Former Holloway Prison

Circular Economy Statement

Peabody

HOARE LEA

Holloway.
Islington, London.
Peabody.

SUSTAINABILITY
CIRCULAR ECONOMY STATEMENT

REVISION B – 29 OCTOBER 2021

Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
A	15/10/2021	Draft issue for comment.	AB	GB	JD
B	29/10/2021	Final issue for planning submission	AB	-	NB/RE

Project number: 23/24131
Document reference: REP-2334131-5A-AB-20211022-Circular Economy Statement-Rev B.docx

Contents.

Executive Summary.

1.1 Scope.

This document has been prepared on behalf of Peabody (hereafter referred to as the 'Applicant') supporting the application for planning permission for the Proposed re-development of the former Holloway Prison.

This report constitutes a Circular Economy Statement which sets out the strategic approach to Circular Economy implemented by the project. This Circular Economy Statement is focused on the work carried out to define a strategic approach to Circular Economy principles for the project and identify high level strategic opportunities early in the development process.

1.1 Development description.

The Proposed development will involve the '*Phased comprehensive redevelopment including demolition of existing structures; site preparation and enabling works; and the construction of 985 residential homes including 60 extra care homes (Use Class C3), a Women's Building (Use Class F.2) and flexible commercial floorspace (Use Class E) in buildings of up to 14 stores in height; highways/access works; landscaping; pedestrian and cycle connection, publicly accessible park; car (blue badge) and cycle parking; and other associated works.'*

1.2 Project team.

Discipline	Organisation
Client / Developer	Peabody
Project Manager	Potter Raper
Architect	AHMM
Landscape Architect	Exterior Architecture
Building Services Consultant	Hoare Lea
Energy Consultant	Hoare Lea
Sustainability Consultant	Hoare Lea
Waste Management	WSP
Civils Consultant	Waterman Group
Ecologist	Penny Anderson Associates
Acoustic Consultant	WSP
Transport Consultant	Velocity
Drainage Consultant	Waterman
Environmental Consultant	Avision Young
Air Quality Consultant	AQ consultants

Table 1: Key Project Team Members

1.3 Summary of the approach to circular economy.

The construction and operation of the built environment consumes 60% of all materials in the UK. At the end of life, materials are often diverted from landfill, but downcycled, reducing their value.

There is growing industry consensus that the way we design, build, operate and dispose of our buildings and associated facilities needs a major overhaul to obviate waste and increase efficiency. There is an incredible breadth of opportunity that this shift in approach will create across the entire supply chain.

Designing for longevity and adaptability and maximizing the use of recycled and renewable materials could reduce greenhouse gas emissions while increasing innovation opportunities and economic growth. Replacing finite and fossil-based materials with responsibly managed renewable materials can decrease carbon emissions whilst reducing dependency on finite resources.

Before considering future waste elimination and sustainable waste management practices though, opportunities for retaining and refurbishing /re-purposing existing buildings, materials and other resources on site have been assessed by the design team to maximise the residual value of existing structures and conserve resources by reducing the need for new materials.

New buildings developed on the site will follow best practise principles in their design and construction with the overarching aims of reducing material usage, minimising waste, and embedding longevity, flexibility, and adaptability.

Table 2: Circular Economy Strategic Approach

Aspect	Phase / Building /Area	Steering approach	Explanation	Supporting Analysis
Circular economy approach for the new development	Sub-structure	Minimise the quantities of materials used	Minimising the required material for the substructure by using lean design principles and lightweight materials	WSP Waste Management Strategy. Completed GLA Whole Life Carbon assessment. Peabody ESG Report (2021) Peabody Design Guide (2018) Project Holloway – Design and Access Statement Holloway SWMP Rev 03
	Superstructure	Minimise the quantities of materials used	Using lean design principles and lightweight materials	
	Construction waste	Manage construction waste	Investigating available modern construction technologies and offsite pre-manufacture to avoid waste	
	Excavation waste	Manage excavation waste	Where possible on-site use of non-hazardous excavation material	
Circular economy approach for municipal waste during operation	All areas	Efficient management of operational waste	Appropriate refuse storage to enable recycling and best practise waste management	WSP Waste Management Strategy.

2. Introduction.

2.1 Site location.

The Project Holloway site is situated in the London Borough of Islington along Camden and Parkhurst road. The site is located between Tufnell Park and Kentish Town stations to the west and Holloway Road station to the East. The site is currently occupied by the existing disused Former Holloway Prison, constructed during the 1970's and occupies an area of 4.16 Hectares.

Within the immediate vicinity of the site sits the Peabody owned Bakersfield estate to the north, Islington owned housing both to the north and the west and then the City of London owned estates to the east and to the west.

Please refer to Figure 1 site location for confirmation of location of the scheme.

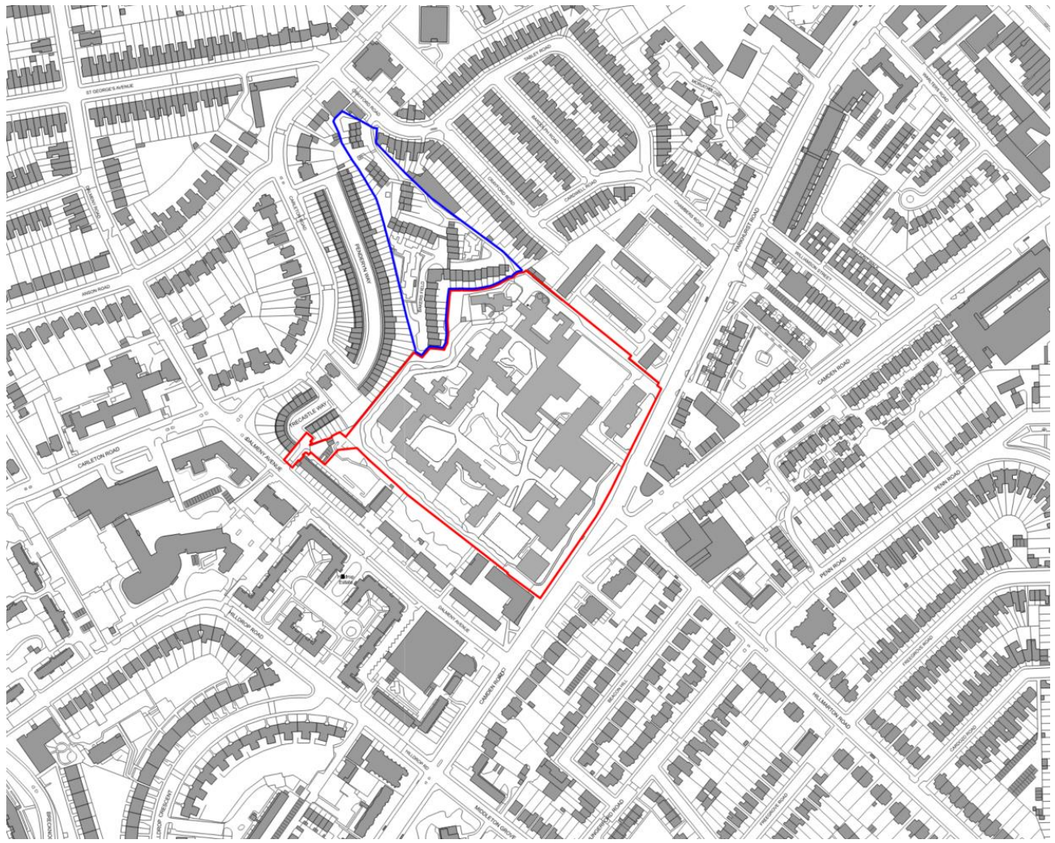

Figure 1 Site location (Credit: AHMM)

2.2 Development description.

The proposed development consists of the *'Phased comprehensive redevelopment including demolition of existing structures; site preparation and enabling works; and the construction of 985 residential homes including 60 extra care homes (Use Class C3), a Women's Building (Use Class F.2) and flexible commercial floorspace (Use Class E) in buildings of up to 14 stores in height; highways/access works; landscaping; pedestrian and cycle connection, publicly accessible park; car (blue badge) and cycle parking; and other associated works.'*

Figure 2 shows an initial CGI concept of the Proposed development.

Figure 2 CGI concept of the Proposed development (Credit: AHMM).

3. Policy

3.1 The London Plan (March 2021)

The London Plan includes the following policies in relation to the Circular Economy.

3.1.1 SI 7 Reducing waste and supporting the circular economy.

A. Resource conservation, waste reduction, increases in material re-use and recycling, and reductions in waste going for disposal will be achieved by the Mayor, waste planning authorities and industry working in collaboration to:

1. Promote a more circular economy that improves resource efficiency and innovation to keep products and materials at their highest use for as long as possible
2. Encourage waste minimisation and waste prevention through the reuse of materials and using fewer resources in the production and distribution of products
3. Ensure that there is zero biodegradable or recyclable waste to landfill by 2026
4. Meet or exceed the municipal waste recycling target of 65 per cent by 2030

5. Meet or exceed the targets for each of the following waste and material streams:
    i. Construction and demolition – 95 per cent
    ii. Excavation – 95 per cent beneficial use
6. Design developments with adequate, flexible, and easily accessible storage space and collection systems that support, as a minimum, the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food.

B. Referable applications should promote circular economy outcomes and aim to be net zero-waste. A Circular Economy Statement should be submitted, to demonstrate:
1. How all materials arising from demolition and remediation works will be re-used and/or recycled
2. How the proposal's design and construction will reduce material demands and enable building Materials, components, and products to be disassembled and re-used at the end of their useful life
3. Opportunities for managing as much waste as possible on site
4. Adequate and easily accessible storage space and collection systems to support recycling and re-use
5. How much waste the proposal is expected to generate, and how and where the waste will be managed in accordance with the waste hierarchy
6. How performance will be monitored and reported.

C. Development Plans that apply circular economy principles and set local lower thresholds or the application of Circular Economy Statements for development proposals are supported.

3.1.2 D1 London's form, character, and capacity for growth.

The Circular Economy Design Principles are also referenced in the "Policy D1 London's form, character and capacity for growth", which requires the following:

A. Boroughs should undertake area assessments to define the characteristics, qualities, and value of different places within the plan area to develop an understanding of different areas' capacity for growth. Area assessments should cover the elements listed below:
1. demographic make-up and socio-economic data (such as Indices of Multiple Deprivation, health and wellbeing indicators, population density, employment data, educational qualifications, crime statistics)
2. housing types and tenure
3. urban form and structure (for example townscape, block pattern, urban grain, extent of frontages, building heights and density)
4. existing and planned transport networks (particularly walking and cycling networks) and public transport connectivity
5. air quality and noise levels
6. open space networks, green infrastructure, and water bodies
7. historical evolution and heritage assets (including an assessment of their significance and contribution to local character)
8. topography and hydrology
9. land availability
10. existing and emerging Development Plan designations
11. land uses
12. views and landmark

B. In preparing Development Plans, boroughs should plan to meet borough-wide growth requirements, including their overall housing targets, by:
1. using the findings of area assessments (as required in Part A) to identify suitable locations for growth, and the potential scale of that growth (e.g., opportunities for extensive, moderate, or limited growth) consistent with the spatial approach set out in this Plan; and
2. assessing the capacity of existing and planned physical, environmental, and social infrastructure to support the required level of growth and, where necessary, improvements to infrastructure capacity should be planned in infrastructure delivery plans or programmes to support growth; and
3. following the design-led approach (set out in Policy D3 Optimising site capacity through the design-led approach) to establish optimised site capacities for site allocations. Boroughs are encouraged to set out acceptable building heights, scale, massing, and indicative layouts for allocated sites, and, where appropriate, the amount of floorspace that should be provided for different land uses.

This Circular Economy Statement is based on the GLA's Circular Economy Statement Guidance "which interprets the policies set out above and describes what Circular Economy Statements should include.

3.2 Local Policies

3.2.1 Islington's Core Strategy February 2011

The Core Strategy (2011) and Development Management Policies DPD (2013) do not cover Circular Economy.

3.2.2 Draft Local Policy - Islington Local Plan November 2018

LBI is currently preparing a new Local Plan. The Council submitted the Draft Islington Local Plan to the Secretary of State on 12th February 2020 for examination. Examination in Public took place in September to October 2021.

The following section outlines the policies captured within Islington Local Plan – Strategic and development management policies (Nov 2018) relevant to the Circular Economy and Adaptive Design principles.

3.2.3 Policy S10: Circular Economy and Adaptive Design

A. All developments must adopt a circular economy approach to building design and construction in order to keep products and materials in use for as long as possible and to minimise construction waste.

