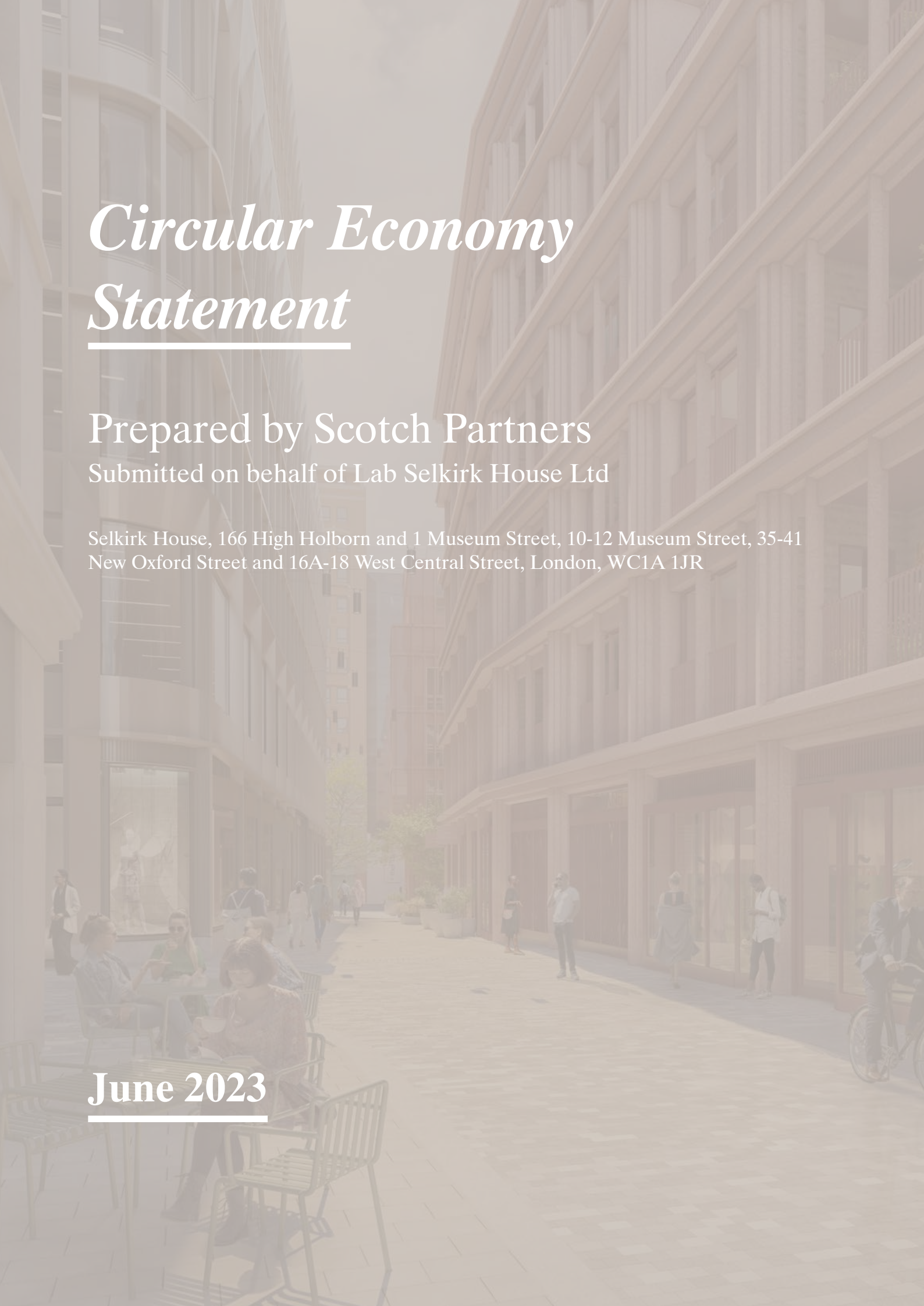

Circular Economy Statement

Prepared by Scotch Partners

Submitted on behalf of Lab Selkirk House Ltd

Selkirk House, 166 High Holborn and 1 Museum Street, 10-12 Museum Street, 35-41 New Oxford Street and 16A-18 West Central Street, London, WC1A 1JR

June 2023

ScotchPartners
Building Services Engineering | Sustainability | Acoustics

Selkirk House, 166 High Holborn and 1 Museum Street, 10-12 Museum Street, 35-41 New Oxford Street and 16A-18 West Central Street, London, WC1A 1JR,

Lab Selkirk House Ltd

Circular Economy Statement

Rev 10

26/06/2023

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Project Particulars

Client Name: Lab Selkirk House Ltd

Project Name: Selkirk House, 166 High Holborn and 1 Museum Street, 10-12 Museum Street,

35-41 New Oxford Street and 16A-18 West Central Street, London, WC1A 1JR,

Project Number: 5259

Document Reference: Circular Economy Statement

Disclaimer

Revision History

Revision	Description	Date	Prepared By	Checked By
00	First draft	03/03/2021	Danielle Lowson	Seb Dimarco
01	Second Draft	12/03/2021	Danielle Lowson	Seb Dimarco
01.1	Final - Update including findings of Arup's Draft Pre-demolition audit and Site Waste Manage Plan	01/04/2021	Danielle Lowson	K Elder
02	Revision 2 Draft	20/06/2022	Riara Woodley	
02.1	Revision 2 Draft – Update including development description and municipal waste management	15/07/2022	Danielle Lowson	Seb Dimarco
02.2	Final – Update including WLCA results	29/07/2022	Jaime Oliver	Danielle Lowson
03	Rev03	22/09/22	Riara Woodley	K Elder
04	Minor Updates	07/10/2022	Rob Magee	Seb Dimarco
05	For Planning	11/10/2022	Rob Magee	Seb Dimarco
06	Update in Response to Planning Comments	24/05/23	Riara Woodley	Seb Dimarco
07	Minor updates following comments	25/05/23	Riara Woodley	Seb Dimarco
08	Minor updates following comments	08/06/23	Riara Woodley	Seb Dimarco
09	Minor updates following comments	22/06/23	Riara Woodley	Seb Dimarco
10	Minor updates following comments	26/06/23	Imogen Horne	Seb Dimarco

Contents

1 Executive Summary

1.1 Overall Sustainability Objectives and Aspirations

London Borough of Camden ('the Council') and the Mayor of London have declared a 'Climate Emergency' with the Council's declaration including an 'Ecological Emergency'. Both have an aspiration to achieve a Net Zero Carbon borough and city by 2030, 20 years ahead of the national target. In June 2020, the Council approved a 5-year 'Climate Action Plan' which creates a framework for action across all aspects of the borough with the aim of achieving zero carbon by 2030.

The Applicant and the project team have fully embraced the sustainability and Net Zero Carbon objectives of the Council and the Mayor of London. They are keen for the proposed development to fully support these objectives and to go further by adopting both mandatory and voluntary standards (such as WELL, WiredScore and Net Zero Carbon) in order to maximise longevity, market relevance and social sustainability, and minimise environmental impact over the buildings' life cycle. The intention of the scheme is to act in support of the Council's sustainability aspirations and commitments for the coming years. This includes design updates to retain the existing fabric of 10 Museum Street and 35 and 37 New Oxford Street as much as possible; retain the existing structure of 11-12 Museum Street and retain the existing structure of 39-41 New Oxford Street.

The proposed approach to development combines substantive retention of the existing basement and substructure of Selkirk House and replacement new-build above ground. This approach offers the opportunity to achieve cutting-edge environmental performance for the office space that a refurbishment of the existing building cannot match. This in turn, improves performance of the proposed scheme on a life cycle basis.

The proposed development has been designed to also consider the key policies relating to sustainable design and construction, focusing primarily on the following documents:

- Camden Local Plan 2017
- Camden Planning Guidance (CPG) Energy efficiency and adaptation, January 2021
- CPG Planning for Health and Wellbeing, January 2021
- CPG Biodiversity, March 2018
- The London Plan 2021

This Statement forms part of a suite of sustainability documents that collectively demonstrate how the development proposals have responded to both the Council and the Applicant's sustainability objectives, and its performance against mandatory and voluntary sustainability targets. As such, this document should be read in parallel with the following reports submitted with the planning application:

- Sustainability Statement
- Energy Statement
- Whole Life Carbon Assessment (WLCA) and Report
- Retention & Redevelopment Options Review & WLC Comparison

1.2 Development Description

This Circular Economy Statement (CES) has been prepared in support of the detailed planning application submitted by Lab Selkirk House Ltd ('the Applicant') to the Council for the redevelopment of the land at Selkirk House, 166 High Holborn and 1 Museum Street, 10-12 Museum Street, 35-41 New Oxford Street and 16A-18 West Central Street, London, WC1A 1JR ('the site').

This application relates to a site covered by another application (ref. 2021/2954/P) it is the intention that this application supersedes the previous application which will in turn fall away. This new planning application has been prepared in the context of the recent listing of 10-12 Museum Street and 35-37 New Oxford Street, both of which sit within the application boundary. As a result, a listed building application is being submitted alongside the planning application. Whilst the original application gave significant weight to the heritage interest of these now Grade II listed buildings, the applicant wanted the opportunity to properly consider the implications of the listings on the proposals in order to deliver a revised scheme which maximises the heritage benefits of the site.

Following the recent decisions by Historic England, the status of the buildings within the One Museum Street element of West Central Street area of the site is as follows:

Grade II Listed:

- 10-12 Museum Street
- 35-37 New Oxford Street

Certificate of Immunity from Listing granted:

- 39 – 41 New Oxford Street
- 16a West Central Street
- 18 West Central Street
- 16b West Central Street

The proposed development comprises of the following components:

- Museum Street - a single new building rising to 19 storeys, providing office (Class E(g)(i)) accommodation on upper levels and a range of flexible town centre uses (Class E) at ground level.
- High Holborn - a single new building rising to 6 storeys, providing residential (Class C3) accommodation on upper levels and a flexible town centre use (Class E) at ground level.
- Vine Lane - a single new building rising to 5 storeys, providing market residential units with a flexible town centre use (Class E) at ground level.

- West Central Street - a series of new and refurbished buildings rising to 6 storeys, providing residential accommodation (market, LCR and Intermediate) on upper levels (Class C3) and flexible town centre uses (Class E) at ground level.

In summary, the proposed development is seeking detailed planning permission for:

- 22,650 sqm (GIA) of office floorspace falling within Class E(g)(i). This will be provided within the Museum Street building.
- 1,481 sqm (GIA) of flexible town centre floorspace at ground floor level falling within Class E. This will be provided within the Museum Street, Vine Lane, High Holborn, and West Central Street buildings. The planning application specifies the range of uses within Class E that each of these units is seeking permission for.
- 3,992 sqm (GIA) of residential floorspace will be provided. This represents an uplift of 2,078 sqm (GIA) of residential floorspace falling within Class C3. This will be provided within the West Central Street, Vine Lane and High Holborn buildings.
- All of the affordable housing component (1,693 sqm GIA) is provided with the West Central Street buildings along with 294 sqm (GIA) of market housing.
- 1,579 sqm (GIA) of market housing is provided within the Vine Lane block with a further 426 sqm (GIA) of market housing being provided within the High Holborn block.
- Two basements which will be used for cycle parking, servicing areas, plant, storage, and other ancillary uses.
- The creation of new public pedestrian route through the site known as 'Vine Lane', which will link High Holborn with West Central Street.
- 465 cycle parking spaces allocated as follows:
    - 345 long stay cycle parking spaces allocated to the office component.
    - 11 long stay cycle parking spaces allocated to the flexible town centre uses floorspace component.
    - 73 long stay cycle parking spaces allocated to the residential component.
    - 36 cycle parking spaces allocated to visitors to the site and located within the public realm areas.
    - 0 vehicle parking spaces.
- A high proportion of open space across the site totalling 2,201 sqm provided as public realm, pocket parks, communal areas, play space and private amenity for residents and office occupants.
- Extensive provision of open space across the site (2,190sqm) including:
    - 1,083 sqm provided as public realm within the Applicant's ownership across the site.
    - 509 sqm provided as communal offices terraces within Museum Street building.
    - 186sqm provided as play space within the West Central Street courtyard, which also provides communal open space for residents of those buildings.

  - 195 sqm of communal open space within the Vine Lane block - 74 sqm within the courtyard and 121 sqm at level 4.
  - 87 sqm for WCS and 130 sqm for VL of private amenity space.
- In addition to the open space provision within the Applicant's ownership, 729 sqm of public realm and streetscape improvements outside of the Applicant's ownership is proposed.

Please note, GIAs have been measured in accordance with International Property Measurement Standards (IPMS). All GIAs within this report have been measured and reported in line with this as the industry standard to include all internal areas with the following exceptions:

- Any area between a Notional Boundary and the external perimeter of External Walls;
- Sheltered Areas;
- External Floor Areas;
- Enclosed walkways or passages connecting separate Buildings;
- Enclosed rooftop plant such as mechanical, electrical and lift motor rooms;
- External stairs that lead to upper levels, excluding open framework fire escapes, which are excluded; and
- Limited use area(s) not otherwise identified above.

In a number of the supporting technical reports including the Circular Economy GLA Template, it is necessary to calculate the GIA without the exceptions listed above. In these instances GIA includes all internal areas without any of the exceptions listed above to give the following totals:

- 1 Museum Street building – 24,791m²
- High Holborn building – 493m²
- Vine Lane building – 2,449m²
- WCS buildings – 3,247m²

Total – 30,980m²

Figure 1 Red line boundary

1.3 Approach, Key Commitments and Targets

1.3.1 Case for Refurbishment

In line with the DEFRA 2011 Waste Hierarchy, first the condition of the existing site must be considered for any opportunities for a refurbishment in order to prevent waste prior to a new building being developed. This approach was considered for the development, with a further study looking into potential retention options prepared separately to this report.

On West Central Street, much of the existing fabric is being retained and refurbished. The following opportunities have been identified for the West Central Street Buildings:

- Maximise opportunity to provide additional residential accommodation on site, of a high quality, with priority focus on affordable housing.
- Redevelopment of the block which responds to the historical significance of the freeholds as well as makes a positive contribution to the townscape setting of the block in the Bloomsbury Conservation Area.
- Minimise demolition and maximise conservation of historic building fabric from both a heritage and sustainability perspective.
- Maximise active frontage and connectivity to the public realm.

The following elements of the existing building are proposed to be retained and reused as part of the proposals for 16A, 18 and 16B West Central Street, namely:

- Existing stone floor sets - to be carefully removed and set aside to be reused on the proposed new communal courtyard to the West Central Street buildings.
- Existing timber horse stalls - to be carefully removed and set aside to be reused on the proposed new residential communal lobby space of 16B-18 WCS.
- Existing wall crane - to be carefully removed and set aside to be reused / reinstated in the corner on the top floor of 16A WCS. The internal winch mechanism will not be reinstated due to the residential accommodation constraints.

It is challenging to incorporate the existing cast iron staircase as part of the new build proposals therefore the intention is to reuse this item in a different site as a reclaimed item.

On 1MS, much of the existing basement is being retained.

On the Selkirk House site, full details will be provided as part of the retention report being submitted with this application (Retention & Redevelopment Options Review & WLC Comparison). Key findings from this report are as follows:

- New build development options offer more efficient land use through an uplift in floorspace quantum.
- When taking in account the overall embodied carbon associated with a building across a standard 60-year lifespan, the gap between the level of emissions of retained and new build options per m² of space narrows substantively.
- Retaining the existing structure significantly impacts the capacity, quality and flexibility of the finished building.
- When comparing operational energy, the new build options 4 (basement retention and new build) and 5 (new build and new basement) perform best.
- Options 2 (maximum retention and extension) and 3 (partial retention and extension) perform reasonably well against some of the sustainability factors and provide an uplift in area. However, these options to not address the fundamental limitations of the building. They result in a compromised outcome that would generate additional embodied carbon through its life-span and are not able to secure the majority of the wider benefits of options 4 and 5.
- WLC emissions of option 4 per m² are also 6% lower than option 5 through the through the retention of the existing basement.

For more information on the various options examined as part of the review, please refer to the full Retention & Redevelopment Options Review & WLC Comparison report.

The embodied carbon results available in the WLCA submitted with this application are part of the larger study looking holistically into the retention options.

1.3.2 Circular Economy Principles

The site will target the full life cycle of the building in its approach by following the 6 circular economy principles throughout the design process. The 6 fundamental principles outlined in the guidance document support and underpin the structure and content of this Circular Economy Statement these are displayed in Table 1.

Table 1 – Key Project Targets in line with GLA Circular Economy Principles (London Plan Guidance, Circular Economy Statements, GLA, March 2022)

Principle	Develop Commitments to…	Key Targets	Route to achieve Key Targets
Building in layers	• Ensuring different parts of the development are accessible and can be maintained and replaced where necessary	• Maximise material recovery from the existing site in line with the DEFRA 2011 Waste Hierarchy. Goal to recycle 95% of the material.	• Further exploration of opportunities for re-use and recycling of demolition materials as per section 5.2 of APPENDIX A – Arup Draft Pre-demolition Audit and APPENDIX D – HTS Pre-reclamation Audits. • During Stage 3, surveys and a demolition plan will be developed to calculated the amount of demolition materials and best re-use/ recycling opportunities. • As the Site Waste Management Plan is developed, this will ensure the scheme meets the target.

Principle	Develop Commitments to…	Key Targets	Route to achieve Key Targets
Designing out waste	• Ensuring waste reduction is planned in from project inception to completion • Retain 1MS basement and WCS retained as per section Case for Refurbishment • Consideration of standardised components, modular build, and reuse of secondary products and materials	• Achieving at least 95% reuse/recycling/recovery of construction and demolition waste • All non-residential buildings to not exceed target ≤7.5 m^3 or ≤6.5 tonnes per 100 m^2 Gross internal floor area. Residential buildings have targets for non-hazardous construction waste not to exceed to 26.52m^3 or 16.90 tonnes per £100K of project value.	• Further exploration of opportunities for re-use and recycling of demolition materials as per section 5.2 of APPENDIX A – Arup Draft Pre-demolition Audit. • During Stage 3, surveys and a demolition plan will be developed to calculated the amount of demolition materials and best re-use/ recycling opportunities. • As the Site Waste Management Plan is developed, this will ensure the scheme meets the target. • See section 3.3.3 for further information on minimisation of construction waste.
Designing for longevity	• Designing to avoid a premature end of life for all components through considering maintenance and durability	• Durability of materials used to be considered at outline specification stage and built into the design.	• Long-term needs of the development will be considered at all stages of design. This includes ensuring durability and resilience of the development, making sure it can be adaptable to future changes and technologies.

