving blocks, 2344 kg/m3, Plaza Paving: Flags; Standard + Permeable (AG Paving + Building Products Limited)	7597	0	0
Plastic - Polypropylene	269	0	0
Polyethylene vapour barrier membrane, 0.15 mm, 0.14 kg/m2 (One Click LCA)	553	0	0
Precast concrete ground beam, 2400 kg/m3 (British Precast)	49415	0	0
Precast concrete part stairs, 1965 kg/unit, 1.1 m wide, 9 steps each 16 cm, EN15804+A2, ref. year 2021	14724	0	0
Profiled steel sheet (SNPPA)	86	60	52
Ready-mix concrete, in-situ, UK average, C32/40 (IStructE)	97036	0	0
Ready-mix concrete, normal-strength, generic, C30/37 (4400/5400	86730	1	867

Material	Total Cost (£)	Recycled Content (%)	Recycled content by value (£)
PSI), 10% (typical) recycled binders in cement (300 kg/m3 / 18.72 lbs/ft3) (One Click LCA)			
Rectangular paving stone, Finnish average, 2700 kg/m3 (KIVI ry)	12771	0	0
Reinforcement steel (rebar), generic, 90% recycled content, A615 (One Click LCA)	32276	90	29048
Reinforcement steel (rebar), generic, 97% recycled content (typical), A615 (One Click LCA)	55136	97	53482
Reinforcement steel (rebar), generic, 97% recycled content (typical), A615, (version 2018) (One Click LCA)	750	97	728
Road asphalt, per m2, 3.5% binder content, 100mm depth surface or binder course, 235 kg/m2	468763	20	93753
Sand, compacted dry density, 1682 kg/m3 (One Click LCA)	1235	0	0
Screen system for solar shading mounted on aluminium frame, 3.78 kg/m2, D-65 (Fischer International A/S)	3150	0	0
Self-levelling screed, 1 mm, 2.16 kg/m2, Gyvlon® ECO, ECO SP, ECO FD E2C (Anhydritec)	159099	0	0
Self-levelling screed, 1 mm, 2.25 kg/m2, Gyvlon® EXCELIO (Anhydritec)	3853	0	0
Semi-frameless shower enclosure, 50 kg/unit, 875 x 875 x 1950 mm, tempered glass thickness: 6 mm, 70% recycled aluminium frame (One Click LCA)	10000	7	700
Sett stone paving, 140x220x140 mm (5.5x8.7x5.5 in)	12771	0	0
Sewer pipes from PVCu, 150 mm, 2.073 kg/m, Polysewer (Polypipe Civils & Green Urbanisation)	7420	2	175
Stainless steel sheet, 7900.0 kg/m^3, EN15804+A1, ref. year 2018	529	60	317
Steel external door, EN15804 A1/A2	4564	0	0
Stone wool (mineral wool) insulation, unfaced, L = 0.031 W/mK, R = 1 m2K/W, 31mm, 1.86 kg/m2, 60 kg/m3, (Range: 51-65kg/m3), 50% slag content (One Click LCA)	23021	40	9192
Structural steel profiles, generic, 40% recycled content, I, H, U, L, and T sections, S235, S275 and S355 (One Click LCA)	418015	40	167206
Structural steel section equal angle (EA), 125 x 125 x 8 mm to 200 x 200 x 26 mm, 7850 kg/m3 (Liberty Primary Steel)	2238434	70	1566904
Thermo insulating breather membrane, 0.148 kg/m2, Protect TF200 Thermo (Building Product Design Ltd)	11314	0	0
Wooden door with solid chipboard core, glazed, 2040x926x44 mm, 60.8 kg/m2, FD30 (Forza Doors Ltd)	36874	7	2397
Wooden door with solid chipboard core, unglazed, 2040x926x44 mm, 61.6 kg/m2, FD30 (Forza Doors Ltd)	601	0	0
Wooden internal door excluding frame, unglazed, 0.762mx1.981m, 7.75 kg/m2 (JELD-WEN)	1203	23	280
Building services	4071800	0	0
Total	**£ 12,824,294**		**£ 2,640,434**
Recycled content by value			**21%**

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