B. Buildings must be made from components and materials that can be re-used or recycled. Building design must enable deconstruction to ensure the maximum value of building components can be recovered and re-used at the end of the building's life. Where demolition and remediation works are necessary, materials must be re-used and/or recycled.

C. A minimum 10% of the total value of materials used in the construction of both major and minor developments must derive from recycled and re-used content in the products and materials selected.

D. All developments must be designed to be flexible and adaptable to changing requirements and circumstances over their lifetime; including changes to the physical environment, market demands and land use.

E. All major developments (including refurbishment and redevelopment of existing buildings), minor new build developments, and larger minor extensions are required to provide an Adaptive Design Strategy as part of the SDCS. This must demonstrate how a circular economy approach has been adopted as part of the building design and construction, and how the building will adapt to change over its lifetime. The Strategy must include evidence to demonstrate that the development will be designed and constructed to:
    a. last as long as possible and suit its anticipated lifespan – the strategy must specify the intended overall design life of all buildings in the development.

b. avoid construction waste and the unnecessary demolition of structures.
c. be built in layers to allow elements of buildings to be replaced overtime, supporting a modular design.
d. be adaptable – the plan form, layout and structure enable the building to be adapted to respond to change and/or adapted for various uses throughout its life.
e. enable ease of deconstruction - building materials, components and products can be disassembled and re-used at the end of their useful life; and
f. maximise the re-use and/or recycling of all materials arising from demolition and remediation works.

F. All development must minimise the environmental impact of materials through the use of sustainably sourced, low impact and recycled materials, using local supplies where feasible.

G. All developments are required to take all possible measures to minimise the impact of construction on the environment and comply with Islington's Code of Practice for Construction Sites.

3.3 Emerging Supplementary Planning Guidance.

This guidance document explains how to prepare a Circular Economy Statement to accompany planning applications that are preferable to the Mayor as required by the Intend to Publish London Plan (London Plan) Policy SI7, or where boroughs have specified a lower threshold. It can also be used to inform non-referable schemes.

The guidance has been developed and tested with industry and is primarily for anyone involved in, or with an interest in developing Circular Economy Statements, including developers, designers, consultants, and local government officials.

3.3.1 GLA's Circular Economy Statement Guidance Draft for Consultation (2020)

The Mayor of London wants to see London's homes, buildings and supporting infrastructure adopt innovative design. London Plan policies D3 'Optimising site capacity through a design-led approach', and SI7 'Reducing waste and supporting the Circular Economy' set out a policy framework that supports the delivery of a circular built environment.

Policy SI7 of the London Plan also requires development proposals that are referable to the Mayor of London to submit a Circular Economy Statement as part of a planning application.

It states:

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

In part C of London Plan Policy SI7, London boroughs are encouraged to apply circular economy principles and set their own lower local thresholds for Circular Economy Statements, for example, for 'major development'Reference:3.

Development proposals that are not required to produce a Circular Economy Statement (non-referable schemes or those that are below local thresholds) are still encouraged to apply the Circular Economy principles and processes set out in this guidance.

4. Method statement.

A holistic, interdisciplinary approach has been adopted to define and communicate the sustainability and Circular Economy strategy for Project Holloway Development.

The design of the development is based on sustainable design and construction principles as informed by planning requirements and industry best practice.

4.1 Circular economy approach.

- Working with all key stakeholders, an overall sustainability vision for the development has been defined and agreed.
- A series of sustainability workshops have been held during the early design stages, in collaboration with the client and project team to help steer the sustainability vision.
- Circular economy principles have been reviewed by the project team as part of this process.
- Additional workshops will be held during the detailed design stages to explore further opportunities to incorporate key Circular Economy principles into aspects of the design, procurement, and construction process.
- As the proposals move toward construction stage, early engagement will be sought with contractors to assist in refining strategies for delivery.
- Robust data collection plans will be implemented through design and construction to facilitate ongoing monitoring against intended outcomes.

4.2 Circular economy aspirations.

Consumption of natural resources has historically followed a linear approach, heightened by the industrial revolution, which while lifting the living standards of millions, also dramatically increased pressure on environmental resources. Under the traditional take-make-use-dispose model, raw materials are collected, then transformed into products that are used until they are finally discarded as waste. Apart from failing to capture value over the lifetime of products, this system also produces a range of negative externalities that include resource scarcity, unsustainable levels of water extraction, rising carbon emissions, and widespread ecosystem pollution.

The built environment sector is a major consumer of natural resources. There is growing industry consensus that the way we design, build, operate and dispose of our buildings and associated facilities needs a major overhaul to obviate waste and increase efficiency. There is an incredible breadth of opportunity that this shift in approach will create across the entire supply chain.

Peabody Sustainability Strategy

Sustainability for Peabody throughout their developments is a key principle they have demonstrated to embed throughout all their developments. As a developer, Peabody have confirmed: *'We want to take positive action to reduce the impact of climate change on our people, communities and the environment so we've set out a plan for the future. Our ambition is to be net zero carbon in our new and existing homes by 2050 and in our day-to-day business activities by 2030.*

We know that we cannot achieve our targets alone so we will work with key local authorities and partners alongside our employees and residents to achieve our sustainability objectives. These will also help to combat fuel poverty, boost the economy and create jobs, making our environment better for everyone.'.

The Sustainability Strategy (2021-2024) established by Peabody outlines the approach the developers are making towards reduce the impact of climate change on our people, communities, and the environment.

Peabody have summarised the key sustainability strategy targets 2021-2024 as follows:

Energy efficiency of our existing homes

- Reach net zero carbon with an average SAP of 86 (EPC B) in our rented stock by 2050, and an average SAP of 74.5 (EPC C) by end of 2024, modelling remedial action plans with costs for all properties under EPC C

for improvement up to 2030 with a similar model to achieve an average of EPC B at SAP 86 for improvement up to 2050 by December 2021
- Increase efficiency of the 30 least efficient heat networks by 33% by 2024
- Provide continuous advice, education and behaviour change to help residents use energy efficiently, supported by a programme of energy advice for all our residents with a target of an average of 10-21% saving in energy use (280kg600kg CO_2 saving per household) • Provide normative energy use information to 6,000 communal heating dwellings
- Increase Solar PV capacity from 4MWp to 7.6MWp
- Take up Government financial incentives to better the lives of our residents

Sustainability of new homes

- Ensure 100% of all new homes built by us are minimum EPC B (SAP 81) by 2024
- Ensure all new developments in design from 2021 are minimum EPC B (SAP 86)
- Ensure that 100% of new development projects deliver on Peabody's sustainable construction requirements in the specification and undertake Whole Life Cycle (WLC) for each scheme
- Ensure that 100% of New Homes Guides include energy, water, waste, and sustainable transport advice
- 3 Dr Bikes and 1 EV (Electric Vehicle) event to be held per year for residents

Facilities and Operation

- Achieve Net zero carbon within our core business activities by 2030
- Review the use of our offices in the context of home working
- Deliver a 40% reduction in our current office carbon emissions by 2024
- Ensure 100% of our fleet is electric vehicles by 2030
- Work to ensure our offices are rated BREEAM Excellent by 2030 where practicable
- Ensure that 100% of new contracts to abide by our 'Principles of Sustainable Procurement' statement
- Create processes to ensure that 70% of our office waste is recycled
- Increase the proportion of sustainably sourced office goods from 28% to 60% by 2024.

Biodiversity

- Develop an Open Space Strategy by March 2021.

5. Circular economy – Strategic approach.

Circular Economy considerations have formed a key part of the project sustainability strategy. It is recognised that in order to implement Circular Economy principles most effectively, it is helpful to explore high level strategic opportunities as early in the development process as possible.

As discussed earlier, a series of sustainability-focused workshops were held in collaboration with the client and project team to help craft a holistic and consistent sustainability approach for the development. Considerations around resource efficiency, material circularity and ethical sourcing have been a critical element of the overarching sustainability strategy.

It is acknowledged that the approach to circular economy will evolve as the design evolves, or in response to wider considerations and feedback from the GLA or other stakeholders.

Key strategic implementations for the scheme explored throughout this document include the aspects as set out Table 3.

Table 3: Circular Economy Strategic Approach

Aspect	Phase / Building /Area	Steering approach	Explanation	Supporting Analysis
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	Superstructure	Minimise the quantities of materials used	Using lean design principles and lightweight materials	
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Circular economy approach for municipal waste during operation	All areas	Efficient management of operational waste	Appropriate refuse storage to enable recycling and best practise waste management	WSP Waste Management Strategy.

5.1 Circular economy approach for the existing site.

Project Holloway is situated on the site of the former HMP Holloway Prison. The site occupies 4.16 hectares and is occupied by a number of prison buildings arranged around an existing central garden with a number of existing trees and vegetation.

Strategies shall be put in place allowing these materials to be maintained at their highest level of value, for example, most of the structural steel elements are likely to be suitable for re-use if the correct supply chain is put in place prior to deconstruction.

In line with the Circular Economy Statement guidance, a Pre-Demolition audit has been undertaken on the existing site, demonstrating numerous deconstruction strategies, assessment of estimated material streams and quantities and an assessment of the major reuse and reclamation potential both within the new development and where this is not feasible, off-site opportunities.

5.2 Circular economy approach for the new development.

The buildings developed on the site will follow best practise principles in their design and construction with the overarching aims of reducing material usage, minimising waste, and embedding longevity, flexibility, and adaptability.

The following focus areas have been reviewed to maximise opportunities to embed circular economy principles:

- Lean design principles
- Material efficiency
- Adaptability
- Flexibility
- Low carbon construction
- Offsite / modular construction
- Design for Manufacture and Assembly (DfMA)
- Minimisation of excavation waste
- Material procurement via leasing frameworks
- Responsible procurement
- Sustainable sourcing
- Local sourcing
- Supply chain engagement
- Structural and fabric resilience
- Life-cycle assessments
- Material circularity
- Disassembly and demount ability

5.3 Circular economy approach for municipal waste during operation.

The scheme will look to encourage the recycling of operational waste through the provision of dedicated storage facilities and space. The supporting Waste Management Strategy has been put together by WSP outlining the potential impacts that may arise from waste generated during the operational phase, whilst providing an overall aim of developing a strategy for legislative compliance and good practice in the separation, storage and collection of waste arising.

In summary the following residential waste strategy will be adopted:

- The residential units will incorporate sufficient internal waste storage containers in order to promote the separation of recycling and food waste at source.
- the number of containers recommended has been made in line with the appropriate guidance.
- The residents will be responsible for transporting waste from their units to their nominated waste store, and for separating their refuse, recycling, and food waste into the appropriate containers.
- The on-site Facilities Management (FM) team will manage the residential waste stores to ensure containers with capacity for each waste type are accessible to the residents.
- The residential waste stores will be built to BS5906:2005 standards.
- London Borough of Islington, (LBI) will attend to the bins within 10m access and return them to the appropriate waste store or waste presentation area.

For the commercial areas of the scheme, the following strategy has been proposed:

- Each tenant will be responsible for designing and providing sufficient internal waste storage space as part of their fit-out. This will be the first point of waste disposal for waste generated within the units.
- Commercial tenants' staff / the FM team will be responsible for transporting waste from their respective unit to dedicated commercial waste stores.
- Four commercial waste stores will be provided within the Proposed Development. There will be two commercial waste stores in Plot B at lower ground floor level, one commercial waste store in Plot C at lower ground floor level and one waste store in Plot D at lower ground floor level.
- The FM team will be responsible for managing all the commercial waste stores.
- Commercial waste stores will be built to BS5906:2005 standards.

For further information on the proposed Waste Strategy for the development, please refer to accompanying WSP Waste Management Strategy.

5.4 Addressing the circular economy principles.

The following details the Circular Economy opportunities identified for the Proposed Development, as explored through the application of nine Circular Economy principles: These are further summarised in the Key commitments section.

Minimising the quantities of materials used

The overall scheme will look to minimise of the quantities of materials used throughout the design and life cycle. Opportunities including designing to standard material dimensions to reduce off-cuts and waste on site, removing redundant materials from the design, using materials that can be recycled or reused at the end of their service life, as well as making use of recycled or reclaimed materials where possible.

Consideration of the principle and the opportunities outlined, will not only provide economic benefits to the scheme due to a reduction of material use in building design, but will also encourage the reuse of existing materials where practical, and allow the team to investigate alternative design and construction methods resulting in lower material usage and waste levels.

Minimising the quantities of other resources used e.g., Energy, Water

In addition to minimising the quantities of materials used, these opportunities will subsequently result in less resources e.g., Energy, and Water from also being consumed.