Principle	Develop Commitments to…	Key Targets	Route to achieve Key Targets
Designing for adaptability or flexibility	• Consider how the development might be easily altered structurally to prolong its life • Consider how the development might allow easy rearrangements of its internal fit-out and to suit the changing needs of occupants.	• Soft spots to be permissible to allow tenants to knock through floor plates for internal circulation, if desired • Outline a number of tenancy split scenarios showing how each floor plate can be split in order to suit tenant demands.	• Achieve maximum BREEAM Wst05 Adaptation to Climate Change and Wst06 Design for Disassembly and Adaptability credits. Please see current evidence for these BREEAM credits in APPENDIX B – BREEAM Evidence for Wst05 and Wst06 • Present and future needs will be considered, and the development will be able to be altered for future periodic remodelling. • The development design will consider future changes and reconfigurations. • Refer to section 3.3.4 for further information on designing for adaptability

Principle	Develop Commitments to…	Key Targets	Route to achieve Key Targets
Designing for disassembly	• Consider how the development can be deconstructed and reconstructed to allow components and materials to be salvaged for reuse or recycling, whilst maintaining their economic and environmental value.	• Utilise pre-fabrication or standardised components where possible for ease of reconstruction/ reusability • Avoid use of adhesives to allow for ease of disassembly	• Achieve maximum Wst06 Design for Disassembly and Adaptability credits. Please see current evidence for Wst06 in APPENDIX B – BREEAM Evidence for Wst05 and Wst06 • The development design will consider future changes and reconfigurations. Such reconfigurations are likely to be pre-agreed and will minimise waste. • Refer to section 3.3.4 for further information on designing for disassembly
Using systems, elements or materials that can be reused and recycled	• Identifying opportunities for the use of reused or recycled materials	• Aim for a minimum of 20% recycled content by value, for the whole building • Aim for a minimum 50% of the new construction materials which can be reused or recycled at the end of the buildings life through designing for disassembly.	• Achieve 52.3% recycled content in the development of the materials schedules and WLCA. • Design team commit to specifying 58% of the new construction materials to be recyclable and 6% as reusable at end of life. • Careful consideration from the design team for materials specifications that align with these goals. • The contractor will be responsible for implementing these goals in practice.

The aim is for the following to be achieved by the Site:

- The development will apply the 6 circular economy principles, including designing for disassembly and adaptability.
- The design will aim to minimise materials used on site, through designing out waste and reuse where possible. Material reuse on site and recycling will be maximised where possible.
- The development will aim to reduce and minimise the use of energy and natural resources where possible.
- Procurement of materials and other resources will be done responsibly and sustainably, with local products prioritised where possible to reduce transport to and from site.
- The development will be designed to maximise its life cycle where possible. The development will also be designed to be as adaptable or flexible as possible and optimise the chances of reusability and recoverability.
- The Site will aim to minimise all construction, demolition and excavation waste via retaining the 1MS basement and large parts of the WCS buildings and through continued work to increase reuse.
- Continued discussion of use of smart waste minimisation schemes will aim to minimise municipal waste throughout the development.

2 Introduction

2.1 Overall Sustainability Objectives and Aspirations

The London Borough of Camden ('the Council') and the Mayor of London have declared a 'Climate Emergency' with the Council's declaration including an 'Ecological Emergency'. Both have an aspiration to achieve a Net Zero Carbon borough and city by 2030, 20 years ahead of the national target. In June 2020, Camden approved a 5-year 'Climate Action Plan' which creates a framework for action across all aspects of the borough with the aim of achieving zero carbon by 2030.

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2.2 This Statement

This Circular Economy Statement has been prepared in support of the detailed planning application submitted by Lab Selkirk House Ltd ('the Applicant') to the London Borough of Camden ('the Council') for the redevelopment of the land at Selkirk House, 166 High Holborn and 1 Museum Street, 10-12 Museum Street, 35-41 New Oxford Street and 16A-18 West Central Street, London, WC1A 1JR ('the site').

This report outlines the Circular Economy strategy for the Site at RIBA Stage 2, as agreed with the design team and the Applicant. The purpose of this Circular Economy statement is to address relevant planning policy regarding the transition away from the traditional single use, or "take-make-dispose" economic model to a circular model aimed at reducing waste and keeping elements in the cycle. The end goal is to retain the value of materials and resources indefinitely, with no residual waste at all. For this to happen, there needs to be transformational change in the way the industry operates. This includes changing the way we think about designing, building, operating, and deconstructing buildings.

This statement has followed the structure outlined in London Plan Guidance, Circular Economy Statements, GLA, March 2022. The statement will be reviewed and updated in future design stages. The aim of this statement is to demonstrate how the development is planning on incorporating Circular Economy measures into all aspects of the design, construction, and operation of the buildings. The main three aims of this statement are;

1) To consider strategies to facilitate the transition towards a circular built environment,
2) Report against numerical targets that will facilitate monitoring of waste and recycling.
3) Recognise opportunities to benefit from greater efficiencies that can help to save resources, materials and money.

2.3 Development Description

This application relates to a site covered by another application (ref. 2021/2954/P) it is the intention that this application supersedes the previous application which will in turn fall away. This new planning application has been prepared in the context of the recent listing of 10-12 Museum Street and 35-37 New Oxford Street, both of which sit within the application boundary. As a result a listed building application is being submitted alongside the planning application. Whilst the original application gave significant weight to the heritage interest of these now Grade II listed buildings, the applicant wanted the opportunity to properly consider the implications of the listings on the proposals in order to deliver a revised scheme which maximises the heritage benefits of the site.

Following the recent decisions by Historic England, the status of the buildings within the One Museum Street element of West Central Street area of the site is as follows:

Grade II Listed:

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- 35-37 New Oxford Street

Certificate of Immunity from Listing granted:

- 39 – 41 New Oxford Street
- 16a West Central Street
- 18 West Central Street
- 16b West Central Street

The proposed development comprises of the following components:

- Museum Street - a single new building rising to 19 storeys, providing office (Class E(g)(i)) accommodation on upper levels and a range of flexible town centre uses (Class E) at ground level.
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- Vine Lane - a single new building rising to 5 storeys, providing market residential units with a flexible town centre use (Class E) at ground level.
- West Central Street ¬- a series of new and refurbished buildings rising to 6 storeys, providing residential accommodation (market, LCR and Intermediate) on upper levels (Class C3) and flexible town centre uses (Class E) at ground level.

In summary, the proposed development is seeking detailed planning permission for:

- 22,650 sqm (GIA) of office floorspace falling within Class E(g)(i). This will be provided within the Museum Street building.
- 1,481 sqm (GIA) of flexible town centre floorspace at ground floor level falling within Class E. This will be provided within the Museum Street, Vine Lane, High Holborn, and West Central Street buildings. The planning application specifies the range of uses within Class E that each of these units is seeking permission for.
- 3,992 sqm (GIA) of residential floorspace will be provided. This represents an uplift of 2,078 sqm (GIA) of residential floorspace falling within Class C3. This will be provided within the West Central Street, Vine Lane and High Holborn buildings.
- All of the affordable housing component (1,693 sqm GIA) is provided with the West Central Street buildings along with 294 sqm (GIA) of market housing.
- 1,579 sqm (GIA) of market housing is provided within the Vine Lane block with a further 426 sqm (GIA) of market housing being provided within the High Holborn block.
- Two basements which will be used for cycle parking, servicing areas, plant, storage, and other ancillary uses.

- The creation of new public pedestrian route through the site known as 'Vine Lane', which will link High Holborn with West Central Street.
- 500 cycle parking spaces allocated as follows:
    - 345 long stay cycle parking spaces allocated to the office component.
    - 9 long stay cycle parking spaces allocated to the flexible town centre uses floorspace component.
    - 84 long stay cycle parking spaces allocated to the residential component.
    - 62 cycle parking spaces allocated to visitors to the site and located within the public realm areas.
    - 0 vehicle parking spaces.
- Extensive provision of open space across the site (2,190 sqm) including:
    - 1,083 sqm provided as public realm within the Applicant's ownership across the site.
    - 509 sqm provided as communal offices terraces within the One Museum Street building.
    - 186 sqm provided as play space within the West Central Street courtyard, which also provides communal open space for residents of those buildings.
    - 195 sqm of communal open space within the Vine Lane block - 74 sqm within the courtyard and 121 sqm at level 4. roof top level.
    - 87 sqm for West Central Street and 130 sqm for Vine Lane of private amenity space.
- In addition to the open space provision within the Applicant's ownership, 729 sqm of public realm and streetscape improvements outside of the Applicant's ownership is proposed.

Figure 2 Red line boundary

Figure 3 Proposed scheme overview

2.4 Method Statement

Throughout the design process, cross-disciplinary meetings have been held, with Circular Economy measures integrated into the design of the scheme. Attendees at these meetings included representation from the following teams: developer (Lab Selkirk House Ltd), architects (DSDHA), structural engineers (HTS), M&E consultants (Scotch Partners) and sustainability (Scotch Partners).

The project is currently at RIBA Stage 2, and a dedicated Circular Economy workshop has taken place, providing a strategic briefing on the topic of Circular Economy, and discussion on best approaches for the Development. Please see workshop notes in APPENDIX C – Circular Economy Workshop Notes and Presentation

It has been agreed that further workshops will be held throughout the design process to continue to consider Circular Economy principles and further embed these into the design.

The core principles outlined in the guidance document, support and underpin the structure and content of this Circular Economy Statement. These core principles are displayed in Table 2.

Table 2 - Key Project Targets in line with GLA Circular Economy Principles (London Plan Guidance, Circular Economy Statements, GLA, March 2022)

Principle	Develop Commitments to…	Key Targets	Route to achieve Key Targets
Building in layers	• Ensuring different parts of the development are accessible and can be maintained and replaced where necessary	• Maximise material recovery from the existing site in line with the DEFRA 2011 Waste Hierarchy. Goal to recycle 95% of the material.	• Further exploration of opportunities for re-use and recycling of demolition materials as per section 5.2 of APPENDIX A – Arup Draft Pre-demolition Audit and APPENDIX D – HTS Pre-reclamation Audits. • During Stage 3, surveys and a demolition plan will be developed to calculated the amount of demolition materials and best re-use/ recycling opportunities. • As the Site Waste Management Plan is developed, this will ensure the scheme meets the target.

Principle	Develop Commitments to…	Key Targets	Route to achieve Key Targets
Designing out waste	• Ensuring waste reduction is planned in from project inception to completion • Retain 1MS basement and WCS retained as per section Case for Refurbishment • Consideration of standardised components, modular build, and reuse of secondary products and materials	• Achieving at least 95% reuse/recycling/recovery of construction and demolition waste • All non-residential buildings to not exceed target ≤7.5 m^3 or ≤6.5 tonnes per 100 m^2 Gross internal floor area. Residential buildings have targets for non-hazardous construction waste not to exceed to 26.52m^3 or 16.90 tonnes per £100K of project value.	• Further exploration of opportunities for re-use and recycling of demolition materials as per section 5.2 of APPENDIX A – Arup Draft Pre-demolition Audit. • During Stage 3, surveys and a demolition plan will be developed to calculated the amount of demolition materials and best re-use/ recycling opportunities. • As the Site Waste Management Plan is developed, this will ensure the scheme meets the target. • See section 3.3.3 for further information on minimisation of construction waste.
Designing for longevity	• Designing to avoid a premature end of life for all components through considering maintenance and durability	• Durability of materials used to be considered at outline specification stage and built into the design.	• Long-term needs of the development will be considered at all stages of design. This includes ensuring durability and resilience of the development, making sure it can be adaptable to future changes and technologies.

Principle	Develop Commitments to…	Key Targets	Route to achieve Key Targets
Designing for adaptability or flexibility	• Consider how the development might be easily altered structurally to prolong its life • Consider how the development might allow easy rearrangements of its internal fit-out and to suit the changing needs of occupants.	• Soft spots to be permissible to allow tenants to knock through floor plates for internal circulation, if desired • Outline a number of tenancy split scenarios showing how each floor plate can be split in order to suit tenant demands.	• Achieve maximum BREEAM Wst05 Adaptation to Climate Change and Wst06 Design for Disassembly and Adaptability credits. Please see current evidence for these BREEAM credits in APPENDIX B – BREEAM Evidence for Wst05 and Wst06 • Present and future needs will be considered, and the development will be able to be altered for future periodic remodelling. • The development design will consider future changes and reconfigurations. • Refer to section 3.3.4 for further information on designing for adaptability

Principle	Develop Commitments to…	Key Targets	Route to achieve Key Targets
Designing for disassembly	• Consider how the development can be deconstructed and reconstructed to allow components and materials to be salvaged for reuse or recycling, whilst maintaining their economic and environmental value.	• Utilise pre-fabrication or standardised components where possible for ease of reconstruction/ reusability • Avoid use of adhesives to allow for ease of disassembly	• Achieve maximum Wst06 Design for Disassembly and Adaptability credits. Please see current evidence for Wst06 in APPENDIX B – BREEAM Evidence for Wst05 and Wst06 • The development design will consider future changes and reconfigurations. Such reconfigurations are likely to be pre-agreed and will minimise waste. • Refer to section 3.3.4 for further information on designing for disassembly
Using systems, elements or materials that can be reused and recycled	• Identifying opportunities for the use of reused or recycled materials	• Aim for a minimum of 20% recycled content by value, for the whole building • Aim for a minimum 50% of the new construction materials which can be reused or recycled at the end of the buildings life through designing for disassembly.	• Achieve 52.3% recycled content in the development of the materials schedules and WLCA. • Design team commit to specifying 58% of the new construction materials to be recyclable and 6% as reusable at end of life. • Careful consideration from the design team for materials specifications that align with these goals. • The contractor will be responsible for implementing these goals in practice.

2.5 Circular Economy aspirations

Currently, the construction industry largely follows a single use "take-make-dispose" model. In order to reduce the negative impact the industry is having on the environment, and participate in the wider move to long-term sustainable buildings, it is vital the construction industry moves across to a more circular model, in which the value in materials and buildings are both realised and kept in the model for as long as possible.

Figure 4 Circular Economy

Taking this into account, this Circular Economy Statement outlines the details in which the development can design and plan Circular Economy principles for the Site. In order to do this the Site will aim to consider the full life cycle of the building and its components. The Site will do this by following the core principles throughout the design process. The aim is for the following to be achieved by the Site.

- The design will minimise materials used on site, through designing out waste and reuse where possible.
- The development will reduce and minimise the use of energy and natural resources where possible.
- Procurement of materials and other resources will be done responsibly and sustainably, with local products prioritised where possible to reduce transport to and from site.
- The development will be designed to maximise its life cycle where possible. The development will also design to be as adaptable or flexible as possible and optimise the chances of reusability and recoverability.

- The Site will aim to minimise all construction, demolition and excavation waste via retaining the 1MS basement and large parts of the WCS buildings and through continued work to increase reuse.
- Continued discussion of use of smart waste minimisation schemes will aim to minimise municipal waste throughout the development.

The DEFRA 2011 Waste Hierarchy (Figure 2) will be considered at each RIBA Stage to ensure that reuse, recycling and recovery opportunities are optimised. This will mean that waste is minimised as far as possible when working on the existing site, the new development, the new development in operation and the end of life of the development.

The DEFRA 2011 Waste Hierarchy is as follows from most optimal to least optimal:

- Prevention: Reducing use of materials in design and manufacturing, keeping products for longer and reducing use of hazardous materials.
- Preparing for re-use: This includes checking, cleaning, refurbishing and repairing items or parts of items.
- Recycling: Creating new substances or products out of waste, this includes composting if it meets quality protocol.
- Other recovery: Including anaerobic digestion, incineration with energy recovery, gasification and pyrolysis which produce energy (fuels, heat and power) and materials from waste.
- Disposal: Landfill and incineration without energy recovery.

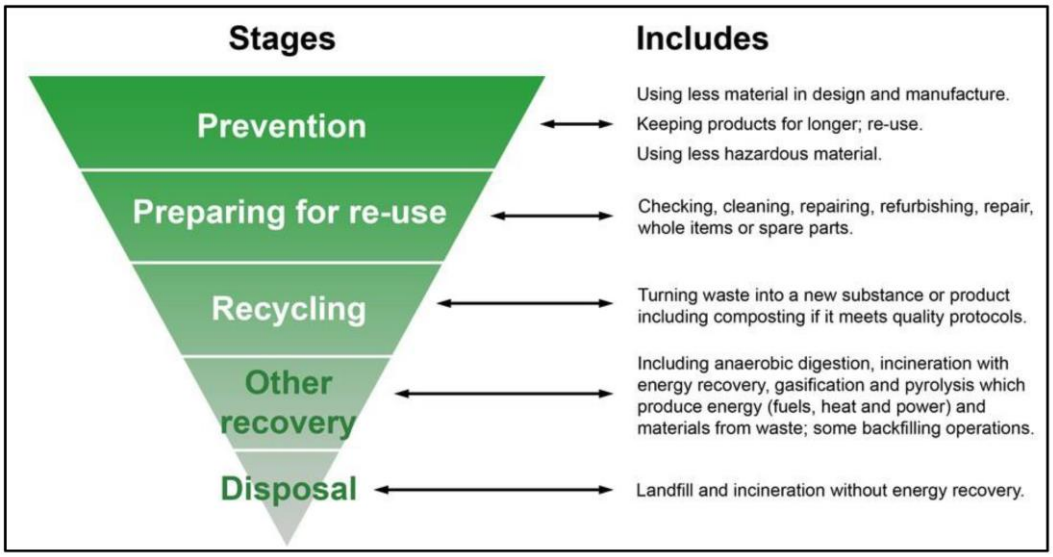


Figure 5 The DEFRA 2011 Waste Hierarchy

3 Circular Economy Goals and Strategic Approach

3.1 Strategic Approaches

At RIBA Stage 2, high level strategic opportunities have been identified by the design team and the Client to maximise the Circular Economy approach for the development.

The proposed development's strategic approaches have been provided in the attached GLA Circular Economy Statement Template. These have been compiled following high-level discussions at project meetings. The template will be updated based on design development and discussions at the next stage of design.

The GLA decision tree was used to guide the circular economy strategy for the new elements of this development as follows: there is existing building on the development site and it is technically feasible to retain the buildings in part, as parts of the buildings are suited to the requirements of the site. In line with the decision tree, the preferred strategy is 'partial retention and refurbishment'. The development philosophy is to work with as much of the existing structure as possible to minimise the amount of demolition and new structure required. This is outlined in further detail in the CES Template submitted with this report.

The following steering options were at the forefront of considerations regarding strategic approaches for the proposed development:

- Retention and prevention: Retention and repair of much of WCS existing buildings and 1MS basement.
- Demolish and recycle: Where retention is not occurring, demolished elements should be converted into new materials or objects to be used on the site or at another site. Storage space and collection systems should be provided to support recycling and reuse.
- Longevity: Long-term needs of the development must be considered at all stages of design. This includes ensuring durability and resilience of the development, making sure it can be adaptable to future changes and technologies.
- Adaptability: Present and future needs must be considered, and the development must be able to be altered for future periodic remodelling. Such remodelling is likely to involve planning, building control and wet trades.
- Flexibility: The development design must consider future changes and reconfigurations. Such reconfigurations are likely to be pre-agreed and will not involve wet trades or any waste.
- End-of-life reuse: Building materials, components and products should be chosen to enable disassembly and re-used at the end of their useful life.

The strategic approaches and related targets have been created for this Circular Economy Statement, and due to the stage of the project will be revisited and updated at the appropriate stage, including the setting of specific targets.

3.2 Circular Economy Approach for the Existing Site

3.2.1 Retention and Reuse

Retention and reuse has been prioritised for the following elements of 16A, 18 and 16B WCS, namely:

- Existing stone floor sets - to be carefully removed and set aside to be reused on the proposed new communal courtyard to the West Central Street buildings.
- Existing timber horse stalls - to be carefully removed and set aside to be reused on the proposed new residential communal lobby space of 16B-18 WCS.
- Existing wall crane - to be carefully removed and set aside to be reused / reinstated in the corner on the top floor of 16A WCS. The internal winch mechanism will not be reinstated due to the residential accommodation constraints.

On 1MS, much of the existing basement is being retained.

3.2.2 Pre-reclamation Audit

Draft Pre-reclamation audits have been undertaken by structural specialists, HTS, for the West Central Street and Museum Street buildings. These audits, provided in APPENDIX D – HTS Pre-reclamation Audits, outline current suggestions for potential reuse of structural elements on the West Central Street buildings and concrete on the Museum Street building.

The audits highlight how the development aims to go above and beyond standard practice considering reuse options for structural elements of the existing 16a-18 West Central Street buildings including steel columns and beams, timber joist beams and studs, beam and block floor and masonry wall. Reuse of concrete on the existing Museum Street building is also considered, including columns, wall panels, recast slabs, and reinforced concrete slab panels and how these can be applied to the proposed development.