A Whole Life Cycle Carbon Assessment has been provided in support of the planning application providing an analysis of the materials to be used within the development, and their carbon footprint throughout the building life cycle. This assessment has informed the choice and use of materials obtaining a high carbon rating, and outline opportunities where these can be improved. As a result, this approach has also investigated the reduction in the environmental impacts arising from construction product use but will also help project teams to understand the overall environmental impact of the building design for the future.

Please refer to the supporting Whole Life Carbon assessment as included within the Sustainable Design and Construction Standards document.

Specifying and sourcing materials responsibly and sustainably

Sustainable procurement is a key principle embedded throughout Peabody's core operations as a developer.

Peabody ESG Report (2021) confirms Peabody will ensure all Sustainable Procurement practises are adopted throughout the design and construction of the scheme. Their established 'Principles of Sustainable Procurement' requires '*all new contracts have Peabody's sustainable requirements included in the specification and that they monitor their carbon usage. Any of our refurbishment or construction contractors will have to monitor their waste recycling and consider sustainability of refurbishment materials. Within our offices, we will ensure that 60% of our office supplies are sustainably sourced by the end of 2024. We will procure our energy from sustainable sources as far as possible. '*

Peabody Design Guide (2018) specifies that *the selection of suppliers and materials should prioritise natural, locally sourced, recycled, and reused materials, with supply chains for building materials being selected based on environmental and ethical certifications.*

It is therefore understood the scheme will go above and beyond baseline compliance in ensuring all materials procured for the developed are appropriate responsibly and sustainably sourced.

Design for longevity, adaptability or flexibility and reusability or recoverability

The Proposed Development will aspire to deliver a building which can designed for longevity, adaptability, flexibility, reusability and allow the recovery of materials.

Longevity

Peabody have committed to ensure the primary structure and envelope of their developments are made of materials which are durable with a design life of more than 100 years. External materials selected for the scheme will be low maintenance and will age gracefully. In additional to this Peabody ensure all roofs, building services and other components are easily replaced within the design.

In addition, with the substructure and superstructure components, the landscaped areas of the scheme will also be sure to incorporate hardy plant species, selected to suit location with consideration to a low maintenance regime, seasonal colour ang longevity, final size, and shape of the chosen plants.

Adaptability

Adaptability will be incorporated throughout the design. Peabody are committed to ensure the spaces within their designs can be modified in order to accommodate different needs. In addition to this, Peabody ensure the

structural loads are carried by either external and/or party walls allow for internal partitions to be moved and or reinforced relatively easily.

Further design aspects include:

- Maintain the potential opportunity for twin bedrooms to be split into two singles to accommodate growing families and different resident dynamics.
- The layout of homes should consider possible future changes in demographics including design implications for older people, the able and less able, cultural diversity, and different family needs, sizes, and dynamics, so as to create accessible, inclusive, comfortable, and welcoming homes for all.
- A wheelchair-adaptable home is one which can be easily adapted for residents who are wheelchair users. That is, a home which is designed to comply fully with the required standard, but which may not be fully fitted out with specialist kitchen and bathroom fittings and grab rails. The fit-out may be delayed until the allocation of a resident and a discussion between them and their Occupational Therapist.

Flexibility

Peabody's placemaking-driven approach to design embraces equality, understands the flexibility of uses and structural design, ensures complete accessibility to recognise everyone's needs and limitations, and accommodates for all, regardless of age, gender, mobility, ethnicity, or circumstances.

By ensuring flexible approach to the design allows Peabody to put both customers and residents first and demonstrate a dedicated approach tailored to everyone's needs. This inclusive approach applies to not only the individual homes and buildings, but also the streets, public spaces, and the complete context of the location; it must be considered from the outset of the design process for all future Peabody homes and remain integral throughout.

Recoverability and reusability.

For encouraging the reuse of materials and components on site, Peabody ensure the selection of suppliers and materials should prioritise natural, locally sourced, recycled, and reused materials, with supply chains for building materials being selected based on environmental and ethical certifications.

In additional to this, Peabody ensure all design proposals consider that a building will be de-constructed at some point. By considering this within the early stages of the design not only facilitates the deconstruction process, but also ensure financial and environmental savings as recovery and reuse potential for materials increases.

Design out construction, demolition, excavation, and municipal waste arising

In order to reduce construction waste, a pre-demolition audit has been completed by the Demolition Contractor once appointed providing an assessment of the existing buildings, structures, and hard surfaces which the site currently occupies. This audit will inform the team as to whether the existing materials are feasible for refurbishment or reuse, in the case of demolition, to maximise the recovery of material for subsequent high grade or value applications. In addition to this, this assessment will inform the design team on the materials with potential for high grade reuse and recycling opportunities, thus reducing the overall demand for new materials to be required.

In addition to this, appropriate waste targets will be outlined throughout the onset of construction informing the Contractor of waste resource efficiency benchmarks, as well as the amount to waste to be diverted from landfill. These processes will not only tie in with both local and regional policies for the local borough but will ensure best practises are in place throughout the construction stage but will also minimise cost and environmental damage resulting from waste going to landfill.

In addition to this, wider practises such as continuous construction progress monitoring of all construction materials and waste will also be encouraged to be made, thus improving project efficiency in general and improving the understanding of construction impacts and resources helping to enhance resource efficiency on current and future projects.

Manage demolition waste

A pre-demolition audit has been completed for demolition reporting on the existing buildings, structures, and hard surfaces which the site currently occupies, and the materials which can be reused and recovered for the future. The audit will provide teams with an opportunity to set recycling, and reuse targets where appropriate, and identify the overall landfill diversion rate for all key materials. This strategy will not only inform the team on the materials currently on-site but will encourage the team to identify opportunities within the current design moving forward, thus maximising their full potential and life cycle.

Manage excavation waste

The Pre-demolition audit has reported on all key materials existing on the site, including material to be considered for excavation.

Where there is risk of contamination on site, intrusive investigations will be carried out at the site to inform the required remedial measures to be adopted

Manage construction waste

As outlined above, the aim would be to reduce construction waste arising through the use of off-site construction and good site management practices. It is intended that the GLA target is achieved for 95% of non-hazardous waste to be diverted from landfill.

Manage municipal waste

WSP supporting Waste Management Strategy has considered the need to lessen the overall impact of waste generation through the recycling of materials and segregation of food waste from the operation phase of the Proposed Development.

Regarding the municipal waste expected to be generated, the scheme itself will be residential led. Each residential unit will be provided with a segregated waste bin, to enable the separation of recycling and food waste from refuse. Further details on the segregated bin are not available at this stage but will come forward within the fit out of the residential units. It is proposed that each unit will be provided with the following bins:

- 1 x 240 litre bin for refuse.
- 1 x 240 litre bin for recycling; and
- 1 x 240 litre bin for food waste.

Residents will be required to transport their waste from their own units directly to the waste store, where they will segregate their waste in the appropriately labelled bins.

The on-site FM team will then be responsible for managing the waste stores. This will include:

- Ensuring that the waste stores are maintained in a clean and tidy condition.
- Cleaning the waste stores as required.
- Transporting bins and bulky waste to a dedicated waste presentation point a lower ground floor level for collection on nominated collection days; and
- When required, returning their respective waste stores once emptied.

This central facility will be designed to BS5906:2005 Waste management in buildings – Code of practice (hereafter referred to as 'BS5906:2005') and will include the following waste facilities:

- A suitable water point in close proximity to allow washing down.
- All surfaces sealed with a suitable wash proof finish (vinyl, tiles, etc).
- All surfaces easy to clean.
- Suitable floor drain; and
- Suitable lighting and ventilation.

On nominated collection days, the Refuse Collection Vehicle (RCV) will park in the loading bay adjacent to the waste store and LBI's waste collection operatives will collect bins directly from the waste store at ground floor level to be emptied, before returning them promptly to the residential waste store.

In accordance with the Guidance, the path between the residential waste store and the RCV will:

- Be free of kerbs or steps (a dropped kerb may be required).
- Have a solid foundation.
- Be rendered with a smooth, continuous finish (a cobble surface is unsuitable for any type of wheeled container).
- Be level, unless the gradient falls away from the housing or chamber, in which case it should not exceed 1:14; and
- Have a minimum width of 2 metres.

Where bulky waste is generated, the residents will be required to contact the on-site FM team. The FM team will assist the residents to move their bulky waste from their units to the bulky waste stores (located within the building waste stores). Residents will have to provide evidence to the FM team that they have paid for the bulky waste collection service. When sufficient bulky waste has accumulated, the on-site FM team will arrange collection through LBI.

On the agreed collection days, for buildings that exceed 10m from the refuse collection vehicle the FM team will transport bulky waste from the building waste stores to the appropriate waste presentation area. All other buildings will be collected directly as they will be within 10m of the collection vehicle.

For further information on the proposed Waste Strategy for the development, please refer to accompanying WSP Waste Management Strategy.

5.5 Key commitments.

The following table sets out the key commitments for the development, and follows the template set out in the Circular Economy Statement Guidance.

Table 4: Key Commitments

Building "Layer" (as per GLA guidance)	Site	Substructure	Superstructure	Shell/Skin	Services	Space	Stuff	Construction Stuff	Summary	Challenges	Counteractions + Who + When	Plan to prove and quantify
	SECTION A: CONSERVE RESOURCES											
Minimising the quantities of materials used	The site is classified as a 'Brownfield site' currently occupied by the previously occupied HMP Holloway and associated structures. The benefits of utilising a brownfield site will allow the team to explore opportunities for reuse and recoverability of the existing materials on site, as well as the social benefits of enhancing land already established within a local community.	A Pre-Demolition Audit has been undertaken for the site identifying the materials currently existing on site and looking into opportunities for recoverability and reuse throughout the future life.			Efficient design practises such as using prefabricated elements, designing to standard material dimensions to reduce off-cuts and waste on site will be considered and adopted throughout the site where practical. The commercial units will be designed to a shell and core fit out, ensuring the future tenant to have full control over layout and design and service requirements.	The commercial units will be designed to a shell and core fit out, allowing future tenants to occupy and design the space to their own requirements. This approach will reduce costs associated with the procurement, installation, removal, and disposal of materials, but will allow avoid environmental impacts arising from associated disposed components.	N/A	The Principal Contractor will be encouraged to Maximise the recovery and reuse of construction materials to avoid unnecessary extraction and processing of virgin materials, and associated vehicle movement. Throughout the construction phase, the Contractor will be advised to set targets for transportation movements and impacts resulting from delivery of the majority of construction materials to site and construction waste from site, and report on these. This collection of data will assist in improve the understanding of construction impacts and resources helping to enhance resource efficiency on current and future projects.	The scheme will look at adopting efficient design, demolitions, construction, and operation of the building life cycle. Key considerations will be made throughout each of the different layers regarding minimising quantities of materials required as far as possible.	On-going considerations will still be made throughout the design process to ensure the reduction in material used, does not compromise the design and overall purpose the areas are to accommodate.	Pre-demolition audit to be completed at the earliest opportunity. Construction contractor to ensure outlined practises are considered and adopted onto the design where practical. Pre-construction supply chain engagement to take place.	Material efficiency review exercise at next stage of design to ensure on-going consideration is made within the design.
Minimising the quantities of other resources used	Occupying a brownfield site with existing buildings/structure on	The use of techniques such as DfMA, will be considered throughout the scheme allowing prefabricated elements and modular design			The scheme will be designed to incorporate appropriate	The commercial units are being design to a shell and core fit out, therefore all components		The Principal Contractor will be required to report	All aspects of the building will ensure quantities of	Specific site constraints driving bespoke	Pre-construction supply chain	Review exercise at

Table 4: Key Commitments

(energy, water, land)	site, will present design teams with an opportunity to reuse existing materials within the design, and thus reduce the need for additional resources to be required in both the interim and long term.	opportunities to be incorporated into the scheme, thus reducing the short-term demand for resources in the interim.	energy and water monitoring metering systems, This feature will allow the building occupiers to identify potentially inefficient operation, system deficiencies and building management issues and rectify these at the earliest opportunity.	will be provided by the tenant upon occupation of the area.	on the Energy and Water consumption used throughout the construction phase. Key targets will be set prior to commencement on site, in order to inform the team on the usages made, and provide them with the information to make changes and enhance resource efficiency on current and future projects.	materials are reduced as far as possible, without compromising the design. As a result of minimising the overall quantity of materials used on site, less resourcing. water, energy will be required for the scheme.	solutions.	engagement to take place.	next stage of design
Specifying and sourcing materials responsibly and sustainably		In line with Peabody's procurement aspirations: 'materials selected should prioritise natural, locally sourced, recycled, and reused materials, with supply chains for building materials being selected based on environmental and ethical certifications. Peabody are also committed to ensure only FSC timber is procured and used for their developments. All timber use for and on site will be sourced in line with the UK Governments Timber Procurement Policy (TPP) KPI indicators will be set with the team, encouraging the design team to source materials in accordance with appropriate certification schemes e.g., BES 6001, ISO 14001, CARES, and EPD. Targets to ensure at least ≥ 20% of the superstructure, substructure, hard landscaping, and internal finishes will be in place to encourage this procurement and the specification.	N/A	Principal Contractor will be required to comply with the requirements adhered to by the design team. Where material selection differs from that specified at design stage, a like-for-like component is to be provided in order to ensure the standard is maintained throughout the scheme.	Responsibly sourced materials will be given priority over materials not obtaining certification.	Potential cost premiums will need to be considered by the design. Higher recycled content targets may limit supply chain. Structural constraints for higher GGBS content.	Ensure structural design is optimised (Structural engineer). Pre-construction 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 site is Brownfield site currently occupied by existing buildings and hard structures. Pre-demolition audit has been completed assessing the materials on site, and their reuse and recycle properties. Consideration will be made for all existing materials on site for	The design has and will consider the principles of reusability / recoverability / longevity / adaptability / flexibility throughout the entire process. The principles will address each aspect as per the following: – Primary structure and envelope will be made with durable materials with a design life of more than 100 years. – External materials selected for the scheme will be low maintenance, thus reducing carbon emissions in replacement of these components. – Access to the roof, building services and other components will be easily accessible to ensure an easy access for maintenance and replacement when necessary.	The commercial areas are being designed to a shell and core fit out, allowing the incoming tenant full responsibility to fit out the area to their own requirements. This approach will ensure full flexibility for the tenant to design the space to their requirements, as well as reduce any potential unnecessary waste arisings	The Principal Contractor will be required to adhere to the principles as outlined by the design team.	All commercial and residential spaces throughout the development will be designed with reusability / recoverability / longevity / adaptability / flexibility principles in mind. The scheme will look to	Potentially compromising the initial design concept having to account for different design considerations and principles which might have previously been overseen.	Design team to consider and incorporate measures within the design where feasible.	Review exercise at next stage of design and confirm the key design consideration made in line with Peabody aspirations.

Table 4: Key Commitments

	incorporation within the new design.	– Landscaped areas will be designed to incorporate hardy, low maintenance plants suitable to the location of the development. – The building design will be easily modified to cater for the changing needs of the building users and surrounding community. – Structural loads of the building will be designed to be carried by either external and/or party walls allow for internal partitions to be moved and or reinforced relatively easily. – Flexible design and approach to the scheme will be incorporated ensuring accessibility to meet all building users needs regardless of age, gender, mobility, ethnicity, or circumstances. – Prioritisation of natural locally sourced, recycled, and reused materials, with supply chains for building materials being selected based on environmental and ethical certifications will be made. – The building will be designed considering end of use requirements, and the ability to recover and reuse the materials and key components at the end of the building life cycle.	from potentially unrequired materials and components. The flexible structure design will be sure to account for access to services and replacements within the scheme where necessary e.g., replacement.		create a space flexible and accommodating to all needs of the building users and tenants ensuring an inclusive development is delivered for the community.			
Designing out construction, demolition, excavation, industrial and municipal waste arising	Demolition will be undertaken by a Demolition Contractor who has provided a Pre-Demolition Audit assessing the existing buildings, structures and hard surfaces and the materials which they encompass. This audit will ensure an assessment of all materials on site, and report on the ability to reuse and recover materials for subsequent high grade or value applications. Key targets have been captured within the Site Waste Management Strategy completed by London Square in line with the BREEAM and GLA Guidance (Policy SI 7 Reducing waste and supporting the circular economy) which requires design teams to meet and/or exceed the targets for construction and demolition waste by 95% (reuse, recycling, and recovery).		A supporting Operational Waste Management strategy has been put together by WSP, in support of the planning application. In terms of designing out municipal waste arising, the strategy informs the design on the estimated waste arising expected to be generated, and how these can be appropriately managed. Once the buildings and development are in operation, the occupants will be informed on suitable measures and processes to consider in order to reduce their municipal waste output.	The Principal Contractor will be encouraged to adopt construction practices which centre on the reduction of waste. These can include planning deliveries (Just-in-time delivery strategies and arranging for the delivery of materials to align with construction stages thus avoiding materials being stored on site). Rejecting materials which have been damaged in transit and request they are returned (preventing materials not fit for purpose being included on site). Finally, minimising construction movement, thus reducing the amount of CO_2 emissions created.	Efficient waste reduction practices will be incorporated where practical throughout all stages of the design, demolition, excavation, construction, and municipal waste stages.	Where DFMA is opted for, this could raise potential cost implications and timing implications and programme delays.	Pre-construction supply chain engagement. Pre-demolition to outline the feasibility for material recovery and reuse in the long term.	Review exercise at next stage of design. Design team to confirm the inclusion of key targets throughout the design and report on additional measures incorporated regarding 'Designing out construction, demolition, excavation, industrial and municipal waste arising'.

Table 4: Key Commitments

	SECTION C: MANAGE WASTE						
Demolition waste (how waste from demolition of the layers will be managed)	Pre-Demolition audit has been undertaken in order to assess the feasibility for reuse and recoverability of existing materials identified on site. The audit will capture the recycling and reuse targets of the local and national policies were outlined and will use these as a baseline towards ensuring best practises are adopted. Key targets have been captured within the Site Waste Management Strategy completed by London Square in line with the BREEAM and GLA Guidance (Policy SI 7 Reducing waste and supporting the circular economy) which requires design teams to meet and/or exceed the targets for construction and demolition waste by 95% (reuse, recycling, and recovery).			Pre-demolition audit has been undertaken reporting on the materials of waste recovered from site, quantity of materials and the suitable end use in line with the Waste Hierarchy.	Potential challenges are reusing materials within the scheme, without compromising integrity of the design or building elements.	Demolition Contractor has provided Pre-demolition audit reporting on the materials identified on site, there expected end use (reuse, recycling, and recovery).	Pre-demolition audit to inform on the Demolition waste and the expected end use.
Excavation waste (how waste from excavation will be managed)	In line with Policy SI 7 Reducing Waste and Supporting the Circular Economy of the London Plan, the scheme will target for 95% of excavation waste to be used for beneficial use, with all inert excavation waste being used for beneficial use.			Pre-demolition audit has been undertaken reporting on the materials of waste removed from site.	Excavation waste could be of poor quality, therefore making it impractical to incorporate within the design of the scheme/and or potentially compromise the design.	Pre-demolition audit has been completed reporting on the quantity of waste excavated from the scheme.	Ongoing review of the design, and consideration to be made regarding the reuse of excavation waste within the scheme.
Construction waste (how waste arising from construction of the layers will be reused or recycled)	The Principal Contractor will be advised to keep Resource Management Plan (RMP) records, identifying the project materials waste arising and waste management routes which have been taken during the construction phase. The RMP will report the final waste arisings for the schemes and allow for teams to adopt best practice construction waste management practices throughout the process. In addition to this, the strategy will ensure comparable benchmarks are set with the local and national waste policies for the scheme ensuring the team stay on track. Key targets will be set in line with BREEAM, and GLA Guidance (Policy SI 7 Reducing waste and supporting the circular economy) which requires design teams to meet and/or exceed the targets for construction and demolition waste by 95% (reuse, recycling, and recovery).			Best construction waste management practices will be adopted throughout all teams and levels of the project process.	New techniques and strategies with potential cost implications to be considered in order to ensure the waste targets are achieved.	RMP to be completed by appointed Principal Contractor.	Resource Management Plan and Site Waste Management plan to be produced at the necessary project stage and provided.
Municipal and industrial waste (how the design will support operational	An Operational waste management strategy has been completed by WSP reporting on the overarching management for the scheme, as well as the commercial and residential requirements in line with London Plan requirements.			Appropriate waste management guidance, operations,	Space requirements for the waste storage facility	Design team to incorporate requirements into base build	Ongoing Review to follow.

Table 4: Key Commitments

waste management)	The strategy will provide an all-encompassing approach to minimise operational waste as far as possible ensuring all applicable waste streams are accounted for, and appropriate number of bins, and size of facilities are incorporated into the design to account for the waste storage needs. Residents and commercial occupiers will be encouraged to reduce their waste generated as far as possible. The strategy and all recommendations incorporated throughout the documentation will have been put together in line with the following guidance: – Waste Management, The Duty of Care Code of Practice (2018 update) – The Waste (England and Wales) Regulations 2011 (as amended) – From 1 January 2015, – Environmental Protection Act 1990 – Ministry of Housing, Communities and Local Government (MHCLG), National Planning Policy – Framework (updated July 2021). – MHCLG, National Planning Policy for Waste (2014). – Department for Environment, Food and Rural Affairs (Defra), Our Waste, Our Resources: A Strategy for England (2018). – Greater London Authority (GLA), The London Plan (2021). – GLA, London Environment Strategy (2018). – North London Boroughs, North London Waste Plan (Proposed Submission Plan): Regulation 19 (2019). – LBI, Core Strategy (2011). – LBI, Environmental Design Planning Guidance (2012). – LBI, Local Plan: Development Management Policies (2013). – LBI, Urban Design Guide: Supplementary Planning Document (2017); and – LBI, Recycling and Refuse Storage Requirements (2013).	facilities have been outlined by the WSP strategy to incorporate into the design. The report centres on the potential impacts that may arise from waste generated during the operational phase, with the overall aim of developing a strategy for legislative compliance and good practice in the separation, storage and collection of waste arising.	potential challenge for the team to incorporate within the base build.	design. FM team to ensure the smooth operations of the management of waste within the long term.	

5.6 Bill of materials.

Table 5 shows the Bill of Materials based on the whole life carbon assessment (WLCA) completed at the current stage of the design.

Table 4: Bill of Materials

Layer	Element	Material quantity (kg)	Material intensity (kg/m^2 Gross Internal Area)	Recycled content (% by value)	Reused content (% by value)	Estimated reusable materials (kg/m^2)	Estimated recyclable materials (kg/m^2)	Source of information
Structure	Floor slabs, ceilings, roofing decks, beams, and roof	55713737.6	559.6052	*Min. 20% ambition*	Optional (TBC)	Optional (TBC)	Optional (TBC)	Holloway Prison Whole Life Carbon assessment. Building weight calculation Specification documents, Environmental Product Declarations, or other evidence of recycled content
	Foundation, sub-surface, basement and retaining walls	17758588.4	178.3725					
	Columns and load-bearing vertical structures	N/A	N/A					
	Building systems and installations	8633477.72	86.7172					
Shell/Skin	Windows and doors	311155.08	3.125334					
	External walls and facade	11130710.3	111.8001					
Space	Internal walls and non-bearing structures	2237520	22.47431					
	Finishes and coverings	8503744.53	85.41412					
Other	Materials and constructions for external areas	4651102.55	46.71705					
	Other structures and materials	N/A	N/A					

5.7 Recycling and waste.

Table 6 shows the estimates of the recycling and waste based on the current stage of the design.

Table 5: Recycling and Waste Reporting

Category	Total Estimate		Of Which				Source of information
	Total tonnage	t/m2 Gross Internal Area (GIA)	% reused or recycled onsite	% reused or recycled offsite	% not reused or recycled max 5%		
					% to landfill	% to other management (e.g., incineration)	
Excavation waste	Information to be confirmed at Stage 4 (Technical Design)	Information to be confirmed at Stage 4 (Technical Design)	95%		5%		Information to be confirmed at Stage 4 (Technical Design)
Demolition waste	36911.46	0.144t/m^2 255,942(sqm)	99.63% 36774.06 tons. diverted from landfill.		0.37%	N/A	HMP Holloway Pre-Demolition Audit October 2021
Construction waste	Information to be confirmed at project completion (Stage 6)	Information to be confirmed at project completion (Stage 6)	95%		5%		Information to be confirmed at project completion (Stage 6)
		t/annum	% reused on or off site	% recycled or composted on or off site	% not reused or recycled		
			% reused on or off site	% recycled or composted, on or off site	% to landfill	% to other management (e.g., incineration)	
Municipal waste	115.07	1.27t/m^2	65%		Max. 35% and no recyclable or compostable waste.		Former Holloway Prison Waste Management Strategy September 2021
Industrial waste (if applicable)	Information to be confirmed at Stage 4 (Technical Design)	Information to be confirmed at Stage 4 (Technical Design)	Information to be confirmed at Stage 4 (Technical Design)	Information to be confirmed at Stage 4 (Technical Design)			Information to be confirmed at Stage 4 (Technical Design)

5.8 Plan for implementation.

In line with Circular Economy principles, the main priority is to extend the lifetime of the building through careful design and specification.