These are indicative studies at present and have been prepared to promote informed discussions in the team. These initial studies will be used to stimulate discussions with demolition contractors, ideally with experience in reclamation, to agree reclamation procedure, minimise expected damage and understand effect on cost and demolition programme. They will additionally help establish and agree protocol to assess the quality, condition and structural capacity of the reclaimed elements.

3.2.3 Pre-demolition Audit

A draft Pre-demolition audit has been undertaken by Arup in line with BREEAM criteria requirements see APPENDIX A – Arup Draft Pre-demolition Audit . Arup are a third-party independent specialist with expertise in reclamation of components and materials and experience in preparing pre-demolition reports.

Other than where there are now listed buildings (where more fabric is retained and therefore less demolition waste is generated), the general extent of demolition remains the same.

In light of the now listed buildings, the draft iteration of the BREEAM pre-demolition audit will require sensitive updating. This will include evidence of exploration of further opportunities for re-use (continuing from the current studies carried out by HTS – see APPENDIX D – HTS Pre-reclamation Audits) and will be re-submitted as a discharge of condition application.

3.2.4 Diversion of Demolition Waste from Landfill

Non-hazardous demolition waste to be diverted from landfill through reuse, recycling, and recovery will be targeted. Actions to avoid waste being disposed of in landfill include:

- Reusing the material on site
- Reusing the material on other sites
- Community reuse and recycling
- Salvaging or reclaiming the material for reuse
- Returning material to the supplier via a 'take-back' schemes
- Direct recycling of materials via a specialist material reprocessor or recycler
- Recovery of the material from site by an approved waste management contractor and recycled or sent for energy recovery
- Utilising waste in exempt or permitted applications (not landfill).

3.2.5 Uses and Volumes of Retained Demolition Materials

A proportion of the crushed material may be retained on site and reused to make up the difference in levels between the current B3 basement level and proposed B3 basement level. The volumes of materials retained on site will be provided detailed design.

3.3 Circular Economy Approach for the New Development

3.3.1 Minimise Material Waste

Material waste is to be minimised on the site through efficient design and minimising construction waste in line with the BREEAM credit Wst01 – Construction Resource Efficiency and Mat06 – Material Efficiency.

3.3.2 Material Efficiency

In line with the BREEAM credit Mat 06 - Material Efficiency, at the end of each RIBA stage the project team must convene to examine opportunities to implement appropriate measures to ensure that the amount of materials used in the construction of the development are optimised and therefore reduce the amount of construction waste arising from site.

The development philosophy is to work with as much of the existing structure as possible, with consideration of the listed buildings' significance and to minimise the amount of demolition and new structure required. Demolition is proposed where it will improve the design quality of the overall scheme. As such, the existing structure and façades of 35, 37, 39 and 41 New Oxford Street shall be retained with minor internal changes; the rear outrigger and closet wing to 10-12 Museum Street will be demolished and rebuilt, to facilitate access to the courtyard, with other parts of these buildings retained or slightly modified with new openings and new means of access. On Selkirk House, there will be

substantive retention of the existing basement and substructure and replacement new-build above ground.

In line with the BS 8895 Designing for material efficiency in building projects, the project team will identify opportunities to improve materials efficiency by:

- Reducing the quantity of materials used, where this does not adversely impact on other aspects of resource efficiency, such as improving energy efficiency.
- Reducing the quantity of materials wasted during the construction process by designing out waste and planning for effective project waste management wherever possible.
- Designing for effective project waste management, which includes reducing, reusing, recycling and recovering waste material as appropriate; and
- Using more recycled materials and mainstream products containing higher levels of recycled material including material not necessarily sourced from construction and demolition waste, for example, mineral extraction or post-consumer waste.

The whole development is aspiring to achieve above and beyond the GLA target of 20% recycled content, with an overall recycled content target of 52.3%. Please refer to the GLA Circular Economy Template Bill of Materials which outlines current materials elements and associated recycled content %. The contractor will be responsible for implementing this goal in practice.

3.3.3 Minimise Construction Waste

All non-residential buildings to not exceed target ≤7.5 m^3 or ≤6.5 tonnes per 100 m^2 Gross internal floor area. Residential buildings have targets for non-hazardous construction waste not to exceed to 26.52m^3 or 16.90 tonnes per £100K of project value.

The Principal Contractor will be required to ensure construction waste is minimised as far as possible. Some measures which could be adopted to reduce construction waste generated on site include:

- Setting and reporting against waste reduction targets in Site Waste Management Plan.
- Include waste minimisation initiatives and targets in tenders or contracts, and engagement with the supply chain.
- Just in time delivery of materials to prevent spoilage.
- Recording material delivered onsite and dispatched.

The applicant is committed to exploring community recycling initiatives that enable reclaimed materials from un-used construction materials to be donated to other users via a brokerage system. Examples to be explored include Globechain.

Further consideration at later design stages is required regarding the available space and appropriate management for use of schemes such as Globe Chain. Future exploration will consider partnerships for management of the scheme offsite, to overcome the potential issue of space.

3.3.4 Design for Adaptability and Disassembly

A Design for Disassembly and Functional Adaptability study has been undertaken for the site to identify opportunities for accommodating future changes of use to the building over its lifespan, and how they could be incorporated into the Stage 2 design proposals.

The aim of the Design for Disassembly and Functional Adaptability study is to identify ways to reduce waste and cost associated with future refurbishment or fit-out works and ultimately in demolition, to improve the lifetime value of the materials and reduce costs and disruption associated with the need for future adaptation, demolition and strip-out, thereby reducing the associated waste and costs. The study has been designed to comply with BREEAM credit issue Wst 06. Please see the full study in APPENDIX B – BREEAM Evidence for Wst05 and Wst06.

The 1MS structure is adaptable as it has been designed for retail use on the lower floors and office use on the upper floors. With modern floor to ceiling heights, good levels of daylight and sufficient structural loads, the design enables flexibility for a number of different uses in the future including residential hotel, student and alternative office layouts.

3.3.5 Sustainable Procurement of Materials

A sustainable procurement plan has been developed which sets out a clear framework for the responsible sourcing of construction products to guide procurement throughout the project and by all involved in the specification and procurement of construction products. Please see APPENDIX E – Sustainable Procurement Plan.

The main contractor will be encouraged to prioritise the use of suppliers with a current accredited environmental management system (EMS) in place over those suppliers that do not.

100% of timber is to be responsibility sourced in accordance with the UK Government's Timber Procurement Policy. i.e. FSC or PEFC only. Timber, which is locally reclaimed, including during construction should be used.

Products with an Environmental Product Declaration (EPD) should be specified where possible. EPDs provide information about products from cradle to grave (or cradle) such that designers, specifiers, buyers, code officials and the general public can better understand a product's specific, as well as overall, environmental impact. EPDs make the environmental benefits of energy efficiency and other important aspects of a given product clearer. This should be reviewed during the detailed design.

3.4 Circular Economy Approach for Municipal Waste During Operation

Facilities management operatives will transfer waste to dedicated collection points agreed with the Council on a daily basis. Please refer to the Design and Access statement for more information.

In support of the target of 65% of municipal waste to be reused, recycled or composted by 2030, an estimation of municipal waste generation and treatment has been completed and

included within the Operational Waste Management Plan produced by Arup. The site is estimated to reuse, recycle or compost 65% of municipal waste, and achieve the GLA targeted 65%.

Achieving the London Plan target of 65% of municipal waste to be reused, recycled or composted by 2030 will be promoted by the provision of a suitably sized, dedicated, and labelled space for storing/segregating recyclable waste within the scheme. These will be provided centrally and locally and will be in accordance with the London Plan and Local Authority requirements.

The use of smart waste minimisation schemes has been discussed with the design team. Exploration of the schemes, such as Fixing Factory Camden and The Restart Project have been considered for the Development.

Further consideration at later design stages is required regarding the available space and appropriate management for use of schemes such as Fixing Factory Camden and The Restart Project. Future exploration will consider partnerships for management of the scheme offsite, to overcome the potential issue of space.

To consolidate waste collections into as few vehicles as possible, commercial tenants will be required to use waste contractors appointed by the site FM team for the collection of refuse, recycling and food waste streams.

Where recyclable waste is to be collected as a co-mingled stream for the residential development, the following individual streams will be accommodated by this collection:

- Card,
- Paper,
- Mixed plastics,
- Metals,
- Glass.

For further information on the approach for municipal waste during operation, please see the Operational Waste Management Plan submitted with this CES, produced by Arup.

4 Reporting

4.1 Reporting Forms - Bill of Materials

A Bill of Materials has been provided within the GLA Circular Economy Statement Template issued with this report. The Bill of Materials is based on estimated figures to demonstrate how the development's material demands have been minimised and on-site reuse and recycling maximised. This will be updated with each iteration of the Circular Economy Statement and will include the major building layers and elements.

The aim for at least 20 per cent recycled or reused content, by value, has been targeted for the whole development. This must be complied with when building materials are procured, in line with GLA requirements.

4.2 End-of-life Strategy

This statement sets out the measures intended to extend the lifetime of the proposed development wherever possible through design and specification. By following the aspirations, commitments and targets outlined in this statement, the development is embracing a more circular view to the way the building is designed and the value of the materials used.

In order to enable future building owners to prolong the life of the building, and maintain the value of the materials used, thorough records will be kept detailing the design and construction stages of the development. These documents can act at a guide for the future owners for the repurposing or disassembly and recovery of the different layers of the development.

Specific end-of-life strategies for key materials used on the development will be followed in line with the LETI Design Guide Materials Guide (LETI Climate Emergency Design Guide, Appendix 2, pg.132). The general approach is to:

- Utilise standard spans and floor heights that lend themselves to compatible uses
- Design in future provision for services openings
- Design elements to be one way spanning
- Use precast elements where possible, with clear joints that can be opened

The following will be considered for the concrete used on the project:

- Slimming off excess where structurally viable to save in material usage.
- Considering a structural grid and superstructure design to enable different use types and deconstruction for use elsewhere when the building has got to the end of its life.
- Standardising detailing to enable repetition of reinforcement and also to enable formwork to be re-used multiple times.

For all materials used in the project, consideration of using local, reclaimed materials will be made to help reduce delivery distance and packaging. The recyclability of the material

at the end of the building's useful life should also be considered. Materials and products will be procured with appropriate durability and enhanced recycled content, e.g., through the use of Environmental Product Declarations (EPDs).

Products will be considered that might be suitable for standardization e.g., doors and windows, this will enable easier maintenance, replacement and end-of-life re-use. Additionally, aspects such as service life requirements, maintenance strategy and transportation needs of construction products will be considered. Materials have been carefully selected considering reuse and recovery options at end of life. For example, steel can be selected as follows:

- Steel elements not in contact with the concrete will be re-useable.
- Steel that cannot be re-used can always be recycled

Timber can be selected/considered as follows:

- Consider treatment of timber as this can affect end-of-life re-usability.
- Avoid engineered timbers that use glues/adhesive lamination where possible as this may be more difficult to re-use.
- Explore use of local materials to reduce carbon emissions from transportation

Concrete can be reused as follows:

- Precast concrete products can be disassembled for reuse.
- Concrete frames can be reused in-situ.
- Surplus wet concrete can be returned to the batching plant for reuse.
- It may be possible to reuse concrete blocks depending on their condition and the mortar bonds.

Concrete can also be recycled and recovered, as follows:

- Concrete can be crushed and recycled into graded aggregates for use as hardcore, sub-bases, fill, etc.
- Concrete can be crushed and recycled as part of new concrete.
- The Quality protocol for aggregates from inert waste can be used to define when it ceases to be a waste.

Recycling and reuse of other materials include:

- Aluminium recycling
- Steel recycling
- Glass recycling
- Brick/stone used as backfill
- Cement/mortar used as backfill
- Other metal-containing product recycling
- Gypsum recycling

In Developed Design stages, the following actions will take place in line with the BSI Standards Code of Practice.

- Material efficiency actions will be incorporated through the generation of detailed proposals for structural design, building services and outline specifications.
- Research and development activities for material efficiencies will conclude, with additional investigations being conducted as appropriate.
- Investigation outcomes will inform the material efficiency opportunities
- Material efficiency KPIs will consider material efficiency priorities; on-site resource use, waste reduction and recycling targets; reuse and recyclability of materials specified; and requirements for health and safety in relation to material efficiency/waste assessments.
- Roles and responsibilities for material efficiency actions amongst design team members will be updated identifying decisions, priority actions and allocating responsibilities for technical design in subsequent design stages.

In Technical Design stages, the following actions will take place in line with the BSI Standards Code of Practice:

- Material efficiency strategies will be implemented at Stage 4.
- Material efficiency design reviews, coordinated design and information exchanges occur at this stage. This involves investigation and implementation of ways to maximise the efficient use of materials and products.

All actions outlined above will aid in achieving the targets for demolition waste, excavation waste, construction waste, reused and recycled content and operational waste as per Table 1.

This section will be updated at a later stage when more information is available.

4.3 Reporting Forms- Recycling and Waste Reporting Form

The Recycling and Waste Reporting Table within the attached GLA Circular Economy Statement template will set out the estimated waste and targeted reuse and recycling rates for the development. Demolition and excavation waste targets have been provided, waste estimates will be provided at a later stage upon completion of revised iterations of the Pre-Demolition Audit.

The construction waste estimate has been given in alignment with the achievement of 2 credits under BREEAM Wst01 Construction Resource Efficiency. This will be updated upon completion of the Site Waste Management Plan.

Total municipal waste per annum has been provided from the Operational Waste Management Plan, completed by Arup.

4.4 Plans for Implementation

The targets set out in this Circular Economy Statement will be the responsibility of the design team during the design stages. During the procurement and construction stage, the responsibility to carry on the principles set out in this statement will be with the principal contractor.

The principal contractor will appoint a responsible individual to monitor the principles, targets and commitments set out in this statement. This will include completing/updating the Bill of Materials form and recycling and waste reporting form within the GLA Circular Economy Statement Template.

The key commitments will be achieved as follows:

1. Short-Term: Produce a Site Waste Management Plan, which identifies waste minimisation opportunities as well as implementing the following:
2. Medium-Term: Conserve resources by minimising the quantities of materials used, minimising the quantities of other resources used (energy, water, land), and specifying and sourcing materials responsibly and sustainably.
3. Short-Medium-Term: Design to eliminate waste (and for ease of maintenance) by designing for reusability/ recoverability/ longevity/ adaptability/ flexibility, and designing out construction, demolition, excavation, industrial and municipal waste.
4. Medium-Term: Manage waste from demolition of the layers, excavation waste, waste arisings from construction of the layers (and reuse or recycling of this waste), and support operational waste.

4.5 Reporting Outcomes – Post Completion Report

This section will report to the success/failure of the targets and commitments set out in this document, as well as provide evidence and supporting evidence. This will be completed as part of the post-planning/completion updates.

4.6 Lessons Learned

This will be completed as part of the post-planning/completion updates. This will review

- actual performance against quantitative and qualitative targets/commitments
- determine reasons for any differences
- share key learnings that could inform best practice in the future. Lessons learned should include what went well or better than expected, what went wrong, and what could be done differently in the future.

5 Conclusion

This Circular Economy Statement has been produced to demonstrate how the proposed development has considered the circular economy principles and incorporated them into the development design.

The statement takes into consideration the following, with reference to the London Plan Policy SI7 and the development's Circular Economy Aspirations, to maximise re-use of existing buildings where possible and practical to do so, reduce material quantities in the first instance, and reduce waste associated with the development, both in its construction, and at its end of life:

- How demand for materials will be minimised through designing out waste and reuse where possible. Demolition is proposed only where it will improve the design quality of the overall scheme.
- How material reuse is being explored. This includes indicative proposals for applications of reused concrete from Museum Street and reused structural elements from 16a-18 West Central Street.
- How secondary and recycled materials can be used. This includes using materials with an average 21.18% recycled content.
- How new materials are being specified to enable their reuse and recycling. This includes the aim for a minimum 50% of the new construction materials to consist of recyclable materials.
- How construction waste will be minimised and managed in accordance with the DEFRA 2011 Waste Hierarchy.
- How the proposal's design and construction will enable building materials, components, and products to be disassembled and re-used at the end of their useful life. Examples include the use of precast concrete and avoiding use of adhesives wherever possible.
- How the 1MS structure is adaptable as it has been designed for retail use on the lower floors and office use on the upper floors. Both of these uses would allow for the building to be converted to residential use in the future.
- Opportunities for managing as much waste as possible on site.
- Adequate and easily accessible storage space to support recycling and re-use to help achieve the target of 65% recycling rate for municipal waste.

Following a meeting with the design team and completion of the GLA Circular Economy Statement Template, the key commitments will be kept and reviewed throughout the design development, and construction of the project:

- Broad objectives for circular economy aspirations have been set. Moving forward, future workshops will be held to develop and investigate circular economy objectives with specific metrics (design team, contractor, suppliers, and facility managers).
- Circular economy opportunities will be monitored throughout the design and construction process.

- On completion, success against objectives will be reviewed and an analysis will be undertaken on lessons learnt (whole design team, contractor, and relevant supply chains).

6 APPENDICES

6.1 APPENDIX A – Arup Draft Pre-demolition Audit

1 Introduction

This Pre-Demolition Audit report has been has been prepared by Ove Arup and Partners Ltd. ('Arup') on behalf of Lab Tech Investments Ltd. (the 'Applicant') in support of an redevelopment of a development known as Museum Street and West Central Street, located in central London ('the Site'). The Site falls within the administrative area of the London Borough of Camden ('LBC').

The Applicant is looking to promote resource efficiency via the effective management and reduction of refurbishment and fit-out waste and the reuse and direct recycling of materials. The proposed strategy will seek to address the requirements of BREEAM credit WST01.

1.1 Personnel

This report has been undertaken by Jonathan Evans. Jonathan is a Senior Planner in Arup with 20 years' construction industry experience. Jonathan has significant management experience in the construction industry.

He has worked both onsite as client representative and as a principal contractor's site agent. He has extensive experience in the design and development of construction management plans and site waste management plans.

1.2 Objectives

The key objective of this exercise is to advise on the efficient use of material resources and to reduce the amount of waste produced due to the demolition activities of the site. The Applicant is guided by principles of sustainable resource and waste management: the waste hierarchy (see Figure 1) and the circular economy (see Figure 2). The waste hierarchy and the circular economy aim to reduce the quantity of waste generated while trying to maximise the efficient use of material resources.

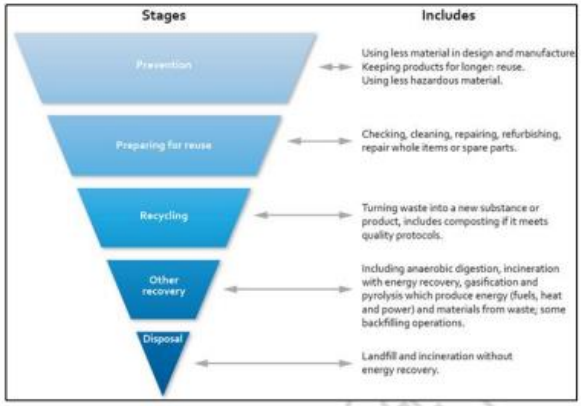


Figure 1: The waste hierarchy (adopted from the EU WFD[1])

The circular economy puts materials and products back into the economy at the end of each service life at their highest value for as long as possible. This reduces the reliance on virgin materials and safeguards supply chains against material price volatility and scarcity. It aims to decouple resource consumption from economic growth, creating resilient economies.