At detailed design stage plans for implementation of the circular economy principles and achieving the targets and commitments will be further developed. These will include the below:

- Development of a programme and outlining the method that will allow the development to achieve the longer-term targets.
- Strategies for end-of-life disassembly will be further developed, including investigating which elements or components can be reused, recycled, or composted.

5.9 End-of-life strategy.

In line with Circular Economy principles, the main priority is to extend the lifetime of the building through careful design and specification and to ensure that if the building is to be deconstructed at a later date that there is a clear process to follow. This will be further developed during the detailed design.

Building components may be disassembled at the end of the building life, either to be re-used in total or in part as other permanent or even temporary structures. This would be subject to material and component standards still applying, and if their systems could suit new systems at that future time. Or be otherwise recycled if appropriate recycling centres exist in the vicinity and is environmentally and economically appropriate and viable to do so at that future time.

6. Conclusion.

The Circular Economy approach and commitments for this project have been put together in accordance with the London Plan Policy SI 7 Reducing waste and supporting the circular economy, and the GLA's Emerging Circular Economy Guidance. The approach will be further developed through a collaborative and cross-disciplinary approach. The interventions proposed address Peabody's desire to embed sustainable practice, waste reduction and circular economy principles within the built environment and throughout their organisational activities. This statement covers a wide range of interventions in developing a design approach that prioritises Circular Economy principles and will help to reduce the material impact and waste generated by the built environment.

Appendix A: Pre-Demolition Audit.




Project HMP Holloway

Parkhurst Road, London N7 0NU

Pre-Demolition Audit

Date: October 2021

WPS Compliance Consulting Ltd

Executive Summary

This report aims to improve the sustainable management of waste materials arising from the demolition of the Buildings and the surrounding External hard landscaped areas, located within the site referred to as HMP Holloway, Parkhurst Road, London, N7 0NU.

The recommendations made in this report are based on the findings of the pre-demolition audit carried out by WPS Compliance Consulting Ltd (WPSCC Ltd).

WPSCC Ltd has been conducting Pre-Demolition and Pre-Refurbishment Audits since 2011 and the Project Lead on this project was Lara Ayris.

The report includes the results of the audit and a reclamation valuation survey. Together these identify the Key Demolition Products (KDPs), their potential for being recycled or re-used and their economic potential.
The information in the report can be used to:

- Reduce the cost of disposal of the buildings
- Inform the project's Site Waste Management Plan
- Inform the project's Circular Economy Statement
- Realise financial returns from the recovered materials

The results from the audit show an overall waste volume, for the project of 36911.46 tonnes. The selected key demolition products (KDP) could have a potential income/saving of approximately £939,610.

The overall Diversion From Landill is 36774.06 tonnes (approx. 99.63%).

The results from the audit show an overall waste volume, for the Buildings of 30533.85 tonnes. The selected key demolition products (KDP) could have a potential income/saving of approximately £786,062.

The key findings and conclusion for the Buildings are:

- Of the 30533.85 tonnes predicted to be produced 30396.45 (99.55%) is targeted for recycling and 137.4 tonnes (0.45%) is targeted for disposal.
- There are financial savings to be made from the recycling of the inert (including bricks and concrete) materials, whereas the majority of the income is from the metals.
- It is estimated that the economic returns from recycling the inert materials would fetch between £9.00 and £11.00 per tonne. This could result in the demolition contractors receiving between £255,762 - £312,598.
- It is estimated that the value of metals would be in the region of £104,000.
- The KDPs present represent approximately 97% by weight of the total demolition products.
- In this instance there are no items suitable / viable for reclamation / reuse. However, this does not include any potential items that might be reclaimed as part of the legacy project by the Islington Museum and Peabody.

The results from the audit show an overall waste volume, for the External Areas of 6377.61 tonnes. The selected key demolition products (KDP) could have a potential income/saving of approximately £153,548.

The key findings and conclusion for the External Areas are:

- Of the 6377.61 tonnes predicted to be produced 6377.61 tonnes (100%) is targeted for recycling and 0 tonnes (0%) is targeted for disposal.
- There are financial savings to be made from the recycling of the inert (including bricks, concrete and asphalt) materials, whereas the majority of the income is from the metals.
- It is estimated that the economic returns from recycling the inert materials would fetch between £9.00 and £11.00 per tonne. This could result in the demolition contractors receiving between £57,348 - £70,092.
- It is estimated that the value of metals would be in the region of £500.
- The KDPs present represent approximately 100% by weight of the total demolition products.
- In this instance there are no items suitable / viable for reclamation / reuse. However, this does not include any potential items that might be reclaimed as part of the legacy project by the Islington Museum and Peabody.

Contents

1: Introduction

1.1 Project Introduction

This pre-demolition audit has been undertaken for London Square, and contributes towards the Site Waste Management Plan and Circular Economy Statement for the project referred to as HMP Holloway, Buildings and External Areas. The report identifies the potential for reusing and recycling components and materials from the buildings and the surrounding hard landscaped areas due to be stripped out / demolished.

The opportunities to reclaim materials and to generate economic and environmental benefits are often overlooked and the majority tends to end up in landfill. This report will identify the feasibility of, and opportunities for, re-use and recycling as alternatives to landfilling.

The report will focus on the complete proposed demolition works, once all furniture and loose items have been removed. Included in the report will be:

- A pre-demolition audit identifying key demolition products (KDP)
- A recycling valuation of three / four KDPs

The information in this report will help to demonstrate the benefits of recycling and re-use of KDPs.

The criteria used to select the KDPs include economic value, the number of units and the viability of deconstruction.

NB. The findings and values contained in the report represent the best estimate of the materials and components within the buildings and hard landscaped areas that comprise the scope of this project, by means of using plans, site surveys and photos of the different materials and components of the buildings on-site.

1.2 Competence

Background

At WPSCC we have been successfully conducting Pre-Demolition and Pre-Refurbishment Audits since 2011, either as stand alone works, or as a part of a larger works package. During this time the team has worked to a range of BREEAM standards, including the most recent, 2018 set.

Whenever original drawings are not available (which is often) our survey team complete a comprehensive site survey in order to complete the calculations for the Audit.

Previous clients for similar works include: Leeds Teaching Hospitals Trust, Morgan Sindall, Gardiner & Theobold and Kier. Significant sites / projects have included Stophill Hospital (Glasgow), Leeds General Infirmary, Queen Mary University London.

Resume: Lara Ayris – Project Manager

Lara is both well educated in her subject (BSc Hons, Earth Sciences and MSc, Environmental Management) and has a great depth of experience gained from a career that has included employment at the Chartered Institution of Wastes Management (CIWM) and Building Research Establishment (BRE). Lara is a Chartered Waste Manager and Fellow of CIWM (FCIWM) and also, a Chartered Environmentalist (CEnv).

Lara then founded WPS in 2009 and now, with her team, provides specialist compliance consulting services to several sectors of industry, but primarily the Construction and Waste industries.

Lara is also an accomplished speaker, participates in the Right Waste Right Place campaign (RWRP) events, as well as at exhibition forums and relevant symposiums. In addition, Lara is a part time University Lecturer and 'guest lectures' at other times too.

She is a published academic author and was Project Lead on the 2 year Innovate (UK) funded grant project (DRIM), collaborating with 2 Universities and a commercial partner.

Both Lara and WPS are award winners, with Lara having won Outstanding Woman in Construction in 2012 and WPS won Compliance Team of the Year at the International Women in Compliance Awards in 2018.

For more information, including testimonials from Clients, please see Lara's LinkedIn Profile: https://www.linkedin.com/in/lara-ayris-msc-fciwm-cenv-14620a1b/ or the WPSCC website: https://www.wpsccltd.co.uk/

2: Methodology

2.1 Brief Overview

The

- Buildings and
- External Areas

are being demolished as part of the re-development of the land once occupied by HMP Holloway.

This report covers the strip out and demolition works to be carried out at the site, including the external pathways and hard landscaped areas.

2.2 Method

This audit is based on a non-intrusive survey methodology. The survey team made a thorough inspection of the buildings, but the roofs were not inspected. While some site plans were available to aid the survey, not all construction details were evident, hence certain assumptions have had to be made. Furniture and loose items have not been included, but fittings such as WC's, fitted kitchens, etc. have been included where they were found during the site audit on the 30th September and 5th October 2021.

Where access was not possible, any information not available from Plans or from external investigations has had to be assumed with reference and relevance to other documents and previous knowledge.

This report does not cover hazardous wastes: for example, asbestos fibres may be present in insulation or other materials, and it is recommended that an asbestos survey is carried out and asbestos-containing materials are removed by a licenced contractor.

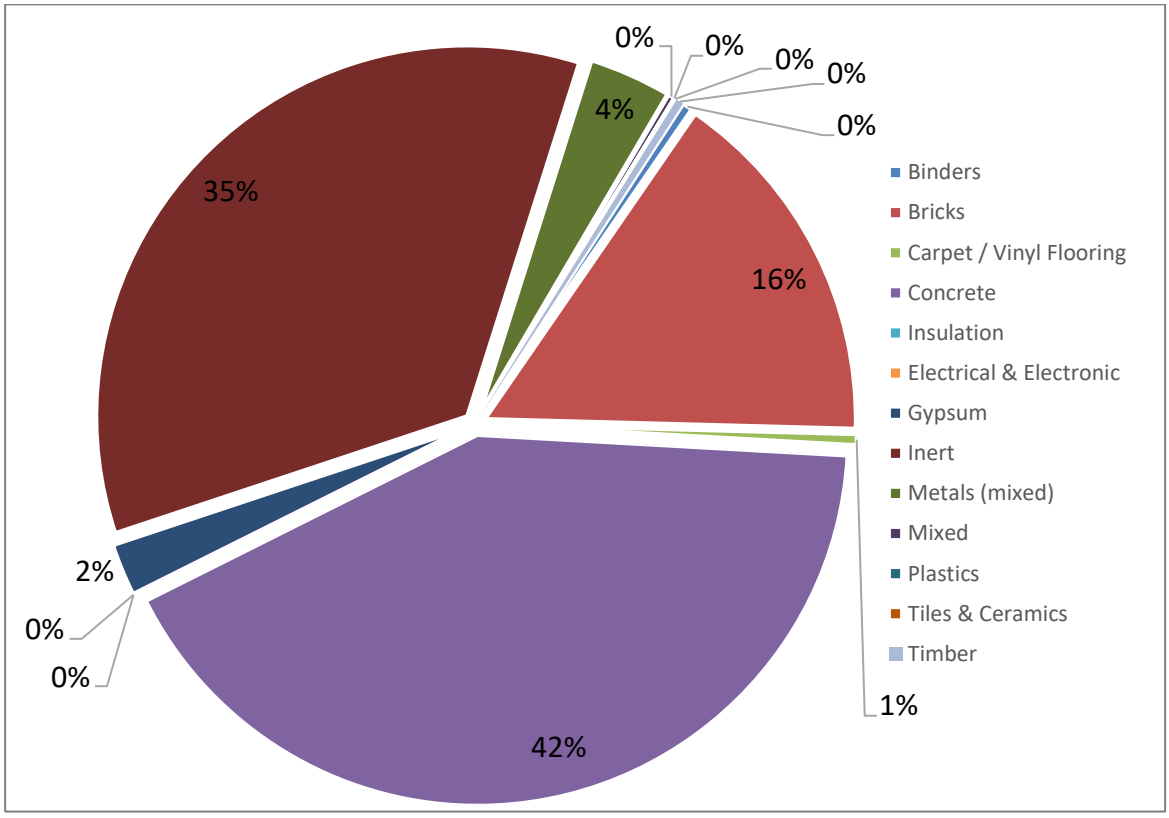
Results of the survey have been analysed according to the principal material types present, these being aggregated into Key Demolition Products (KDPs) with approximate total quantities indicated and recommendations made for their reclamation, recycling or disposal. The condition of products and materials and their suitability for various reclamation or recycling options cannot be guaranteed.

Reclamation is taken to mean the segregation of products and materials for re-use in the same form, whilst recycling refers to the reprocessing of materials into new products. A brick is reclaimed if used as a brick, recycled if crushed and used for fill material. Recycling may be "closed loop", resulting in a new product of the same type or "open loop", resulting in a new product of a different nature, and potentially lower grade. Generally speaking, reclamation is environmentally preferable to recycling as it displaces the environmental impact of manufacturing new construction products and involves little or no re-manufacturing.