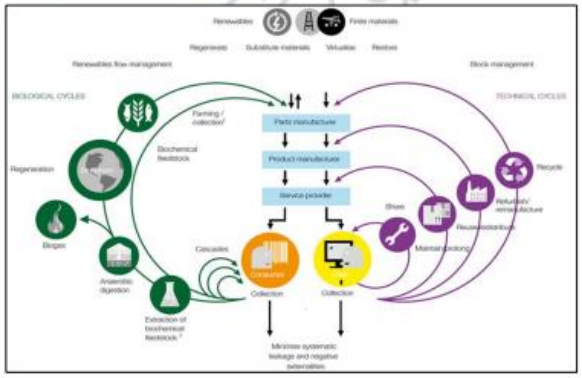


Figure 2: The circular economy (Source: Ellen MacArthur Foundation[2])

[1] European Commission (2008), Directive 2008/98/EC on waste (Waste Framework Directive), Available at: http://ec.europa.eu/environment/waste/framework/ (Accessed 29 October 2018).
[2] Adapted from Ellen MacArthur Foundation and McKinsey Center for Business and Environment; Adapted from Braungart & McDonough, Cradle to Cradle (C2C).

1.3 Scope of the audit

The scope of the audit is defined by the BREEAM Credit WST01. This is set out below.

The client shall ensure that a pre-refurbishment audit of all existing buildings, structures or hard surfaces within the scope of the refurbishment or fit-out zone is completed.
The requirements for carrying out an appropriate pre-refurbishment audit are:

- *The audit should be carried out at the Concept Design Stage (equivalent to RIBA stage 2) prior to strip-out or demolition works in order to use the audit results to guide the design, consideration of materials that can be reused, and to set targets for waste management and ensure all contractors are engaged in the process of maximising high grade reuse and recycling opportunities.*
- *The audit should be carried out by a competent person (see Relevant Definitions) who is independent of the project, has appropriate knowledge of buildings, waste and options for the reuse and recycling of different waste streams.*
- *Actual waste arisings and waste management routes used should be compared with those forecast from the audit and barriers to achieving targets should be investigated.*

The audit must be referenced in the resource management plan and cover:

- *Identification and quantification of the key materials where present on the project (see Table 66).*
- *Potential applications and any related issues for the reuse and recycling of the key materials in accordance with the waste hierarchy.*
- *Identification of local reprocessors or recyclers for recycling of materials.*
- *Identification of overall recycling rate for all key materials.*
- *Identification of reuse targets where appropriate.*
- *Identification of overall landfill diversion rate for all key materials.*

1.4 Report structure and limitations

As buildings on-site have remained operational, on-site intrusive surveys by the audit team have not been possible. This has recently been compounded by restrictions related to site visits during the ongoing Covid 19 pandemic.

The audit is based on the RIBA Stage 2 design; it will be updated in future iterations to reflect increased design detail and include any additional demolition

works that may be identified at later stages of the design and planning of the site. At this stage the report will provide:

- An overview of relevant legislation, policy and guidance;
- An overview of the site and the proposed development (Scheme overview);
- A review of the buildings to be demolished or partially demolished and the proposed demolition strategy;
- Identification of likely materials/waste to be generated from the demolition works;
- Identification of opportunities to maximise the recovery of materials and components from demolition for beneficial reuse and recycling and repurpose without compromising the safety measures and practices as outlined in the European Demolition Protocol and UK Standards; and
- The report concludes by setting out next steps to inform quantified analysis information required to meet BREEAM WST01 credits.

'Materials' in this report refers to surplus materials generated at any point during the demolition of the proposed site. This material will be suitable for reuse without any preparation or treatment.

2 Legislation, policy and guidance

2.1 Overview

A series of legislation, policy and guidance documents set out a range of objectives and targets regarding demolition management that are relevant to the site. Relevant polies are set out below.

2.2 Draft New London Plan

Whilst the current 2016 Plan remains the adopted Development Plan, the 2018 Draft New London Plan (as amended in December 2019)[3] should be a material consideration in planning decisions. The resources and waste-related policies of the Draft New London Plan are outlined below.

2.2.1 Circular Economy Statement

Policy SI7 (Reducing waste and supporting the circular economy) promotes waste reduction, material reuse, recycling and improved landfill diversion. The main targets it sets are:

- Zero biodegradable or recyclable waste to landfill by 2026.
- Construction and demolition – 95% reuse/recycling/recovery.
- Excavation – 95% beneficial use.
- 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.
- Design developments with adequate, flexible, and easily accessible storage space and collection systems that support, as a minimum, the separate collection of dry recyclables and food.

Policy SI7 also sets out the requirement of producing a Circular Economy Statement to demonstrate:

- How all materials arising from demolition and remediation works will be reused and/or recycled.
- How the design and construction will reduce material demands and enable building materials, components and products to be disassembled and reused 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 reuse.

[3] Mayor of London (2019), *Draft London Plan – Intend to Publish version December 2019*, Available at: https://www.london.gov.uk/sites/default/files/draft_london_plan_-_consolidated_changes_version_-_clean_july_2019.pdf (Accessed 10 February 2020).

- 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.

2.2.2 Waste management targets

Policy SI10 (Aggregates) states that an adequate supply of aggregates to support construction in London will be achieved by:

- Encouraging the reuse and recycling of construction, demolition and construction works within London, including onsite.
- Importing aggregates to London by sustainable transport modes.

2.3 Duty of Care

Under the Environmental Protection (Duty of Care) (England) Regulations 1991 (as amended), any person who produces, imports, carries, keeps, treats or disposes of controlled waste (a 'waste holder'), or as a broker who has control of such waste, has a statutory duty of care to ensure that waste is managed properly and recovered or disposed of safely.

A duty of care will be maintained on-site to ensure that waste generated during the construction period is handled in accordance with the relevant legislation and statutory guidance, including the Waste Duty of Care: Code of Practice[4].

A summary of the main Duty of Care requirements that need to be followed by waste holders is provided in Figure 3.

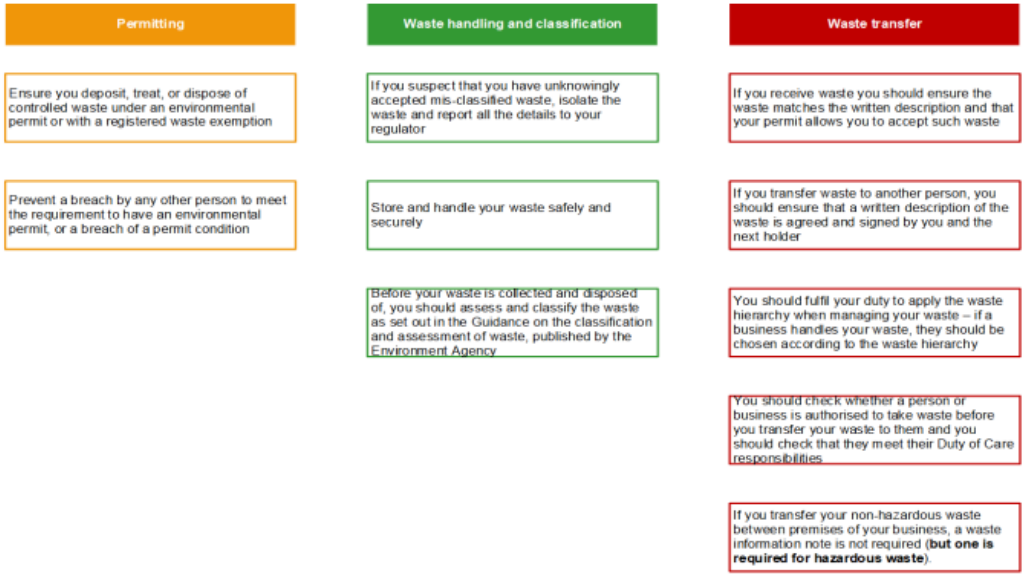


Figure 3: Duty of Care requirements for waste holders

2.4 Environmental permitting

In line with the waste Duty of Care, any waste generated during demolition that cannot be reused, should be sent to an appropriately permitted or exempt facility for reuse, recycling, recovery or disposal, operated by an entity registered with the appropriate environmental regulator (i.e. the Environment Agency in England and Wales).

Similarly, any waste recycling and/or recovery activity taking place onsite should receive an appropriate permit (e.g. storage of waste pending recovery by land treatment) or exemption (e.g. mobile plant for crushing demolition concrete) from the environmental regulator, prior to commencing the activity.

The above is in line with the Environmental Permitting Regulations 2016 (as amended)[5].

2.5 Other legislation

Appendix A contains other legislation and guidance that will inform both the demolition and construction phases of the development.

3 Scheme overview

The Applicant has identified the opportunity to create a high-quality new development through a public realm-led framework to deliver wide-reaching public benefits. The proposed masterplan incorporates new office space and new homes, including much needed affordable housing.

The Site comprises 0.5 hectares bounded by High Holborn to the south, Museum Street to the east and New Oxford Street to the north with the rear of the properties fronting Grape Street forming the western boundary.

West Central Street dissects the site and separates out the existing Selkirk House from the West Central Street block (known as 'The West Central Street buildings').

The site layout is shown in Figure 4.

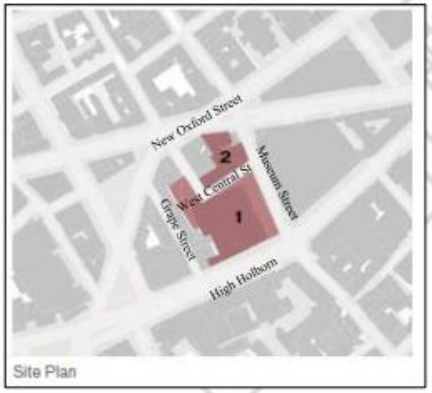


Figure 4: Site layout and surrounding streets

1. Selkirk House - comprises a ground plus 16 storeys building (plus two basement levels, and a further partial basement level). Selkirk House is predominantly occupied by the Travelodge hotel. There is also an NCP car park set across basement to second floor level.

The hotel on the site was as an overspill provision to the Travelodge hotel located at High Holborn. The hotel building on the site therefore does not operate independently and is not designed to do so. As an overspill provision, the current hotel provider has also found the number of hotel rooms to be surplus to their needs, with many of the rooms remaining unoccupied throughout the year.

2. West Central Street buildings - predominantly in retail use at ground floor level fronting New Oxford Street. The basement, first and second floors of No. 39 – 41 are in office use with the upper floors of 35 – 37 being in residential use. No's 16a, 16b and 18 West Central Street were previously in use as a nightclub at

basement level with offices above although this section of the block is currently vacant.

Photographs of the current building on the site are shown in Figure 5.

Figure 5: Images of the existing buildings on site

3.1 Development proposals

The proposals comprise the redevelopment of the existing NCP Multi Storey Car Park (MSCP) and Travelodge Hotel at 1 Museum Street with an office-led mixed-use scheme; and also includes the development and remodelling of 10-12 Museum Street, 35-41 New Oxford Street and 16A-18 West Central Street to provide further active ground floor uses and residential floorspace, including affordable housing provision.

The proposals also incorporate improvements to the wider public realm and the provision of a new pedestrian route through the site to link West Central Street with High Holborn which encourages activity and permeability through the Site.

The proposed development will involve the demolition of the existing NCP MSCP and the existing Travelodge tower (Selkirk House) to provide three buildings comprising office space, and an element of retail and food and beverage floorspace at ground floor level.

The West Central Street block, to the north of the development, will be partially demolished and will provide residential dwellings with retail and F&B outlets at ground floor.

The indicative land use areas for the proposed scheme are detailed in Table 1.

Land Use (Museum Street)	Area/Units
Office space (Museum Street and Grape Street)	28,220 sqm GEA
Residential (on High Holborn)	3 x 2-bed dwellings
F&B / retail floor space (Museum Street)	1,143 sqm GEA

Land Use (West Central Street)	Area/Units
Residential	Total 25 dwellings 8 – 1 bed 12 – 2 bed 3 – 3 bed 2 – 4/5 bed
F&B / retail floor space	644 sqm GEA

Table 1: Indicative Land Use Schedule

An impression of the proposed scheme is shown in Figure 6

Figure 6: Proposed scheme overview

4 Existing buildings and proposed demolition

The following section sets out a description of the proposed buildings and current demolition proposals.

4.1 Selkirk House

The existing building was originally built in 1962. The building consists of a car park located on the north part of the block, occupying three levels of basement and four levels above ground. The car park utilises a spiralling floor plate arrangement to provide car parking. Access to the car park is via Museum Street.

On the southern part of the site the basement is occupied with amenity space and plant rooms. Above ground, up to level 3, the building presents some retail and plant space at grade and office space above.

On the eastern part of the development, above the offices and the car park, there is a tower with 16 floors, designed for office occupation and two residential floors above the office. Originally there was a plant enclosure on the roof at level 16. Level 4 is a podium transferring the building columns from tower above to accommodate the car park arrangement.

The building overview is shown in Figure 7.

Figure 7: Selkirk House layout and heights

The building was converted in 2002 to a Travelodge hotel in the office part of the development. The 2002 refurbishment did not require major structural works, maintaining the footprint of the floor plates as they were, with only localised structural adjustments. These included:

- Installation of a number of new risers through the slabs to service the hotel rooms. These have been strengthened using carbon fibre strips which will need to be taken into account for any further amendments required to the slabs.
- Over-cladding the original façade. The original concrete façade has been over-clad with a rainscreen system.
- Strengthening works to columns and shear walls.

The building is reinforced concrete construction throughout utilising 180-200mm flat slabs with RC columns in the tower area and column & beam arrangements in the low-rise block. An edge beam runs around the perimeter of the tower floor plates which supports to the original concrete cladding and the 2002 over-cladding. A sketch of the existing structure is shown in Figure 8

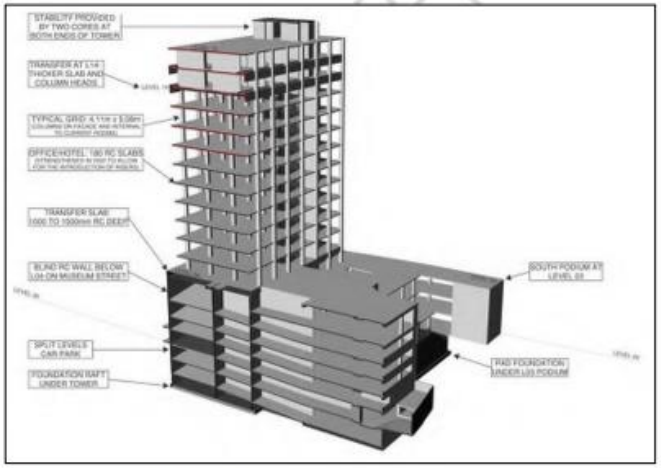


Figure 8: Sketch of existing building

The proposed works involve the demolition of the existing superstructure and re-use of the existing foundation raft.

4.2 West Central Street

The West Central Street site is located to the north of the existing Travelodge building and is bound by West Central Street to the south, Museum Street to the East. The proposal is to refurbish and convert several existing addresses into a residential block with retail space at ground floor.

The site addresses involved are the following:

- 16a, 16b and 18 West Central Street
- 10, 11 and 12 Museum Street
- 35, 37, 39 and 41 New Oxford Street

An overview of the West Central Street site is shown in Figure 9.

Figure 9: West Central Street site overview

4.2.1 16a, 16b and 18 West Central Street

18 West Central Street is a two and three storey building, generally comprising loadbearing brickwork which support timber joist floors.

16b West Central Street is a single storey building with a traditional façade. The building has been used as a nightclub, and the internal structure has been modified to a relatively large span steel structure with cellular beams which support precast planks.

The proposals for this block involve the following:

- Demolition of the existing building to leave just the basement walls and slab (existing retaining walls to be temporary propped prior to demolishing the ground floor); and
- Provide a new build concrete framed residential block with commercial at ground floor and plant space within the existing basement.

An image of the existing buildings is shown in Figure 10.

Figure 10: 16a, 16b and 18 West Central Street

4.2.2 10, 11 and 12 West Central Street

Number 10 Museum Street is a three-storey residential building over retail space at ground floor. The construction appears to be of loadbearing brickwork supporting timber floors. Number 11 and 12 have previously undergone refurbishment appear to be constructed of loadbearing masonry with steel beams spanning between party walls.

A single storey basement extends across all three of the properties. There are also vaults that extend along the full extent of the Museum Street footpath.

The development philosophy will be to work with as much of the existing structure as possible to minimise the amount of demolition and new structure required.

An image of the existing buildings is shown in Figure 11.

Figure 11: 10, 11 and 12 Museum Street

4.2.3 35, 37, 39 and 41 New Oxford Street

Number 35 & 37 New Oxford Street are three-storey residential properties over retail at ground floor. The buildings appear to be of reinforced concrete frame construction, with traditional facades. There appears to be transfer structures at ground and first floors of Number 41. There is a single storey basement along the entire footprint, with vaults under the New Oxford Street footpath.

The development philosophy is to work with as much of the existing structure as possible to minimise the amount of demolition and new structure required. The development strategy for this block involves the following:

- Largely retaining the existing structure and façade;
- Remove non-load bearing partitions to leave just the party walls and existing floor slabs in place;
- Remove the existing roof and upgrade it to facilitate an extra residential floor; and
- Infill the existing vaults.

An image of the existing buildings is shown in Figure 12.

Figure 12: 3.2.3 35, 37, 39 and 41 New Oxford Street

5 Demolition Materials and Waste

5.1 Overview

As set out in Section 1 detailed intrusive surveys have yet to be undertaken of the existing buildings. The Applicant also has yet to appoint a demolition contractor so detailed demolition plans are yet to be developed. As such the pre-demolition audit at this stage reflects a high level overview of potential opportunities to reuse, recycle and repurpose waste.

During RIBA Stage 3, surveys and a demolition plan will be developed. This will enable quantities to be calculated to understand the amount of demolition materials and waste generated.

The waste strategy will be developed in more detail to address the Applicants objectives.

5.2 Demolition Materials

As informed by BREEAM credit WST01, (Table 64) the overarching options for direct re-use and recycling are set out below in Table 2. This table identifies the various streams of waste and opportunities how each stream can be reused or repurposed.

Table 2: BREEAM Materials and options for reuse and recycling

Material	Options for reuse or direct recycling
Inert materials (excluding soil)	On-site reuse in original form e.g. bricks, roof tiles, paving slabs, kerbs, cills
	Off-site reuse in original form e.g. bricks, roof tiles, paving slabs, kerbs, cills
New and used metal materials	On-site reuse of metal material in original form
	Off-site reuse of metal material in original form
Composite materials (materials which include more than one material type often bonded together)	On-site reuse in original form
	Off-site reuse in original form
New and used plasterboard (offcuts/unused/undamaged boards)	On-site reuse in original form
	Off-site reuse of unused/undamaged plasterboard on other construction or refurbishment projects
	Off-site reuse options for unused or undamaged plasterboard – e.g. local community scheme, surplus construction material trading, charities
	Plasterboard manufacturer take-back schemes e.g. collection of bagged offcuts or unused boards
Furniture	On-site reuse in original form
	Off-site reuse options – e.g. local community schemes, local charities, schools, etc
Timber products (All sawn soft/hard wood only – no board products e.g. MDF/chipboard etc.)	On-site reuse of timber on the project
	Off-site reuse via another project, National/local community wood reuse scheme
New and used mineral fibre ceiling panels and tiles	Off-site reuse in other construction/refurbishment projects, local community schemes, charities
	Off-site recycling via manufacturer for closed loop recycling (see Relevant definitions)
Vinyl floor coverings (uplifted vinyl flooring and post-installation offcuts)	Off-site direct recycling via manufacturer for closed loop recycling
Used carpet tiles (good reusable condition)	On-site reuse of carpet tiles in their original form
	Off-site direct reuse on other construction/refurbishment projects, local community schemes, charities
	Direct recycling via a manufacturer for closed loop recycling
Packaging materials (all timber, cardboard & plastic)	Repatriation of wooden pallets from product suppliers for direct reuse
New and unused insulation board (foam board only e.g. EPS, XPS, ISO, COMP. not mineral fibre)	Off-site reuse of new and unused insulation board on other construction/refurbishment projects, local community schemes, charities
	Resale of insulation board via surplus construction material trading companies
	Collection by manufacturer for closed loop recycling
Fixtures and fittings	On-site reuse in original form e.g. sinks, doors, gates
	Off-site reuse in original form, e.g. sinks, doors, gates

5.3 Museum Street and West Central Street

Having considered Table 2, having taken into consideration the demolition strategy and the proposed development the opportunities for reuse, recycle and repurposing of materials for the Museum Street and West Central Street scheme is set out in Table 3.

Table 3: Proposed demolition waste strategy for Museum Street and West Central Street

Material	Opportunity for reuse	Opportunity for recycling	Repurposing
Inert materials (excluding soil)	Face brick work to be cleaned for reuse to assist in refurbishment of existing façade (retained) and or where exposed brick work is noted to provide continuity Face Brick Work may also be cleaned for resale Coping stones; ridge and other roofing materials may be considered for reuse where refurbishment is considered; Roofing materials may be recovered for resale Paving slabs, kerbs, cills will be protected in deconstruction of the buildings and considered for reuse in maintaining the materials within the new design especially in refurbishment of existing facades and roadways etc	Glass / glazing solutions will be recycled	Concrete products and masonry (various) will be crushed (potentially on site) where not reusable and used on site where applicable as fill for basement areas no longer required or; Suitably crushed to enable use as piling mat or 6F2 for sale for subbase roadways etc Roofing materials where unusable will be crushed as with the concrete and masonry above
New and used metal materials	Metal architectural details (e.g. handles, banisters rail, etc will be demounted and sold as are for reuse	Copper cables; metallic components and rebar etc. will be recycled off site for reforming and reuse by others	Copper cables; metallic components and rebar etc. will be recycled off site for reforming and reuse by others
Composite materials (materials which include more than one material type often bonded together)	Bonded materials will be reviewed in nature and where reusable safely without modification will be sold for reuse	Bonded materials that cannot be reused will be taken from site to specialist recycling plants for separation and those materials suitable for reuse will be put back in to manufacturing; materials that cannot be recycled easily will be repurposed	All materials for repurposing will be considered on environmental grounds to best "use", and where no other use can be found, the materials will be considered for waste to heat, or waste to power schemes such as with North

Material	Opportunity for reuse	Opportunity for recycling	Repurposing
			London Heat & Power based in Enfield North London
New and used plasterboard (offcuts/unused/undamaged boards)	Reuse as suitable on site or resale for external usage		
Furniture	Furniture products will carefully be removed from site and either offered to local charities, or community groups or sold on directly to third parties	Where furniture is unable to be sold on it will be broken down into its material parts and recycled through manufacturer closed loop recycling schemes where appropriate or via registered recycling contractors	
Timber products (All sawn soft/hard wood only – no board products e.g. MDF/chipboard etc.)	Where timber can be reclaimed reasonably it will be considered for reuse on site, but it is generally considered that this will be cleaned and sold for offsite reuse Off-site reuse via another project, National/local community wood reuse scheme	Where timber can be reclaimed but not reused the timber will be recycled into timber products such as board at offsite facility	Where timber is beyond recycling efficiently the timber will be repurposed, by sending it to register waste to heat / power plants
New and used mineral fibre ceiling panels and tiles	Where fibre ceilings can be reclaimed reasonably it will be considered for reuse on site, but it is generally considered that this will be cleaned and sold for offsite reuse	Where fibre ceilings can be reclaimed but not reused, they will be recycled through manufacturer closed loop recycling schemes	Where fibre ceiling panels are not able to be recycled, they will be where possible repurposed, by sending it to register waste to heat / power plants
Vinyl floor coverings (uplifted vinyl flooring and post-installation offcuts)	It is not envisaged that vinyl flooring will be reused on site	Off-site direct recycling via manufacturer for closed loop recycling	Where floor coverings are not able to be recycled, they will be where possible repurposed, by sending it to register waste to heat / power plants
Used carpet tiles (good reusable condition)	On-site reuse of carpet tiles in their original form	Direct recycling via a manufacturer for closed loop recycling	Where floor coverings are not able to be recycled, they will be where possible

Material	Opportunity for reuse	Opportunity for recycling	Repurposing
	Off-site direct reuse on other construction/refurbishment projects, local community schemes, charities		repurposed, by sending it to register waste to heat / power plants
Packaging materials (all timber, cardboard & plastic)	Repatriation of wooden pallets from product suppliers for direct reuse	Cardboard will be recycled through registered recycling plants	
New and unused insulation board (foam board only e.g. EPS, XPS, ISO, COMP. not mineral fibre)	Off-site reuse of new and unused insulation board on other construction/refurbishment projects, local community schemes, charities Resale of insulation board via surplus construction material trading companies	Collection by manufacturer for closed loop recycling	
Fixtures and fittings	Fixtures and fittings, especially bracketry will be considered for reuse within the existing site; Where the fixtures and fittings can be reused, those not used on site will be sold for use elsewhere such as in the community (door closers; doors; trunking; kitchen units etc for community projects or refurbishment of community facilities)	Where fixtures and fittings are unsuitable for reuse, they will be considered for repurposing or recycling; Where recycling is considered the best option, the materials will be separated off site into their constituent materials and recycled accordingly	

5.4 Demolition Quantities

In RIBA Stage 3, a summary of the forecast quantities of materials and waste to be generated will be developed for the Site in phases as they are developed and placed in a table such as provided in Table 4.

Table 4: Forecast demolition quantities

Existing building	Structure type	EWC code (six digits)	Material type	Quantity (tonnes)	Destination (% by weight)			
					Reuse	Recycling	Repurpose	Disposal
Selkirk House	Reinforced concrete construction throughout utilising flat slabs with RC columns in the tower area and column & beam arrangements in the low-rise block. The Envelope is a modern façade.	*TBC in future iterations*	*TBC in future iterations*	Pending survey	*TBC in future iterations*	*TBC in future iterations*	*TBC in future iterations*	*TBC in future iterations*
16a and 16b West Central Street	Single storey building with a traditional façade with internal modified structure to relatively large span steel structure with cellular beams which support precast planks	TBC in future iterations	TBC in future iterations	Pending survey	TBC in future iterations	TBC in future iterations	TBC in future iterations	TBC in future iterations

Existing building	Structure type	EWC code (six digits)	Material type	Quantity (tonnes)	Destination (% by weight)			
					Reuse	Recycling	Repurpose	Disposal
18 West Central Street	Two and three storey building, generally comprising loadbearing brickwork which support timber joist.	TBC in future iterations	TBC in future iterations	Pending survey	TBC in future iterations	TBC in future iterations	TBC in future iterations	TBC in future iterations
10 Museum Street	Number 10 Museum Street is a three-storey construction of loadbearing brickwork supporting timber floors.	TBC in future iterations	TBC in future iterations	Pending survey	TBC in future iterations	TBC in future iterations	TBC in future iterations	TBC in future iterations
11 and 12 Museum Street	Number 11 and 12 appears to be constructed of loadbearing masonry with steel beams spanning between party walls.	TBC in future iterations	TBC in future iterations	Pending survey	TBC in future iterations	TBC in future iterations	TBC in future iterations	TBC in future iterations
		TBC in future iterations	TBC in future iterations	Pending survey	TBC in future iterations	TBC in future iterations	TBC in future iterations	TBC in future iterations

Existing building	Structure type	EWC code (six digits)	Material type	Quantity (tonnes)	Destination (% by weight)			
					Reuse	Recycling	Repurpose	Disposal
35, 37, 39 and 41 New Oxford Street	Reinforced concrete frame construction, with traditional facades.	TBC in future iterations	TBC in future iterations	Pending survey	TBC in future iterations	TBC in future iterations	TBC in future iterations	TBC in future iterations
Total				Pending survey				

6 Materials and waste management

This section sets out how materials will be treated onsite to ensure that the Applicant's objectives are met.

6.1 Source segregation

Demolition material and waste arisings will be sorted into separate key waste groups onsite. A minimum seven-stream segregation strategy will be carried out where possible, in line with WRAP guidance[6]:

- Inert materials (excluding soil)
- New and used metal materials
- Composite materials (materials which include more than one material type often bonded together)
- New and used plasterboard (offcuts/unused/undamaged boards)
- Furniture
- Timber products (All sawn soft/hard wood only – no board products e.g. MDF/chipboard etc.)
- New and used mineral fibre ceiling panels and tiles
- Vinyl floor coverings (uplifted vinyl flooring and post-installation offcuts)
- Used carpet tiles (good reusable condition)
- Packaging materials (all timber, cardboard & plastic)
- New and unused insulation board (foam board only e.g. EPS, XPS, ISO, COMP. not mineral fibre)
- Fixtures and fittings

The above segregation strategy will support the demolition maximise the amount of material to be recycled, reused or repurposed.

However, under certain circumstances the types of materials and waste generated will not warrant the segregation of the above streams, and in some specific cases, it may be acceptable to rely on offsite segregation at an appropriate construction materials recovery facility.

6.2 Storage

The movement of demolition and any excavated material will be kept to a minimum to avoid double handling.

[6] http://www.wrap.org.uk/sites/files/wrap/Waste%20man%20technical1.pdf

All types of hazardous materials and waste will be kept separate from each other and will always be kept separate from non-hazardous materials and waste. They will be appropriately stockpiled or stored in appropriate containers (e.g. with the appropriate seals, drainage provisions and signage).

Any surplus excavated material will be stockpiled onsite without intermixing with other materials to avoid contamination. This will be achieved by using dividers and/ or setting the stockpiles sufficiently apart.

All skips and storage receptacles will be sheeted, or otherwise remain lidded or closed, during times when waste is not being deposited into them. They will also be covered to prevent the escape of material and waste whilst in transit and loaded for maximum payload efficiency.

A range of dedicated materials and waste containers and equipment will be provided, including wheeled containers and bulk containers. Materials and waste containers will be colour-coded in line with the colour-coding scheme developed by ICE (see Figure 13). This will facilitate the separation of waste for reuse and recycling and to ensure that inert, non-hazardous and hazardous waste materials are kept separated.

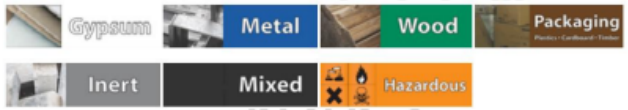


Figure 13: ICE waste stream colour-coding

All skips and storage receptacles will be inspected periodically to ensure they are fit for purpose. Skips and storage receptacles that are not fit for purpose will be taken out of use immediately with appropriate signage used to signify that they should not be used.

7 Next steps

Through the next iteration of pre-demolition audit process, a review will be undertaken to identify potential fixtures, fittings and equipment with enough value for reuse. This may include items or materials with basic reuse value or architectural value.

The outcome of the audits would be a Bill of Quantities that would categorise and quantify the potential materials that are available for reuse. The Bill of Quantities will be shared with the design team to enable them to identify opportunities for onsite recovery, in line with the waste hierarchy.

This audit is proposed to be undertaken by the demolition contractor to maximise the recovery of materials from demolition for subsequent high-grade/value applications. An overview of required information and approach for this exercise is included in Appendix B.

Appropriate timescales for the required demolition activities will be provided to ensure full recoverability of the demolition waste arisings including high value reuse.

Unused, surplus construction and demolition materials will be returned, sold or donated to nearby construction projects or via online construction materials trading platforms (e.g. Build Trade[7]).

Once the full pre-demolition audit is undertaken, and the different demolition material types quantified, the quantities and the management routes of these materials can be tracked. This can be achieved by using BRE's SmartWaste monitoring tool, or similar.

Based on the demolition quantities forecast, it is expected that most of the waste will consist of concrete, steel and asphalt, which are materials with a good potential for onsite reuse and recycling.

For the Appendices included within the Arup Pre-Demolition Audit, please see the full Audit submitted alongside this Circular Economy Statement.

6.2 APPENDIX B – BREEAM Evidence for Wst05 and Wst06

6.2.1 Wst05 Adaptation to Climate Change

WST 05 ADAPTATION TO CLIMATE CHANGE - BREEAM - 295B New Construction 2014

West Central Street

RIBA STAGE UNDERTAKEN: RIBA Stage 2

Risk Matrix		Consequence (severity)				
		Insignificant (1)	Low (2)	Medium (3)	High (4)	Extreme (5)
Consequence (Likelihood)	Almost Certain (5)					
	Likely (4)					
	Possible (3)					
	Unlikely (2)					
	Very Unlikely (1)					

Hazard Identification	Hazard Assessment	Risk Estimation and Effect (describe the risk and the effect it may have. Some examples of hazards are listed below and should be expanded upon)	Risk Evaulation			Risk Management/ Mitigation Implemented (include a description and references to relevant building documentation for the solution(s) chosen.
			Severity	Likelihood	Risk rating	
Structural Stability and Robustness						
Climate						
Overheating - due to warmer summers and more frequent severe weather events i.e. heatwaves	Medium to High	Thermal expansion of steel structure	3	1	3	Exposed steel structure, unlikely to impacted by rising temperatures. Extreme heating of building may have an impact but risk deemed to be low.
	Medium to High	Expansion of façade - Expansion	3	3	9	Allow for expansion under high temperatures and detail between unitised façade junctions. Durability of façade to specified to account for potential overheating and allow for increased UV exposure.
	Medium to High	Expansion of roofing materials	3	3	9	Materials to be specified that mitigate against roofing overheating. Terraces are specified on the majority of roof buildups, which should help mitigate impact to weathered finishes.
Colder climate - due to more frequent severe weather events i.e. snow/freezing conditions	Low to Medium	Freezing of ground potentially causing failure of shallow drainage	3	3	9	Drainage to be provided at depths that will be unlikely to freeze even in extreme cold climates.
	Low to Medium	Thermal movement of steel structure	3	1	3	Exposed steel structure, unlikely to impacted by falling temperatures. Extreme cooing of building may have an impact but risk deemed to be low.
	Low to Medium	Thermal movement and degradation of façade	3	3	9	Movement allowances are to be incoporated into the design, including for greater temperature extremes than currently experienced. Sealants and gaskets are key potential points of failure.
	Low to Medium	Thermal movement and degradation of roofing materials	3	3	9	Movement allowances are to be incoporated into the design, including for greater temperature extremes than currently experienced.
High winds - due increased storm intensity and frequency	Medium to High	Degradation of façade materials due to excessive weathering	3	3	9	1MS Main Building is significantly exposed to westerly winds. All façade component fixings to be specified to suitable wind loading to suit prdeicted downdraughting scenario. Cantelevered balustrades and framing at high level are a key risk. Vine Lane building is proposed as precast, without significant exposure so is lower risk. If GRC is used then this is more likely to weather poorly and mitigation measures should be considered in detailing
High winds - due increased storm intensity and	Medium to High	Structural damage to envelope, roof, etc caused by high winds	4	2	8	Building is designed to return period specified as per Code requirements. This takes into account funnelling, extreme weather cases etc.

Increased precipitation (rain/snow) - due to wetter winters or increased storm	**Medium to High**	Structural damage from soil movement / heave/ shrink swell effect / subsidence Additional loading on podium structure from loading/water ponding	4	2	8	Drainage will be designed in accordance with industry standard and and allowance for climate change. Foundations designed to take account of heave effects. Shallow foundations located at basement level therefore less risk of shrink swell effect. Foundations at ground level are deep foundations therefore less risk of shrink swell effect.
	Medium to High	Increased precipitation on roof	4	2	8	Roofing to be laid to falls and overflows provided.
Decreased precipitation due to warmer summers and increased heatwave	**Medium to High**	Structural damage to sub structure from soil movement / heave/ shrink swell effect / subsidence Structural damage to envelope from cracks and fissures	2	1	2	Deep foundations due to basement which results in a low risk.
Flooding						
Flooding (river and tidal)	**Low to Medium**	Site flooding leading to building damage, site contamination, etc	4	1	4	EA flood maps, and consultant flood risk assesment confirm low flood risk.
Flooding (ground and surface water)	**Medium to High**	As above Soakaway may have limited capacity	4	1	4	Drainage to be designed to include allowance for climate change and appropriate flood risk. The proposed development is low risk form all soruces of flooding.
Weather Proofing and detailing						
UV damage	Medium	Accelerated ageing of gaskets, sealants, reduced life span of glazing and metal coatings	2	1	2	No mitigation possible as materials used are state of the art at time of construction
Precipitation e.g. extreme rain and snow	Medium	Extreme weathering conditions can put the facade systems through service conditions that are harsher than what was tested. This could cause some leakages.	1	2	2	S&P to advice on entity and time proximity of predicted worse condition. If such conditions are predicted within the nect 20 years design for higher watertightness class, otherwise expect to change glazed elements in 25yrs.
Wind loading	Medium to High	Change of building surrounds can create different funnelling effect which are not currently present on site	3	3	9	Not possible to predict at this point in time. Client could decide to overdesign the building to future proof it
Material durability						
Maintenance (dust, cleaning)	Low	Dust sitting on facade surface can accelerate deterioration of base materials and finishes	1	2	2	Cleaning regime to be increased
Extreme temperature (heat)	Medium	Larger thermal expansion for facade element	2	3	6	Design joints for high temperatures
Extreme temperature (cold)	Medium	Facade element subjected to freeze thaw cycles can have a shorter life span	2	1	2	Check facade materials for low temperature embrittlement and free-thaw resistance
Flooding (all sources)	Medium	In case of flooding water gets into the ground and below ground floor space	2	2	4	Design for robust waterproofing details and include sufficient upstand at ground floor slab
Solar Radiation (including UV)	Medium	See comments in line 26	2	1	2	See comments in line 26
Weather Extreme (specify type e.g. wind, lighting strike)	Medium	See comments in line 28	3	3	3	See comments in line 28

6.2.2 Wst06 Design for Disassembly and Adaptability

Design for Disassembly and Functional Adaptation – Recommendations – RIBA Stage 2

The purpose of this study is to:

- outline the ability of the building to be adapted for a change in operational requirements within the same building type or for use as a different building type
- demonstrate the principles that allow the building of parts of the building to be disassembled at the end of its life, or to be renovated rather than demolished.

This study has been undertaken for *One Museum Street (1MS)* to identify opportunities for accommodating future changes of use to the building over its lifespan, and how they could be incorporated into the Stage 2 design proposals. The study has been designed to comply with BREEAM credit issue Wst 06.

The table below sets out the key issues that have been considered by the design team together with the potential solutions that could address these issues. This element of the study has been carried out during RIBA Stage 2.