3: Pre-Demolition Audit Results for the Buildings

It was decided to concentrate on certain KDPs that present the most potential for re-use and recycling. The selection was made by looking at the quantity, value and viability for deconstruction, reclamation and recycling.

3.1 Overall volumes of waste produced from the Buildings



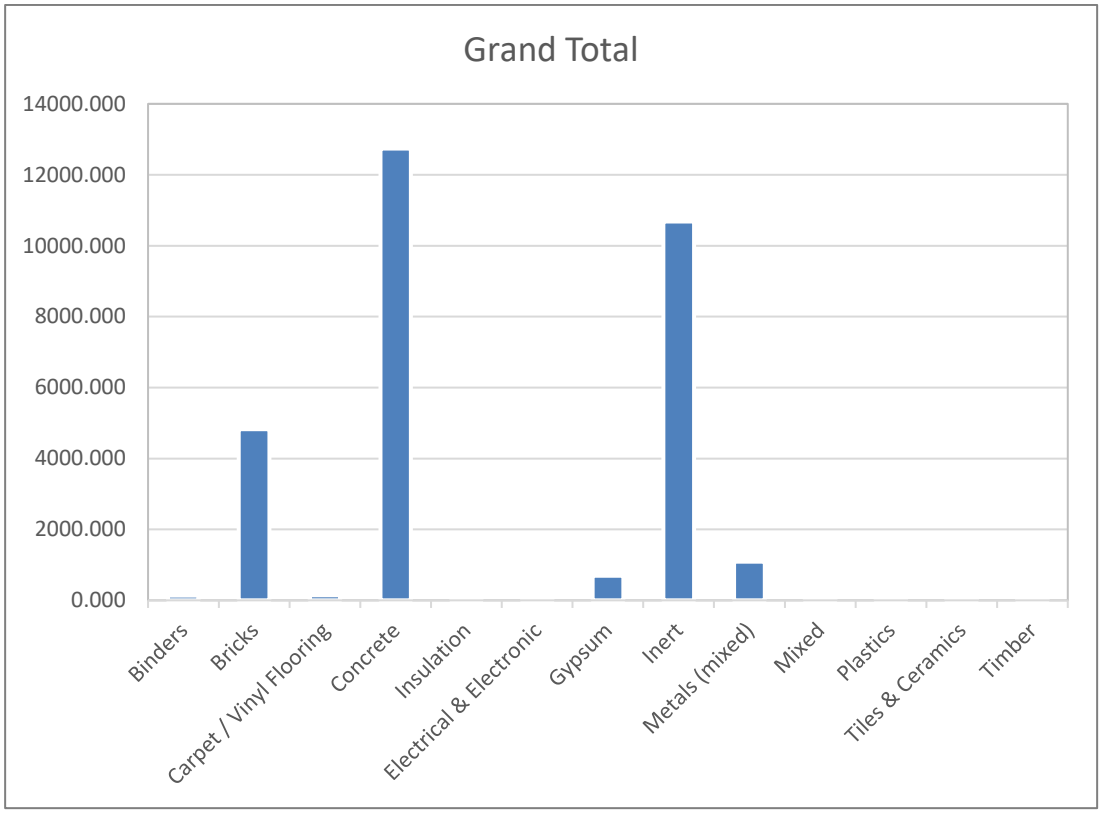


Figure 1 - Overall volumes of waste produced from the Buildings

3.2 Material Recovery Options for the Buildings

(Approximate percentages based on report recommendation)

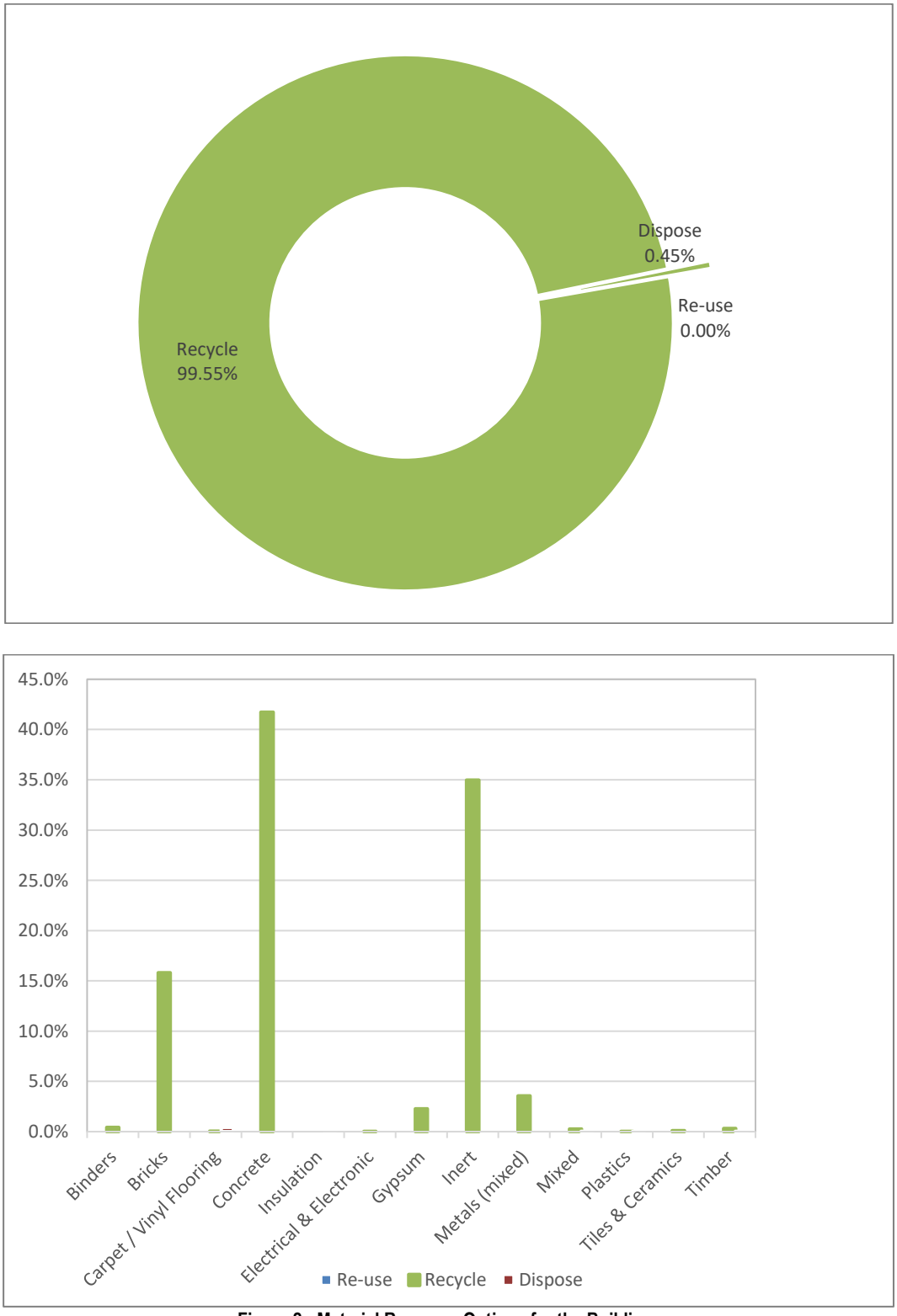


Figure 2 - Material Recovery Options for the Buildings

4: Key Demolition Product Details for the Buildings

This section of the report presents the waste produced as KDPs. There are three KDPs; Inert (including bricks and concrete), Timber and Metal (including M & E elements), representing approximately 97% of all waste occurring on-site.

4.1 Inert (including bricks and concrete)

- Product description:

Inert materials from this demolition are generated mainly from the walls and the concrete slabs / bases of the buildings.

- Product detail:

Product	Weight (tonnes)	Suggested reclamation rate	Suggested recycling rate
Inert	10682.46	0%	100%
Bricks	4829.21	0%	100%
Tiles & Ceramics	32.7	0%	100%
Binders	132.56	0%	100%
Concrete	12741.66	0%	100%
Total	**28418.59**	**0%**	**100%**

- Recommendations for the Buildings:

Reclamation of some bricks could be attempted, but their quality and condition and the time that would be required to 'clean' them, deems their recovery / re-use to be not a financially viable option in this case. This decision is based on recovered bricks having a value of 20p – 40p per brick.

The recycling of demolition arisings, such as concrete, to produce recycled aggregates is now a mainstream activity usually driven by the cost benefits to be made (Demolition Protocol, 2008). Case study results from implementing the Demolition Protocol (2008) indicate that close to 100% recycling performance can be achieved for concrete and masonry where a soft strip process has removed materials / wastes that would be considered contamination. More recently, it has become routine to also crush and recycle asphalt (tarmac) scrapings from road / pavement surfaces.

Disposal of this inert material could cost £426,300, based on a waste management charge of approximately £300 per 20yd container (excluding a possible extra charge of £96.70 per tonne disposal/recycling cost).

These inert materials should be crushed on-site and used as Recycled Aggregate (RA) where possible. The lower value material should be kept separate from Recycled Concrete Aggregate; its first use would be as fill material on-site, with any surplus sold locally. For the remaining inert waste, it could fetch up to £9.00 per tonne. Maximum benefit is to be realised by using the recycled material on-site in the highest value applications first, thereby displacing the procurement of virgin materials. Based on this valuation the overall potential value to the project of on-site recycling of this material is in the region of £255,762, less the cost of processing.

The overall maximum benefit achievable therefore, including disposal savings if retained on-site, could be in the region of £682,062 excluding any processing costs.

4.2 Timber

- Product description:

Timber products arise mainly from the buildings' internal elements, such as wood panelling (particularly in the chapel) and the internal doors and frames.

- Product detail:

Product	Weight (tonnes)	Suggested reclamation rate	Suggested recycling rate of remainder
Timber	98.54	0%	95%

- Recommendations:

The type and condition of the majority of the timber from the Buildings, is not reusable in its current state; therefore the recommended recovery route would be to recycle. However, this does not include any potential items that might be reclaimed as part of the legacy project by the Islington Museum and Peabody.

Sound, whole materials should be offered via material exchange websites (for example Recipro: www.recipro-uk.com), the Community Wood Recycling scheme (http://www.communitywoodrecycling.org.uk/about-us/) or local reclamation merchants.

4.3 Metals

- Product description:

Metals are found in the various security grilles, staircase handrails, together with the M&E elements, such as cabling and pipework, but also in the framework and roof of the workshop.

- Product detail:

Product	Weight (tonnes)	Suggested reclamation rate	Suggested recycling rate
Ferrous / Non ferrous	1094.57	0%	100%

- Recommendations:

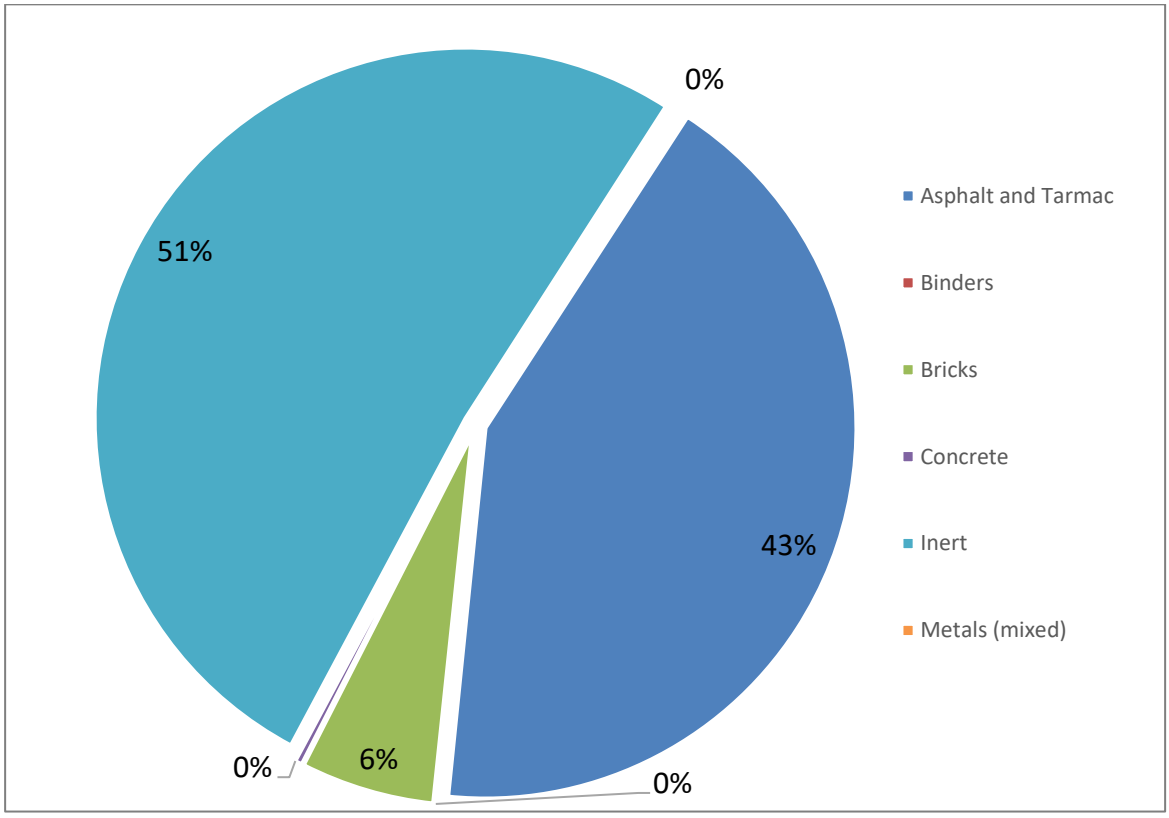
  In this instance, unfortunately, there are no items either fit, or viable for salvage, however, this does not include any potential items that might be reclaimed as part of the legacy project by the Islington Museum and Peabody.