Issue No.	Issue to be considered	Potential design options - including potential limitations	Recommended option(s) to be taken forward and further developed
1.	The potential for major refurbishment, including replacing the façade.	Studies undertaken in stage 1. The scheme has: - Poor slab to slab heights of 3.12m – not suitable for modern office space, especially with service zones considered. - Existing Selkirk House typical floors have a grid size of 4m x 5m (for levels 4 to 14) - Existing car park on the limited areas of flat slab, typical slab to slab heights are spaced at 2.74m with circa 220mm thick. Inclined slabs and significant shear wall construction to suit the NCP car park. Does not allow ground floor to open up. Significant demolition already required to repurpose. - Core not sized to modern requirements requiring significant demolition and rebuild. When the scheme had a hotel brief, studies were undertaken to utilise the existing structure, but discounted for viability reasons.	Retention of the existing basement is proposed, and desirable, considering the requirement to balance structural loadings throughout construction over the Post Tunnels below the site. It is not proposed to take a retention scheme forward for superstructure, as this would significantly impair the buildings long-term functionality, undermining the principle of sustainable redevelopment.
2.	Design aspects that facilitate the replacement of all major plant within the life of the building, e.g. panels in floors/walls that can be removed	The scheme considers plant replacement as part of the access and maintenance strategy:	- Greater detail in plant replacement strategy to be outlined and spatially coordinated throughout stage 3.

	without affecting the structure, providing lifting beams and hoists.	- Roof top plant is replaceable utilising the BMU for the 1MS section of the scheme. - The scheme looks to provide plant replacement opportunity where there currently is none for an existing UKPN substation on the site. - Basement plant is replaceable by utilising both the goods lift and the loading bay vehicle lift (where necessary). - Double door access to plantrooms allows for several items of plant replacement, without the need of breaking the plant down.	- Any equipment for plant replacement required should ideally be captured in outline in the stage 2 cost plan.
3.	The degree of adaptability of the internal environment to accommodate changes in working practices.	- The building is designed to a 1.5m BCO compliant grid and is to provide up to 1:8 levels of occupancy for the typical floor levels, and up to 1:6 for selected floors only. - Operable panels (potential) and terrace provision on levels 8, 11 and 18 give greater variety in spatial quality, allowing for the building to adapt to - The current structural design provides an air conditioning zone in each structural bay which allows for a greater number of cellular spaces. As part of the Cat A design intent, space provision has been provided at high level to allow ducted air supply to back of FCU's and ducted extract from each BCO occupiable zone. - The current services design intent allows for flexibility by utilising high level FCU's and VAV boxes at each floor level. This will ensure the ventilation system can adapt and the fresh air	- High level services routes to be further developed to ensure flexibility for future cellurisation.

		provision at each floor can increase/decrease to follow the buildings occupancy levels.	
4.	The degree of adaptability of the internal physical space and external shell to accommodate change in-use.	- The scheme looks to attract a diverse range of potential tenants to its differing qualities of floor plate, inherent within the stepped design. - A number of tenancy split scenarios are to be outlined in the stage 2 report which show how each floor plate can be split in order to suit tenant demands. - Soft spots to be permissible to allow tenants to knock through floor plates for internal circulation, if desired	- Tenancy scenarios to be further tested - Adaptation scenarios to be planned out as part of agent briefing materials.
5.	The extent of accessibility to local services, such as local power, data infrastructure etc.	- A rising busbar shall be provided within 1 Museum through dedicated electrical risers. Combined, split metered TPN distribution boards shall be installed into the electrical riser cupboard at each floor to serve tenant lighting, power, and heat pump circuits. - North and South Electrical risers shall allow for split tenancy on floors First to Tenth. - A floor void containing containment shall be provided for data cabling to each floor (in both risers where applicable) within 1 Museum Street and Grape Street to allow for the future installation of data cabinets by tenants. - Building will contain at least two incoming telecom communications entry points from different locations to create physical separation if the	- Define Retail utility services connections

		connectivity of one side of the building is disrupted. - Other utilities services will enter the building from the street.	
6.	Adaptability – Potential for building ventilation strategy to adapt to future building occupant needs and climate scenarios	- The allowance for VAV boxes at each floor level will provide the ventilation system with a level of adaptability. This will ensure the ventilation system can adapt and the fresh air provision at each floor can increase/decrease to follow the buildings occupancy levels. - Operable panels are provided, currently as a supplementary cooling strategy, but this could become integral to the ventilation strategy, subject to air quality improvements, brought about by greater uptake in electric vehicles. - A high quality external shell is considered paramount to the scheme's success, connections to façade are to be designed in at outset, rather than retrofitted. -	- Ductwork distribution routes and VAV box locations to be further tested. - Define retail service connections zones - Further develop operable panels strategy, in order to better influence the building energy model
7.	Convertibility – Degree of adaptability of the internal space and external shell to accommodate changes of in-use.	*Is this not the same question as above?*	
8.	Expandability – Potential for the building to be expanded, horizontally or vertically	- Scheme is not proposed to grow significantly vertically or horizontally, as it is sized to suit context. - Expansion on terraces could be possible, in order to provide differing shelter options for future scenarios	- Options for additional terrace shelters to be tested in stage 3. - Viable maximum scheme extents to be communicated in massing studies.

9.	Durability – materials which require less frequent maintenance, repair or replacement, considering them within the context of the life span of the building.	- 1MS: EOC to comment on façade durability - GS: EOC to comment on façade durability - HH: not yet ready to discuss	- Durability of materials used to be considered at outline specification stage - 1MS: EOC to comment on façade durability - GS: EOC to comment on façade durability
10.	Exposed and Reversed Connections – Making the connections more visible provides opportunities to optimise and product reuse.	*Does this refer to structure / services? We would want to avoid making a feature of connections to either.* - Shell and core provision, with exposed services presumed, ensures that future building users tailor space to their own needs.	- Test fit RCP layouts to be carried out in order to test fitout flexibility.

6.3 APPENDIX C – Circular Economy Workshop Notes and Presentation

Circular Economy approaches to the design have been discussed regularly between Scotch Partners' Sustainability team, the Applicant and the wider design team during the pre-application phase of the development, RIBA stages 0-2. This includes a CE workshop in which the following was discussed:

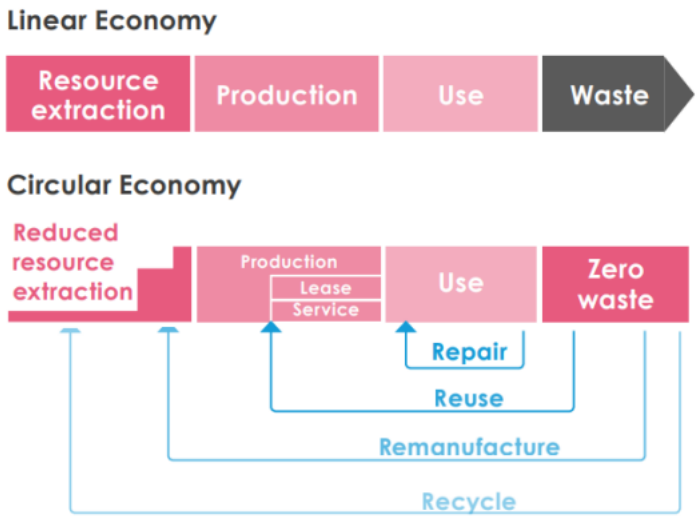
6.3.1 Circular Economy Workshop Notes

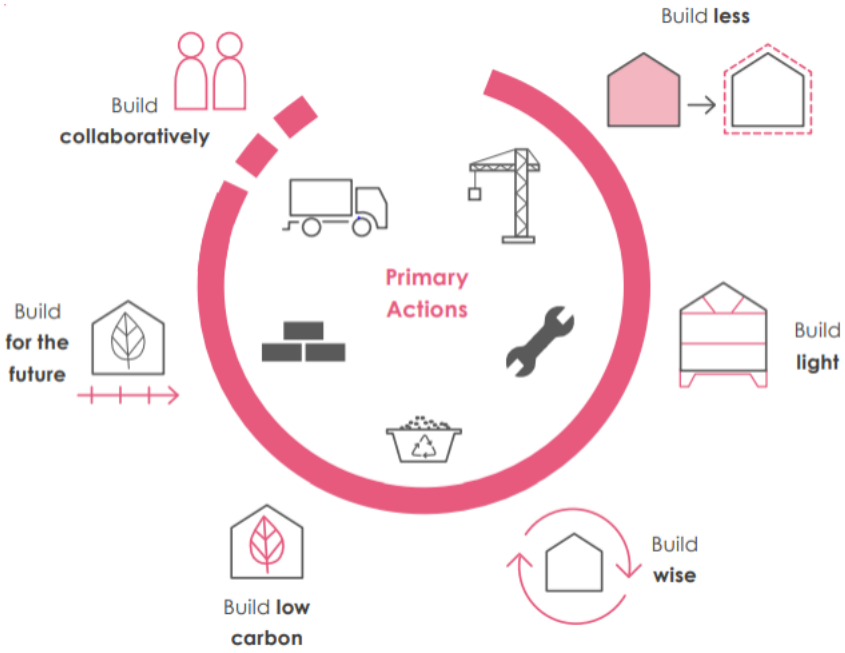
Item	Note
1	Introduction to the Linear vs Circular Economy
2	Discussion on refurbishment should be the priority over demolition, however this is not suitable for this project. It is not feasible to retain the existing building and structure in its entirety. Factors include age, quality and structural integrity of the existing building.
3	Advantages to new build are that the maximum potential of the location can be reached, including transport, character and bringing the site to life.
4	Outline what is required by the GLA, including Bill of Materials and the London Plan benchmarks for whole life carbon assessments.
5	Ran through circular economy design approaches including building relocation, component or material reuse, adaptability, flexibility, replaceability, disassembly and longevity. Also how these relate to the Development.
6	Confirmation that substructure will contain 70% GGBS concrete, superstructure of 1MS will contain 30% GGBS concrete, superstructure of Vine Lane, WCS, High Holborn will contain 50% GGBS concrete.
7	Run through GLA Circular Economy statement spreadsheet.

8	Run through the OneClick process.
9	SP to make a start on circular economy statement.
10	Need DAS etc before filling out certain information in reports.
11	SP to circulate first draft once written.
12	It has been agreed that any further design team meetings and workshops throughout the design process will continue to discuss and consider Circular Economy principles to be embedded into the design

6.3.2 Circular Economy Presentation

Circular Economy



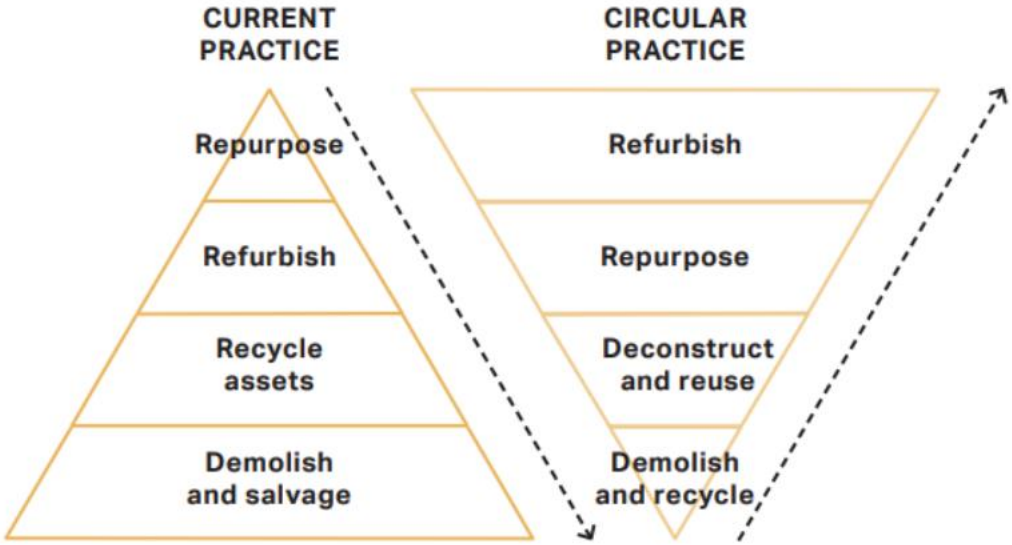


Refurbishment and Existing Development

Buildings which could be refurbished are often demolished and valuable materials and products which could be reconditioned and reused are lost.

Sites with existing buildings should seek to prioritise the retention of such buildings or parts of such buildings instead of assuming that demolition will take place.

If re-use is not viable on-site, then all elements should be reused at their highest carbon value, where possible. A retrofitfirst approach is a crucial component of a Net Zero.



Circular Economy and Whole Life Cycle Carbon

- The same Bill of Materials should be used for CE and WLC assessments
- The promotion of CE outcomes should also reduce the WLC of the development (modules A-C of BS EN 15978), or provide additional benefits beyond the development's life (module D)
- The end-of-life scenarios developed through the CE statement process should be used to inform the assumptions made in the WLC assessment
- Design decisions should be informed by the principles and results of both studies

Whole Life-Cycle Carbon Assessments – London Plan Guidance

Residential

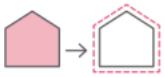
Modules	WLC benchmark ($kgCO_2e/m^2$ GIA)	Aspirational WLC benchmark ($kgCO_2e/m^2$ GIA)	Breakdown of a typical development
A1-A5 (excluding sequestration)	<850	<500	Substructure: 21 per cent Superstructure: 33 per cent Façade: 18 per cent Internal finishes: 10 per cent FFE: 1 per cent Services/MEP: 16 per cent External works: 1 per cent
B-C (excluding B6 & B7)	<350	<300	Substructure: 6 per cent Superstructure: 6 per cent Façade: 34 per cent Internal finishes: 19 per cent FFE: 3 per cent Services/MEP: 30 per cent External works: 2 per cent
A-C (excluding B6 & B7, including sequestration)	<1200	<800	Substructure: 17 per cent Superstructure: 25 per cent Façade: 23 per cent Internal finishes: 12 per cent FFE: 1 per cent Services/MEP: 20 per cent External works: 2 per cent

Actions to Drive Change

- Adopt the circular economy principle of reuse and refurbish before new build ('retro first').
- Implement embodied carbon as a sustainable design metric and calculate embodied carbon emissions of all projects.
- Request Environmental Product Declarations (EPDs) from all suppliers.

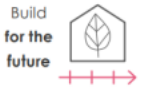
Build collaboratively

- ❑ Solutions must involve the whole design team and the client.



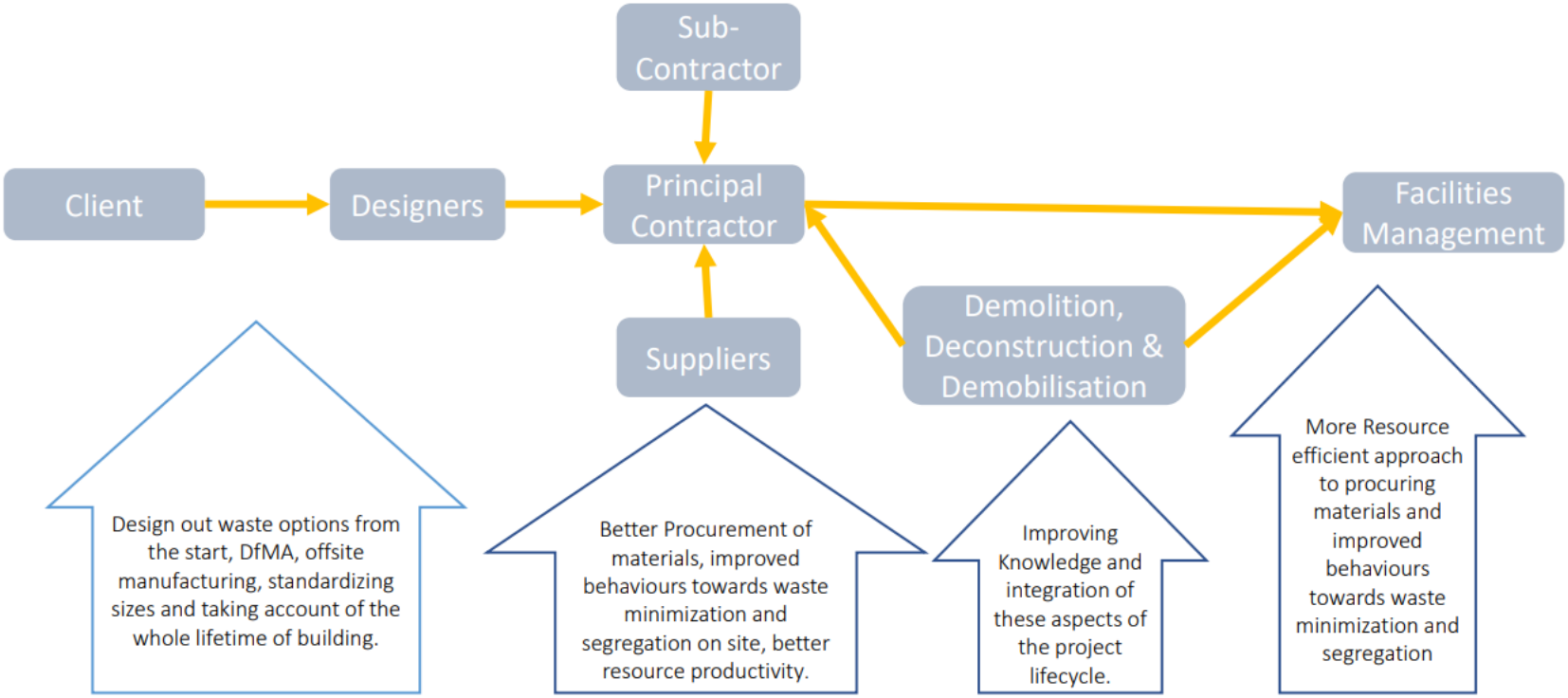
- ❑ Can existing materials on or near the site be used?
- ❑ Can uses be shared or spaces be multi-functional?
- ❑ Carry out a material efficiency review - are all materials proposed necessary?

- ❑ Ensure longevity of material and systems specifications.
- ❑ Review material efficiency options like designing to standard building sizes or for a repeating module.



- ❑ Ensure future uses and end of life are considered and adaptability is designed in.
- ❑ Consider regular structural grid and future-proofed risers and central plant space.
- ❑ Mechanically fix systems rather than adhesive fix so they can be demounted and reused or recycled, supporting a circular economy.
- ❑ Explore methods of creating longevity for materials without additional coatings, as they can reduce the recyclability of the material.

Continuous Link to Circular Economy



Building Targets

Table 3: CE design approaches for new buildings and definitions

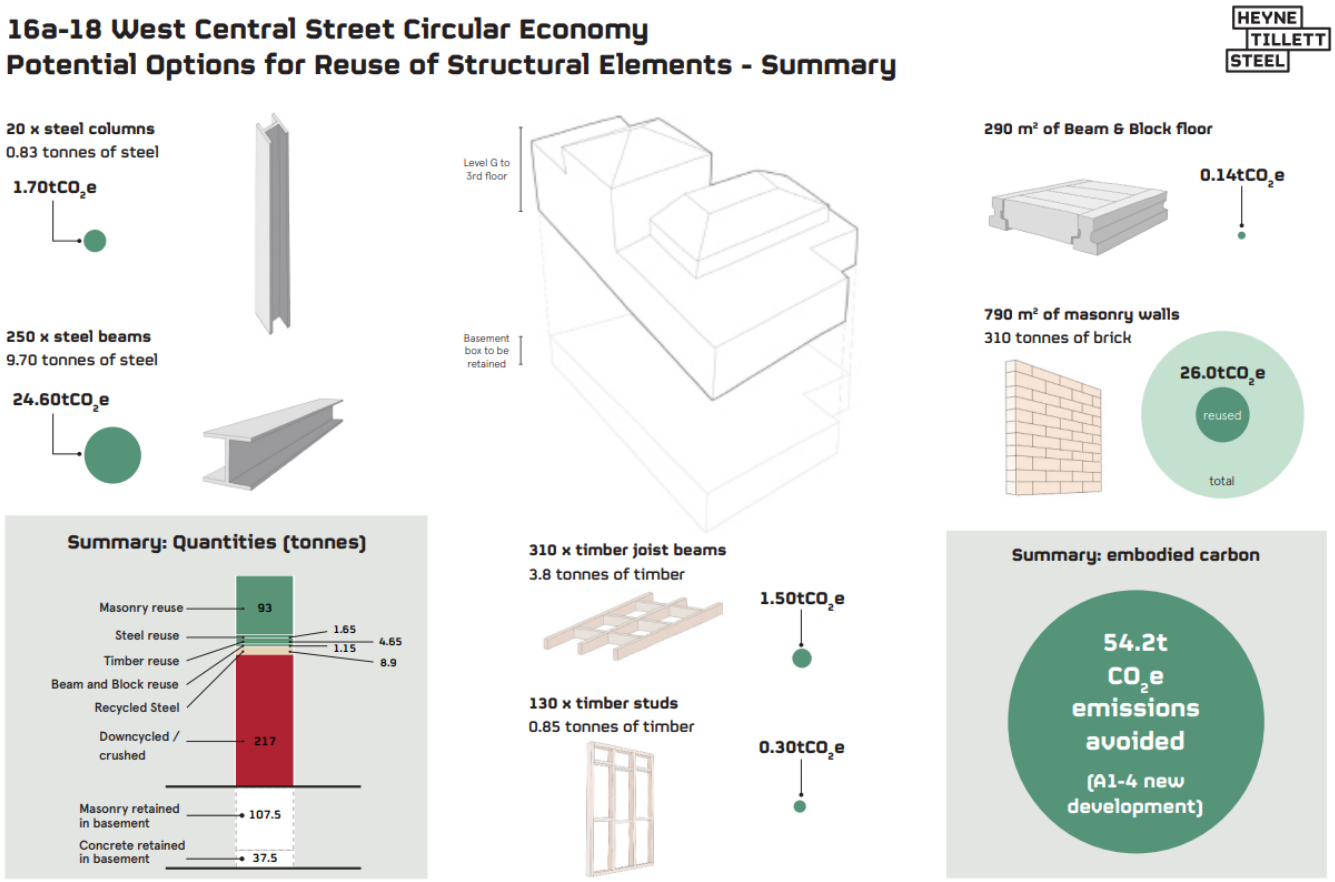
New building CE design approaches	Definition
Building relocation	Designing to allow the whole building to be used on a different site, either by moving as a whole or disassembling into large modules.
Component or material reuse	The use of a product in its original form with minimal reprocessing. Preparation for reuse involves checking, cleaning or repairing materials so that they can be used again for their original purpose. Materials can be reused as a whole; redeployed as modules; or reused as a kit of parts on one or more different sites.
Adaptability	A building that has been designed with thought of how it might be easily altered to prolong its life, for instance by alteration, addition, or contraction, to suit new uses or patterns of use.[13] Often used interchangeably with flexibility; however, it relates more to building structural changes.
Flexibility	A building that has been designed to allow easy rearrangement of its internal fit-out and arrangement to suit the changing needs of occupants.[14] Often relates to floorplates rather than structural changes (see **Adaptability**).
Replaceability	Designing to facilitate easy removal and upgrade, and ideally to be reused, remanufactured or recycled on a part-by-part basis.
Disassembly	Designed to allow the building and its components to be taken apart with minimal damage to facilitate reuse or recycling. If designed well, it should be possible to replace any component.
Longevity	Designing to avoid a premature end of life for all components through considering maintenance and durability.

Building Targets: Example

PRINCIPLE	DEVELOP COMMITMENTS TO	KEY TARGETS
Building in layers	* Ensuring different parts of the development are accessible and can be maintained and replaced where necessary	Maximise material recovery from the existing site in line with the waste hierarchy. Goal to recycle 95% of the material
Designing out waste	* Ensuring waste reduction is planned in from project inception to completion * Consideration of standardised components, modular build, and reuse of secondary products and materials	* 95% reuse/recycling/recovery of construction and demolition waste. * Residential buildings cannot exceed 26.52m² or 16.9 tonnes of non-hazardous construction waste per £100k of project value * Divert 95% of construction waste from landfill. * 65% municipal waste to be reused, recycled or composted by 2030 promoted by the provision of a suitably sized, dedicated, and labelled space for storing/segregating recyclable waste within the scheme.
Designing for longevity	* Designing to avoid a premature end of life for all components through considering maintenance and durability	* Durability of materials used to be considered at outline specification stage and built into the design
Designing for adaptability or flexibility	* Consider how the development might be easily altered structurally to prolong its life. * Consider how the development might allow easy rearrangements of its internal fit-out and to suit the changing needs of occupants	* Utilise pre-fabrication or standardised components where possible
Designing for disassembly	* Consider how the development can be deconstructed and reconstructed to allow components and materials to be salvaged for reuse or recycling, whilst maintaining their economic and environmental value.	* Utilise modular and pre-fabricated components where possible
Using systems, elements or materials that can be reused and recycled	* Identifying opportunities for the use of reused or recycled materials	• Aim for 20% of recycled content by value, for the whole building • Aim for recycled content of concrete between 30-50% GGBS

6.4 APPENDIX D – HTS Pre-reclamation Audits

6.4.1 West Central Street



This pre-reclamation audit identifies the structural elements of the existing 16a-18 West Central Street building with high reuse potential. The audit has been undertaken by HTS as part of the project's commitment to the circular economy principles. The audit is intended to act as starting point for further detailed studies and proposals at the next stage of design.

16a-18 West Central Street Circular Economy – Notes and Next Steps

Notes

- All calculations are indicative at present, hence all quantities noted in the structural elements summary are indicative. This document was prepared to promote indicative guidance for reuse potential and be the starting point for further detailed studies at the next stages of design.
- This pre-reclamation audit was undertaken based on limited information. No archive information was available, instead this audit relies on information gained from visual inspections on site and a measured survey. HTS then assumed an existing structural scheme and material quantities using engineering judgement.
- It was assumed that only 50% of the steel columns, and only castellated beams, are steel elements newer than 1932. All older steel cannot be justified for reuse under current guidance and is therefore proposed for recycling rather than reuse.
- It was assumed that 30% of the masonry can be reused. Currently only 1% of construction waste is reused. This percentage is an educated estimate based on expected losses during demolition and current lack of reuse precedents. As current practice results in reuse of 1% of inert construction waste, 30% aims to strike a balance between aspiration and practicality. If the majority of existing masonry is clay brickwork with lime mortar, it may be possible to increase the % reclaimed and reused.
- All information presented in this audit will require confirmation following further site investigations, structural condition assessment, and capacity testing at the next stage of design.

Next Steps

Structural element dimensions, quantities, and condition to be confirmed on site.

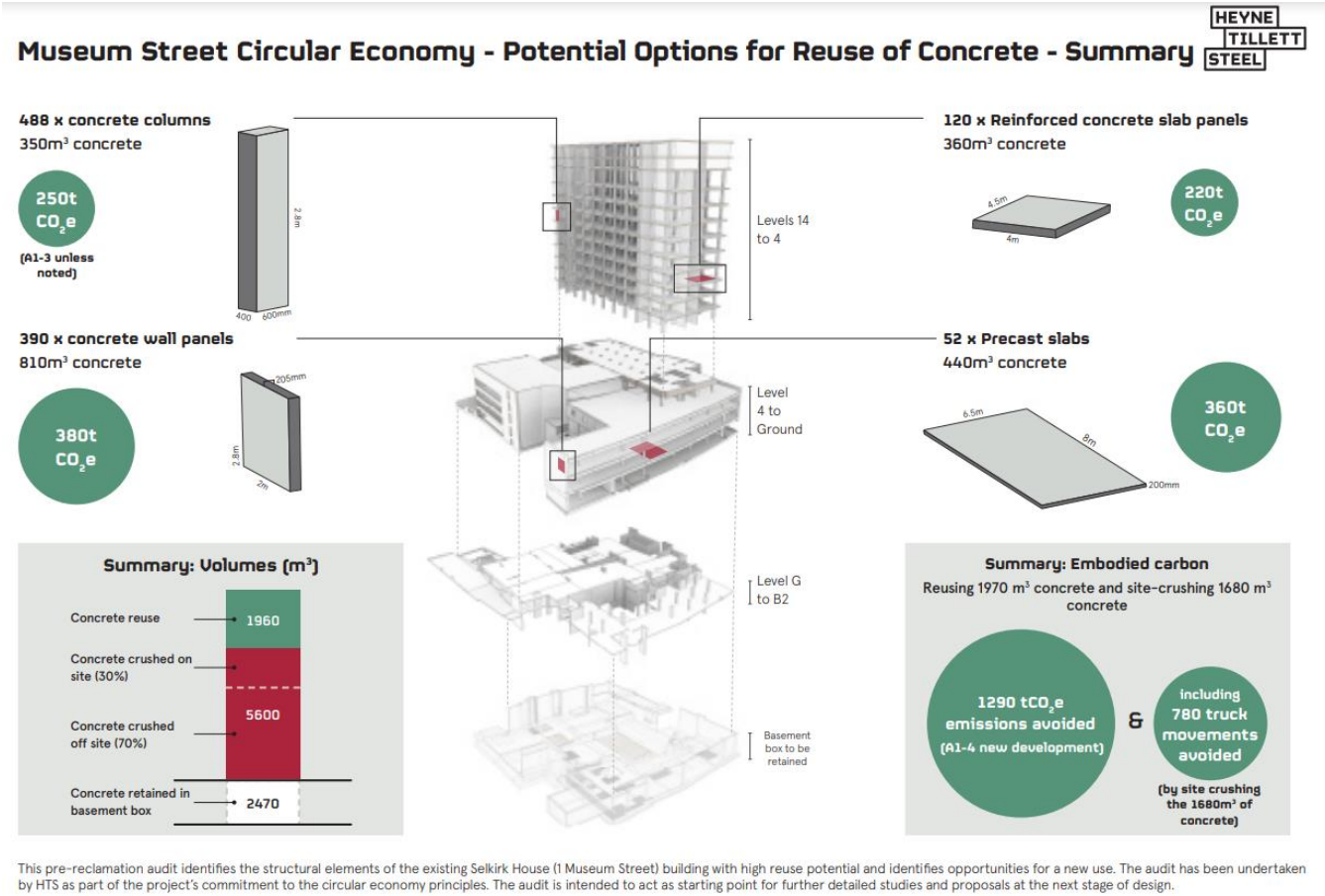
Discussions with demolition contractors, ideally with experience in reclamation, to agree reclamation procedure, minimise expected damage and understand effect on cost and demolition programme:

- Agreeing the deconstruction methodology, including tools used ensure integrity of the extracted elements (diamond saw, hydro blasting, etc) and lifting techniques (similar to ones used in prefabrication).
- Assess the load capacity for lifting equipment, dimensions of openings on the extraction path, maximum transportable dimensions (considering the central location of the site)
- Assessment of storage space within the site for elements proposed for reuse on site.
- Assessment of transport and storage for reclaimed elements not used on site.

Establish and agree protocol to assess the quality, condition and structural capacity of the reclaimed elements.

- Assessing suitability of elements proposed for reuse - deterioration/degradation, mechanical damage, structural damage, contamination from toxic substances, etc.
- Existing building quality assessment - verify structural material properties using destructive and non-destructive methods (rebound hammer, ground-penetrating radar, non-destructive hardness testing, visual inspection, load testing, etc.)
- Documenting all elements extracted from the building, including condition and damage occurred during demolition.
- Undertake any testing needed to validate elements for their proposed reuse.

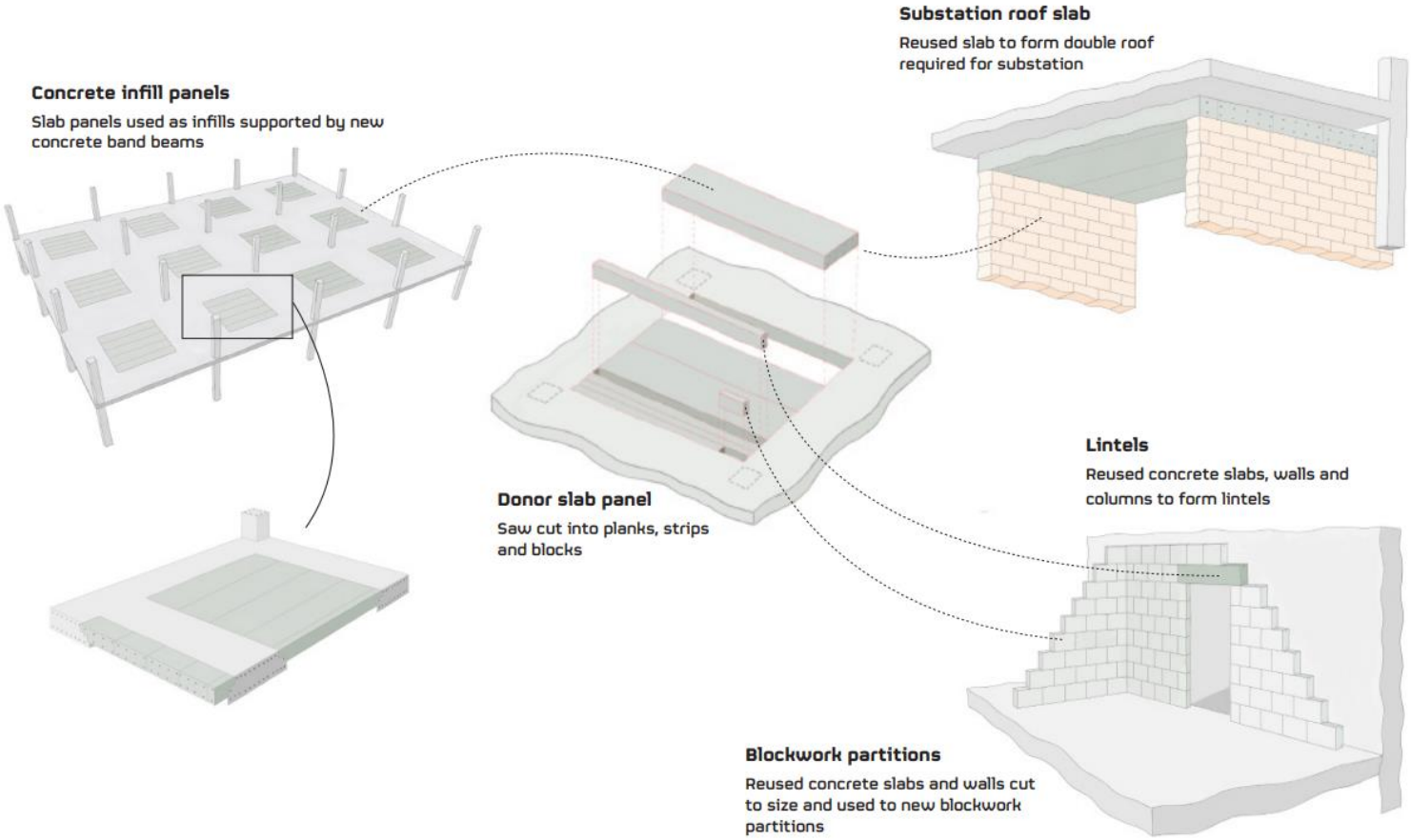
6.4.2 Museum Street



This pre-reclamation audit identifies the structural elements of the existing Selkirk House (1 Museum Street) building with high reuse potential and identifies opportunities for a new use. The audit has been undertaken by HTS as part of the project's commitment to the circular economy principles. The audit is intended to act as starting point for further detailed studies and proposals at the next stage of design.

Museum Street Circular Economy - Proposed Applications for Reused Concrete

HEYNE TILLETT STEEL



Museum Street Circular Economy – Notes and Next Steps

Notes

- All calculations are indicative at present, hence all quantities noted in the structural elements summary are indicative. This document was prepared to promote indicative guidance for reuse potential and be the starting point for further detailed studies at the next stages of design.
- This pre-reclamation audit identifies the structural elements with high reuse potential and proposes then for a new use. A full record for each element with reuse potential from 3 different categories (slabs, columns, and walls) has been created.
- All information presented in this report is based on archive information and assumptions using engineering judgement and needs confirmation following site investigations.
- The proposed reuse applications for concrete elements were chosen to suit the new building's proposed scheme and functionality, taking into account the expected capacity of reclaimed elements. These reuse applications are dependent on availability, quality, dimensional, technical, aesthetic and programme considerations.

Next Steps

Structural element dimensions, quantities and condition to be confirmed on site.

Discussions with demolition contractors, ideally with experience in reclamation, to agree reclamation procedure, minimise expected damage and understand effect on cost and demolition programme:

- Agreeing the deconstruction methodology, including tools used ensure integrity of the extracted elements (diamond saw, hydro blasting, etc) and lifting techniques (similar to ones used in prefabrication).
- Assess the load capacity for lifting equipment, dimensions of openings on the extraction path, maximum transportable dimensions (considering the central location of the site)
- Assessment of storage space within the site for elements proposed for reuse on site.
- Assessment of transport and storage for reclaimed elements not used on site.

Establish and agree protocol to assess the quality, condition and structural capacity of the reclaimed elements.

- Assessing concrete suitability - deterioration/degradation, mechanical damage, structural damage, contamination from toxic substances, etc.
- Existing building quality assessment - verify concrete and reinforcing steel properties using destructive and non-destructive methods (rebound hammer, ground-penetrating radar, load testing, etc.)
- Documenting all elements extracted from the building, including condition and damages occurred during demolition.
- Undertake any testing needed to validate elements for their proposed reuse.

6.5 APPENDIX E – Sustainable Procurement Plan

6.5.1 Sustainable Procurement Plan

The project design team are committed to environmental, social and economic sustainability and are continually seeking to improve and expand existing policies. We seek to guide specification, where practical, to suppliers who share our values as per the framework set out in this plan.

This Sustainable Procurement Plan has been produced during Concept Design and provides a framework for the responsible sourcing of materials, to guide procurement throughout the project and has been developed in accordance with the Sustainable Procurement National Action Plan guidelines and covers the following.

- Aims, Objectives and Targets that will guide sustainable procurement.
- Social, Environmental and Economic issues as identified in BS 8903:2010.
- Assessment of materials sourced locally and nationally.
- Procedures for checking and verifying that this plan is adhered to on individual projects, where relevant.

Sustainable procurement considers the environmental, social and economic consequences of:

- Design;
- Non-renewable material use;
- Manufacture and production methods;
- Logistics;
- Service delivery;
- End usage;
- Operation;
- Maintenance;
- Reuse;
- Recycling options;
- Disposal;
- Supplier' capabilities to address these consequences throughout the supply chain.

6.5.2 Contractor Commitment

As this Sustainable Procurement Plan has been produced during Concept Design, it is expected that the Contractor will have their own corporate sustainable procurement policy in place. This policy will be followed by the procurement team during the construction phase of the development.

6.5.3 Aims, Objectives and Targets

The aim of this Sustainable Procurement Plan (SPP) is to ensure that by following the objectives below, suppliers and manufacturers will be specified based on the overall Environmental, Social and Economic impact their products and processes have. Products

and processes will be measured again the criteria in Section 3 as well as other certification schemes.

We aim to reduce the overall impact of the development by maximising reuse of materials and specifying materials that have minimal environmental, social and economic risk as identified in BS 8092:2009, by scoring suppliers against a set of carefully selected questions in the Supplier PPQ (example provided in Appendix B) and determining which supplier is the most sustainable in line with the principles contained within BS 8903:2010 and by assessing not only the risk but any possible opportunity that may arise from choosing a specific supplier or product.

Four key aims of this Sustainable procurement plan are:

- Minimising demand for resources (e.g., by reducing purchases, using resource efficient products, considering end of life, etc.);
- Minimising any negative impacts of goods, works or services across their life cycle and through the supply chain (e.g., impacts on health, air quality, etc.);
- Ensuring that fair contract prices and terms are applied and respected and that minimum ethical, human rights and employment standards are met;
- Providing opportunities for small and medium businesses, voluntary sector organisations.