  All metals should be segregated for recycling, which is both cost-effective and preserves a large part of their environmental value. Disposal of the metals via a waste management company may realise a net rebate in the order of £104,000.

5: Pre-Demolition Audit Results for the External Areas

It was decided to concentrate on certain KDPs that present the most potential for re-use and recycling. The selection was made by looking at the quantity, value and viability for deconstruction, reclamation and recycling.

5.1 Overall volumes of waste produced from the External Areas



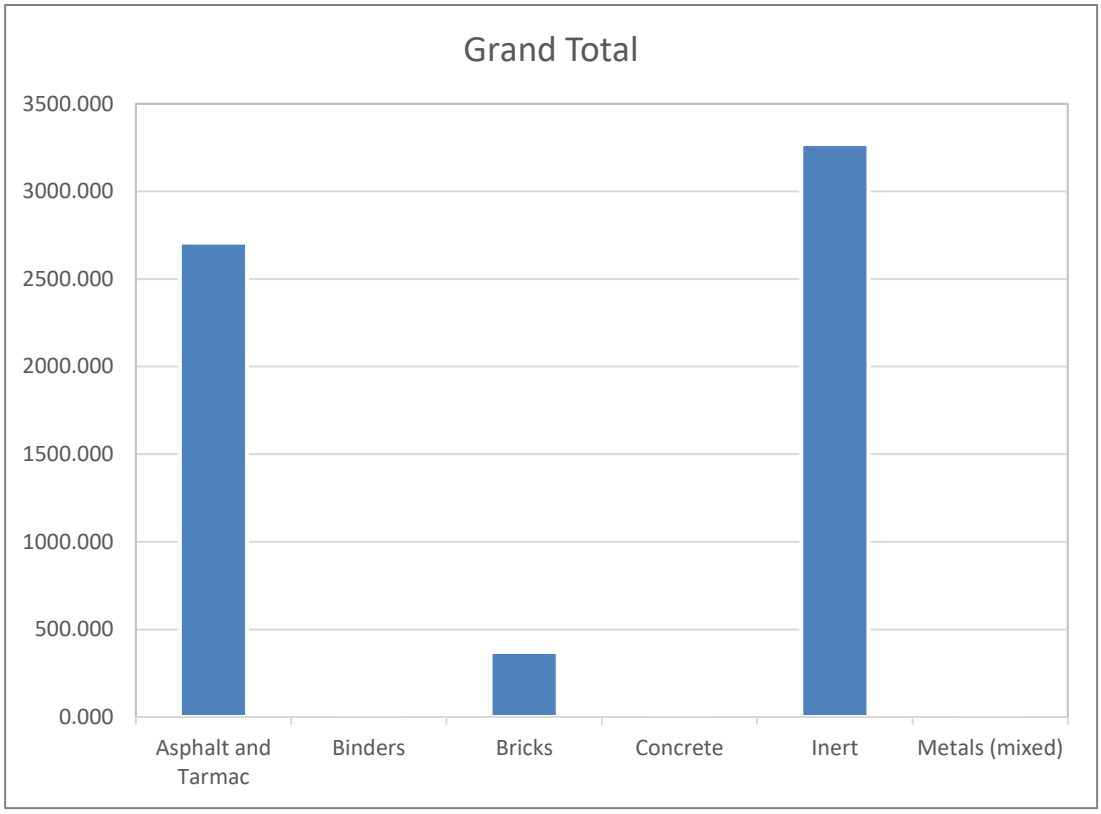
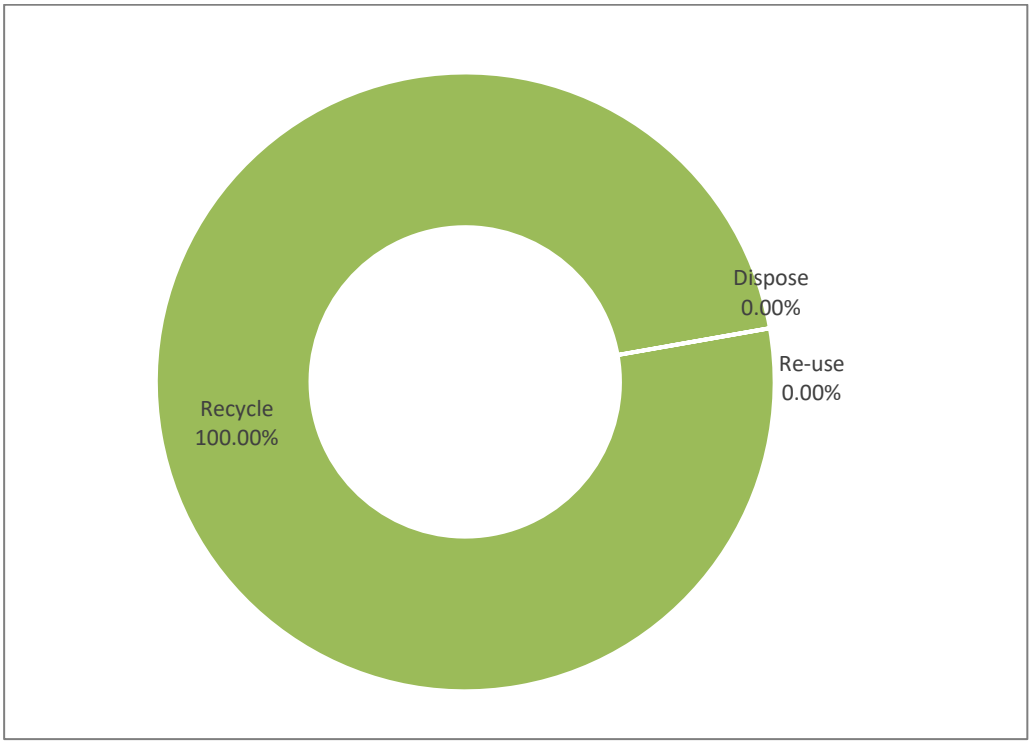


Figure 3 - Overall volumes of waste produced from the External Areas

5.2 Material Recovery Options for the External Areas

(Approximate percentages based on report recommendation)



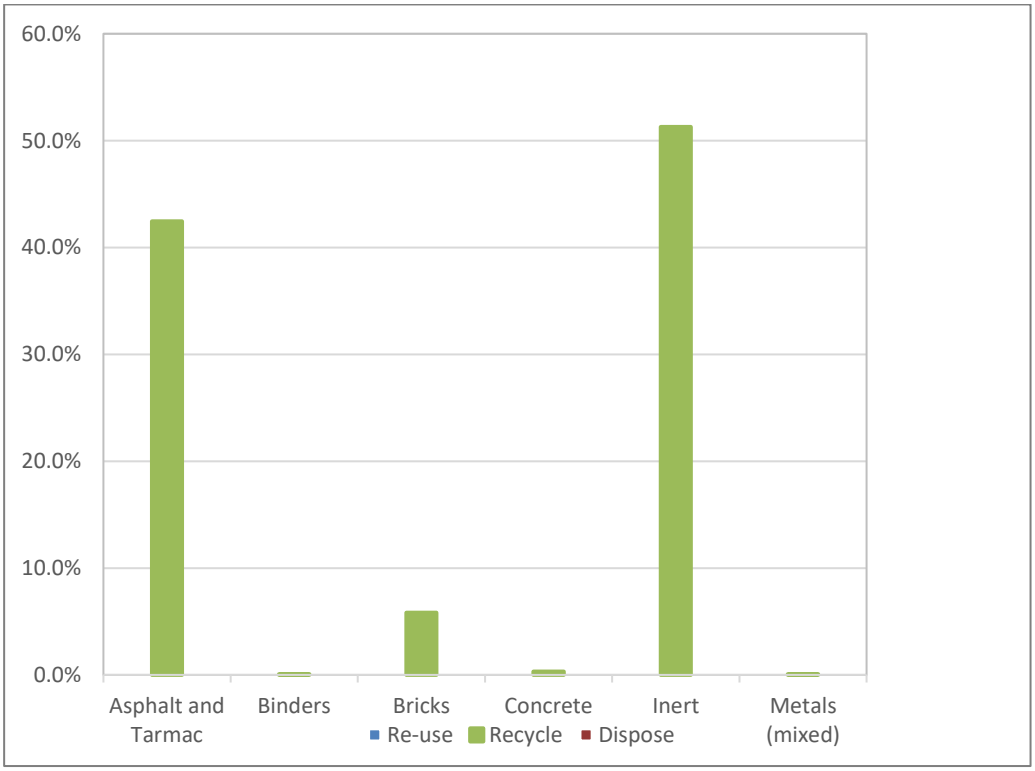


Figure 4 - Material Recovery Options for the External Areas

6: Key Demolition Product Details for the External Areas

This section of the report presents the waste produced as KDPs. There are two KDPs; Inert (including bricks, concrete and asphalt) and Metal, representing approximately 100% of all waste occurring on-site.

6.1 Inert (including bricks, concrete and asphalt)

- Product description:

Inert materials from this demolition are generated from the low brick walls, pathways and roadways.

- Product detail:

Product	Weight (tonnes)	Suggested reclamation rate	Suggested recycling rate
Inert	3270.54	0%	100%
Asphalt	2706.89	0%	100%
Binders	3.91	0%	100%
Bricks	371.51	0%	100%
Concrete	19.69	0%	100%
Total	**6372.54**	**0%**	**100%**

- Recommendations for the External Areas:

Reclamation of some bricks could be attempted, but their quality and condition and the time that would be required to 'clean' them, deems their recovery / re-use to be not a financially viable option in this case. This decision is based on recovered bricks having a value of 20p – 40p per brick.

The recycling of demolition arisings, such as concrete, to produce recycled aggregates is now a mainstream activity usually driven by the cost benefits to be made (Demolition Protocol, 2008). Case study results from implementing the Demolition Protocol (2008) indicate that close to 100% recycling performance can be achieved for concrete and masonry where a soft strip process has removed materials / wastes that would be considered contamination. More recently, it has become routine to also crush and recycle asphalt (tarmac) scrapings from road / pavement surfaces.

Disposal of this inert material could cost £95,700, based on a waste management charge of approximately £300 per 20yd container (excluding a possible extra charge of £96.70 per tonne disposal/recycling cost).

These inert materials should be crushed on-site and used as Recycled Aggregate (RA) where possible. The lower value material should be kept separate from Recycled Concrete Aggregate; its first use would be as fill material on-site, with any surplus sold locally. For the remaining inert waste, it could fetch up to £9.00 per tonne. Maximum benefit is to be realised by using the recycled material on-site in the highest value applications first, thereby displacing the procurement of virgin materials. Based on this valuation the overall potential value to the project of on-site recycling of this material is in the region of £57,348, less the cost of processing.

The overall maximum benefit achievable therefore, including disposal savings if retained on-site, could be in the region of £153,048 excluding any processing costs.

6.2 Metals

- Product description:

Metals are found in the fences and gates and in the handrails of the steps.

- Product detail:

Product	Weight (tonnes)	Suggested reclamation rate	Suggested recycling rate
Ferrous / Non ferrous	5.07	0%	100%

- Recommendations:

  In this instance, unfortunately, there are no items either fit, or viable for salvage, however, this does not include any potential items that might be reclaimed as part of the legacy project by the Islington Museum and Peabody.

  All metals should be segregated for recycling, which is both cost-effective and preserves a large part of their environmental value. Disposal of the metals via a waste management company may realise a net rebate in the order of £500.

7: Reclamation: General note

In order to maximise reclamation value it is advisable to have a long lead-in time and maximum exposure to sell architectural salvage items. To maximise environmental and economic benefits, it is advised that any materials / items be re-used as near to site as possible and they are either:

- Used in the re-development
- Used by the same client locally
- Sold or given away locally

It is important that salvaged items are removed and stored so that components remain together, e.g. exterior doors with their frames. Salvo operate a demolition alert service on their website which brings forthcoming demolition products to the attention of potential buyers. Demolition alerts are also available on the BREMAP system.

7.1 Reclamation / Recycling recommendations

The following recommendations may assist in maximising the reclamation and recycling potential of KDPs:

- Discuss with the client the findings of the report and ensure that all options for on-site re-use are considered, especially for high value items such as entrance doors and fire alarms.
- Consider setting aside storage on-site for segregation of salvage items.
- For useful advice / guidance consult WRAP Construction Contractors (http://www.wrap.org.uk/content/construction-contractors) for resources to help manage waste.
- Consult http://www.ciria.com/recycling/ for a list of construction related recycling sites.
- Timber waste can be segregated and removed through the National Community Wood Recycling Project (NCWRP) www.communitywoodrecycling.org.uk. Timber is then utilised in the most ecological way based on its condition.
- EMR metal recycling is a nationwide network of scrap metal processors (www.emrgroup.com).
- For Plasterboard recycling British Gypsum (https://www.british-gypsum.com/about-us/csr/environmental-challenges/plasterboard-recycling) is a good resource.
- Contact Goldfinger Factory materials recycling (www.goldfingerfactory.com) for the recycling of Factory Contents.
- Contact local architectural salvage merchants about specific items. Salvo publishes a directory on their website. Local options are listed on the NetRegs Waste Directory (www.wastedirectory.netregs.gov.uk), and are listed below.
- Any switch boxes, distribution boxes and fluorescent light fittings should be disposed of according to the WEEE Regulations. We strongly recommend that this is discussed with your demolition contractor or with a specialist WEEE handler.

7.2 Local Waste Contractors

This is a sample of local Waste Contractors who could be used on the project:

Waste Contractor	Waste Carrier License	PAS 402	Address	Contact	Distance
Cory Environmental Ltd	CBDU138950	No	Wallbrook Wharf, Upper Thames Street, London, EC4R 3TD	02073 296721	5 miles
O'Donovan Waste Disposal	CBDU116673	No	Markfield House, 82 Markfield Rd, London N15 4QF	020 8801 9561	5 miles
Powerday, Willesden	CBDU123332	Yes	Crossan House, Old Oak Ln, White City, London NW10 6RJ	020 3858 0504	8 miles
Quattro (UK) Ltd	CBDU145950	Yes	Boden House 114 – 120 Victoria Road, Park Royal, Greater London, NW10 6NY	020 8838 2648	8 miles

8: Conclusion and Recommendations

Inert materials will be the dominant demolition product. This product should be treated in terms of the priorities of the waste hierarchy of Reduce > Re-use > Recycle > Dispose. Where possible, the bricks should be reclaimed for future re-use on-site or for sale or exchange. Unsuitable and damaged inert materials can be crushed for recycled aggregate. Other inert materials should be segregated where possible. These actions will significantly reduce the environmental impact of the demolition process.

8.1 Breakdown of Recovery Options for the Buildings

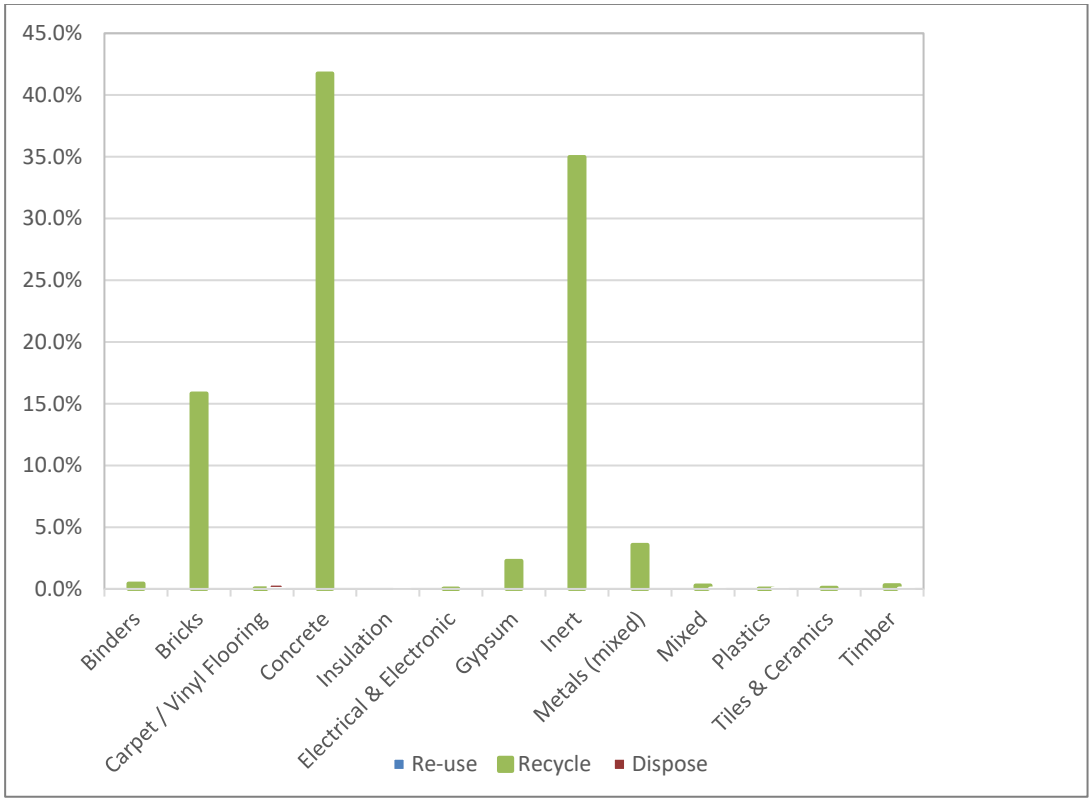


Figure 5 - Breakdown of Recovery Options for the Buildings

8.2 Economic potential for the Buildings

Key Demolition Product	Economic Potential
Inert	£682,062
Timber	Variable
Metal	£104,000
TOTAL	**£786,062**

Table 1 - Economic potential for the Buildings

8.3 Breakdown of Recovery Options for the External Areas

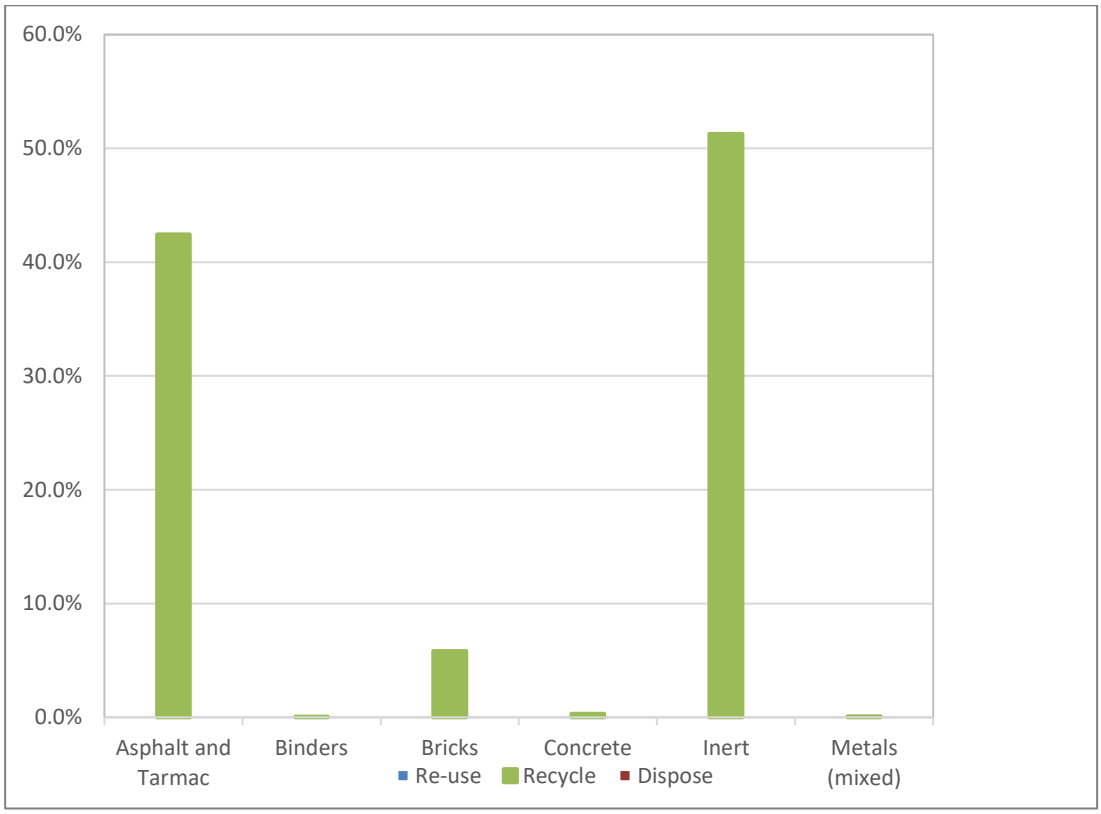


Figure 6 - Breakdown of Recovery Options for the External Areas

8.4 Economic potential for the External Areas

Key Demolition Product	Economic Potential
Inert	£153,048
Timber	Variable
Metal	£500
TOTAL	**£153,548**

Table 2 - Economic potential for the External Areas

8.5 General

The client, architect and demolition contractor should be involved in the implementation of the recommendations of this report. Re-use on-site or in a similar project is the ideal option from an environmental and economic point of view, and the client and architect are best placed to facilitate these actions.

The above recommendations should be considered concerning reclamation, specific segregation, storage and advertising using the suggested routes.

It is recommended that, as part of this process, a plan is drafted for management of demolition waste, the key features of which would be:

1. Targets set for segregation and recycling of key demolition products (KDP), based on the above, to be agreed with the demolition contractor
2. Targets for reclamation of specific materials and named items, based on the above, to be agreed with the demolition contractor
3. Adequate on-site practices for removal and storage of products and materials for reclamation and recycling
4. A template for monitoring waste management routes, with which contractors will be asked to comply.

8.6 Waste Monitoring

Measuring systems such as WPS Compliance Consulting's SitePlan (www.siteplan.online) could be implemented on-site in order to reflect the waste management plan, because:-

- Reference to this Audit must be made in the Resource Management Plan (RMP)
- The data from this Audit must be used as the Forecast data in the project's RMP
- The data from this Audit must be included in Appendix D of the Circular Economy Statement
- At the end of the project the Waste Actuals should be compared to the Forecast values (as is the norm in the Review section of the RMP), with any deviations from the planned targets being investigated and explained.

Without this adequate waste monitoring it will not be possible to check the performance of contractors, or to verify the success of the waste management plan.

Inert materials will be the dominant demolition product. This product should be treated in terms of the priorities of the waste hierarchy of Reduce > Re-use > Recycle > Dispose. Where possible the bricks should be reclaimed for future re-use on-site or for sale or exchange. Unsuitable and damaged inert materials can be crushed for recycled aggregate. Other inert materials should be segregated where possible. These actions will significantly reduce the environmental impact of the demolition process.

REFERENCES:

British Standards Institute (2002) *Standards for Concrete*. BS8500-1. London: BSI

Institute of Civil Engineers (2008) *Demolition Protocol*. London: ICE

National Community Wood Recycling Scheme (2016) *About the NCWRP* [online] Available at: http://www.communitywoodrecycling.org.uk/about-us/

Recipro (2016) *What is Recipro?* [online] Available at: http://www.recipro-uk.com/

Waste and Resource Action Programme (2005) *The quality protocol for the production of aggregates from inert waste.* Oxon: WRAP

http://scrapmetalreaders.co.uk/scrap-metal-prices (as at October 2021)

https://www.ebay.co.uk/ for the sale of individual items of value that can be reclaimed

Plasterboard Recycling | Aasvogel Waste Management qualifies the recycling of plasterboard as 100%

Used Carpet Tiles | 100% Recycled | Nation Wide Delivery available specialise in used carpet tiles

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