The objectives of this SPP follows the principles set out in BS 8903:2010

- A sound approach – sustainable procurement is just good procurement based on fairness, openness and transparency, non-discrimination and competition.
- An ethical approach – sustainable procurement should ensure integrity, encourage diversity, avoid corruption.
- A holistic approach – sustainable procurement should consider the effects of procurement decisions on quality of life, the environment and society in general.
- A risk/opportunity-based approach – sustainable procurement requires an ongoing process of continual improvement. This means using risk and opportunity assessment to identify and address impacts and solutions at all stages of the product life cycle.
- Leadership – senior-level leadership is needed for success although leadership can come from all levels within an organisation in the form of 'champions'. Buyers should adopt leadership qualities to help build capacity and competence within supply chains and the marketplace.
- Delivery of organisational objectives – sustainable procurement can deliver against a wide range of objectives beyond financial and efficiency savings, from CO2 emissions savings to BREEAM compliance.

The target for this plan is to enable products to be sourced that have the lowest social, economic and environmental impact by using suppliers that have the required levels of certification in place and carry products that also have the highest possible level of certification as scored via the PPQ scoresheet, and to source materials locally where possible as per the local sourcing policy.

This will enable the design team to reduce the overall impact of the development in question by sourcing materials that have minimal social, economic and environmental risk as identified in BS 8092:2009, by scoring suppliers against a set of carefully selected questions in the attached PPQ and determining which supplier is the most sustainable in line with the principles contained within BS 8903:2010.

6.5.4 Environmental, Social and Economic Risks & Opportunities

The issues below have been identified using BS 8903:2010

Environmental Issues	Social Issues	Economic Issues
• Emissions to air (e.g., greenhouse gases such as CO_2 and other pollutants) • Releases to water (e.g., chemical pollution of water courses) • Releases to land (e.g., chemical fertilisers) • Use of raw materials and natural resources (e.g., sustainable forestry, biodiversity) • Use of energy (e.g., renewables) • Water use • Energy emitted (e.g., heat, radiation, vibration, noise) • Waste and by-products (e.g., recycling and waste prevention)	• Encouraging a diverse base of competitive suppliers (e.g., minority or under-represented suppliers) • Promoting fair employment practices (e.g., fair wages, workforce equality and diversity) • Promoting workforce welfare (e.g., health and safety, freedom to join or form a union) • Enabling training opportunities and skills development (e.g., apprenticeships) • Community benefits (e.g., supporting community groups, volunteering) • Fair trade and ethical sourcing practices (e.g., fair pricing policies)	• Job creation (e.g., green technologies, creating markets for recycled products) • Whole-life costing • Achieving value for money • Supporting SMEs (e.g., facilitating opportunities for small businesses) • Reducing entry barriers (e.g., facilitating open competition) • Ensuring operating business remains a viable operation able to provide employment • Ensuring suppliers' agreement are competitive and fair to promote business viability

By considering the above issues in the procurement of materials, the four key outcomes could be realised:

1. Reduced demand for resources such as energy, water and raw materials;
2. Reduced negative impacts of goods and services across their life cycle;
3. Contract prices and terms are ethical, fair and respected, and;
4. Opportunities provided for small and medium sized businesses, voluntary sectors and to support jobs, diversity, training and skills development.

When choosing products and suppliers a risk assessment should be undertaken in accordance with the guidelines in BS ISO 31000 against the above Environmental, Social and Economic issues, and revisited and updated throughout the procurement process.

A risk can be defined as "the chance of something happening that will have an impact on objectives". These impacts aren't always negative so when assessing the risk, positive impacts and any possible opportunities must also be considered.

The contractor will produce a risk and opportunity plan to assess procurement risk and opportunities. At this stage a sample risk and opportunity plan has been produced (Appendix C).

6.5.5 Assessment of Materials Sourced Locally & Nationally

We also require suppliers to be assessed using a set of PQQ questions relating to the sustainability of their products and their operations/activities. The final PQQ will be created by the appointed Contractor however we have provided a sample PQQ scoresheet (Appendix B).

The contractor will be expected to use suppliers who share our principles and values: some of our key drivers for sustainable procurement are the fact that sustainable procurement should be:

- Based on fairness, openness and transparency, non-discrimination and competition.
- Ensure integrity, encourage diversity and avoid corruption.
- Act ethically and responsibly and look beyond pure economic gain with regard labour laws and staff pay and working conditions.
- Consider the effects of procurement decisions on quality of life, the environment and society in general, taking into account the impacts at local, national and international level and take responsibility for decision making and outcomes.
- Adopt an ongoing process of continual improvement, using risk and opportunity assessment to identify and address impacts and solutions at all stages of the product life cycle.
- Sustainable procurement can deliver against a wide range of objectives beyond financial and efficiency savings, from CO2 emissions savings to innovation strategies.

Suppliers should be selected based on the results of the PQQ and their location. Where possible and practical to do so local suppliers should be used. Where local suppliers cannot be used due to the product not being available or not having the correct certification locally, where possible deliveries should be scheduled to coincide with other drop offs in the area to reduce the distance the transport has to travel for delivery to a single site.

Suppliers should be asked to provide a copy of the relevant certification held by way of verification.

6.5.6 Procedures for Checking and Verifying Compliance with the Plan

This SPP will be the responsibility of the design team during the design stages. During the procurement stage the contractor will be expected to produce their project SPP which they will be responsible for. They will appoint a dedicated person to monitor the SPP and its procedures.

During the procurement stage, upon receipt of the completed PQQ questionnaire from tendering suppliers and manufacturers the appointed person will use the SPP as a guide when assessing the suitability and sustainability of the product or suppler, alongside the scoresheet.

Before any final decisions are made the Project Manager will review the results of the PQQ scoresheet and ensure compliance with the SPP before sign-off on a supplier or product is given.

The results from all PPQ's and the associated scoresheet will be kept on file with a copy of the SPP in the project file.

The results from all PPQ's will be entered in the central supplier PQQ database to enable a record to be retained of supplier performance and to monitor any improvements to their performance in the future.

6.5.7 Appendix A: Supplier PQQ Guidance

The following is intended to provide guidance on the questions set out within the Supplier PQQ in Appendix B. Note that this is for internal use only.

No.	Question	Guidance Notes
Environmental Management		
1	Does your organisation have an environmental policy in place?	This is a generic, simple policy that sets guidelines on all of the organisation's activities so as to reduce its environmental impact, such as ensuring all paper is recycled and resource use (water, electricity) is minimised. It should be expected for all suppliers to have such a simple policy in place, regardless of size.
2	Does your organisation have an accredited Environmental Management System in place?	For example, ISO 14001 and BS 8555. Large organisations should be expected to have ISO 14001 whereas medium-sized may have BS 8555. It is unusual for very small companies to have an accredited EMS but should be welcomed/encouraged.
3	Does your organisation have a green/sustainable procurement policy in place?	This is a policy that sets out how materials etc. are sourced and the steps taken to ensure they are sourced responsibly and have the relevant certification and comply with legislative requirements where applicable. Large organisations would be expected to have this policy in place. Smaller companies may not but should be encouraged to.

No.	Question	Guidance Notes
4	If relevant, what level of environmental certification or standard have you achieved for the product(s) you supply? Please list all that apply.	As a minimum, this should include the following materials/products: ▪ Timber/Timber-Based Products ▪ Concrete/Cementitious (plaster, mortar, screed, etc) ▪ Metal ▪ Stone/Aggregate ▪ Clay-based (Pavers, blocks, bricks, roof tiles etc) ▪ Gypsum ▪ Paints/varnishes/other finishes ▪ Rubber/vinyls/carpets/other floor finishes Certification could be FSC, PEFC for timber products, EMS certification for either Key process and supply chain or just key process or BES 6001 certification. Some may not have an environmental certification associated with the product, so would meet a British or European standard instead, for example, related to VOCs (volatile organic compounds)
Sustainable Procurement		
5	Do you request, where available, environmental credentials from your supply chain, such as an accredited environmental management system?	This will determine how much regard the supplier has for its own responsible sourcing practices.
6	What level of environmental certification or standard do you require for products / materials you procure from your supply chain?	This could be one of those listed in Q4 above or equivalent.
7	Does your organisation have a process for approving suppliers of the above products/materials? If so, please explain briefly what this is.	This will determine how much regard the supplier has for its own responsible sourcing practices.
8	Does your organisation use an approved supplier list? i.e., suppliers with products/materials verified as having a low environmental impact.	Yes/No If yes, all products will be certified where applicable
9	Does your organisation audit suppliers on their performance in regard to the above?	This will determine how much regard the supplier has for its own responsible sourcing practices.
Resource Use and Waste		

No.	Question	Guidance Notes
10	Does your organisation have a policy in place for minimising waste? If no, please explain why.	The policy should include details taken to minimise waste, including employee training etc.
11	Does your organisation recycle/reuse materials where possible? If no, please explain why.	Ideally this will be detailed in the above policy. Details given on targets for reuse and recycling
12	Does your organisation separate different waste streams?	Ideally should be detailed in the above policy. Is waste segregated prior to leaving site to enable further recycling off site.

6.5.8 Appendix B: Sample Supplier PQQ Questionnaire

Name of Project	
Name of Supplier	
Product(s) Good(s) tendered for	
Date	

N°	Question	Suppliers Response
Environmental Management		
1	Does your organisation have an environmental policy in place? If so, please provide a copy. If not, please explain why.	
2	Does your organisation have an accredited Environmental Management System in place? If so, which one and for how long. If not, please explain why.	

Nº	Question	Suppliers Response
3	Does your organisation have a green/sustainable procurement policy in place? If so, please provide a copy.	
4	If relevant, what level of environmental certification or standard have you achieved for the product(s) you supply? Please list all that apply. Are you able to provide evidence (e.g., certificates) upon request?	
Sustainable Procurement		
5	Do you request environmental credentials from your supply chain, such as an accredited environmental supply chain?	
6	What level of environmental certification or standard do you require for products / materials you procure from your supply chain?	
7	Does your organisation have a process for approving suppliers of the above products/materials? If so, please explain briefly what this is.	
8	Does your organisation use an approved supplier list? I.e., suppliers with products/materials verified as having a low environmental impact. Does your organisation audit suppliers on their performance in regard to the above?	
9	Does your organisation audit suppliers on their performance in regard to the above?	
Resource Use and Waste		
10	Does your organisation have a policy in place for minimising waste? If no, please explain why.	

Nº	Question	Suppliers Response
11	Does your organisation recycle/reuse materials where possible? If no, please explain why.	
12	Does your organisation separate different waste streams?	
Any other information you may feel is useful in regard to your approach to responsible sourcing.		

6.5.9 Appendix C: Sample Risk and Opportunity Plan

Risk or impact and consequences for the organisation.	How the risk/impact arises	Current rating H/M/L	Actions to address risk/Impact	Who	When	Residual rating H/M/L

6.6 APPENDIX F – Arup Operational Waste Management Plan

ARUP

Lab Selkirk House Ltd

Selkirk House, 166 High Holborn and 1 Museum Street, 10-12 Museum Street, 35-41 New Oxford Street and 16A-18 West Central Street, London, WC1A 1JR

Operational Waste Management Plan

Reference: 1MS OWMP

Issue 2 | 21 June 2023

Job number 271284-07

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1. Introduction

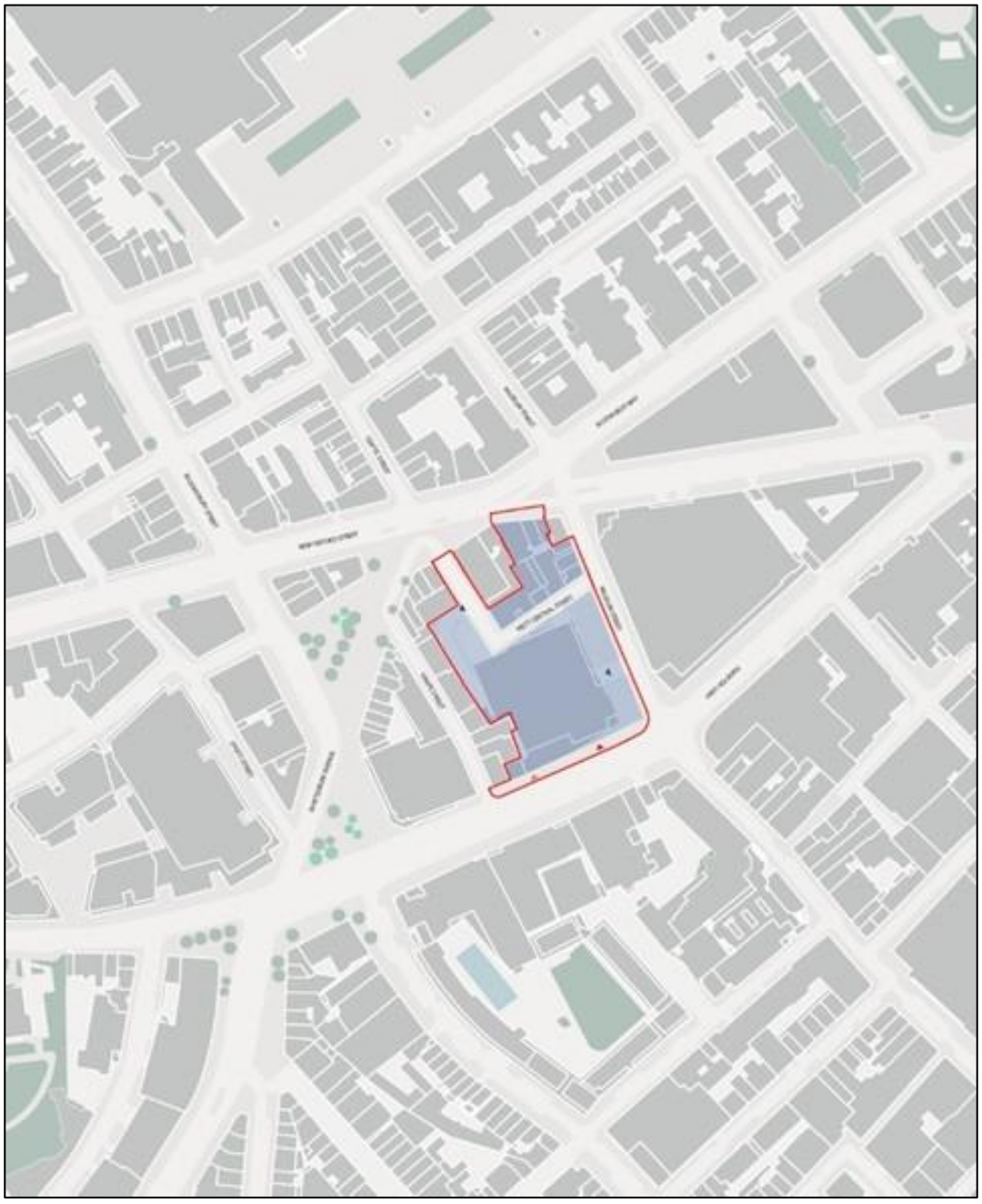
1.1 Background

This Operational Waste Management Plan (OWMP) has been prepared by Ove Arup & Partners Ltd. ('Arup') as part of the 'Circular Economy Statement' (CES). The requirements for the report are set out in the 'Greater London Authority' (GLA) London Plan Guidance on Circular Economy Statements (2022).

The development is located within the London Borough of Camden ('the Local Authority') and the site concerns the redevelopment of the land at Selkirk House, 166 High Holborn and 1 Museum Street, 10-12 Museum Street, 35-41 New Oxford Street and 16A-18 West Central Street, London, WC1A 1JR ('the site').

The location of the site in relation to its wider surroundings is shown in Figure 1

Figure 1 Site location

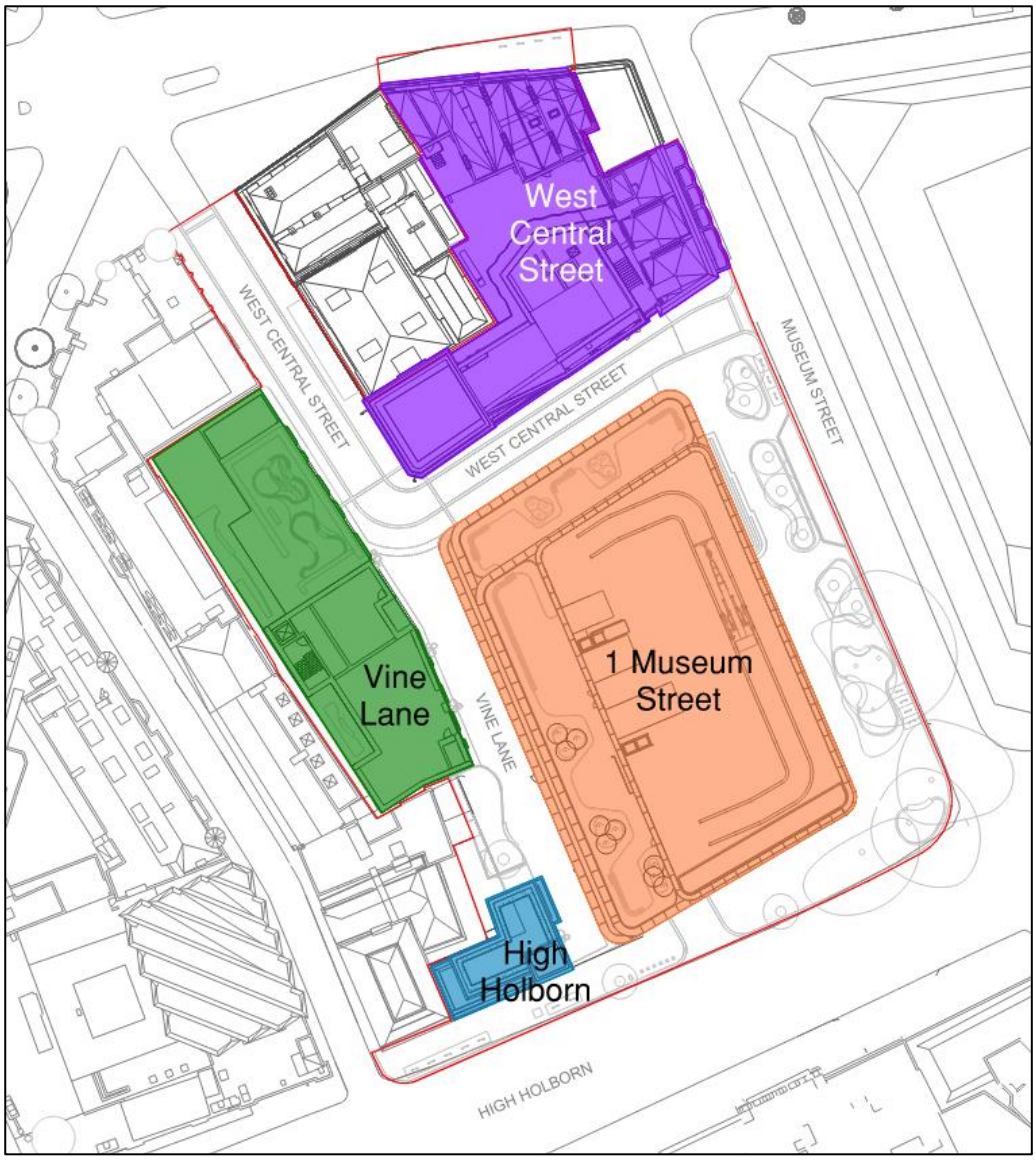


The proposed development comprises the following:

- Museum Street - a single new building rising to 19 storeys, providing office (Class E(g)(i)) accommodation on upper levels and a range of flexible town centre uses (Class E) at ground level.
- High Holborn - a single new building rising to 6 storeys, providing residential (Class C3) accommodation on upper levels and a flexible town centre use (Class E) at ground level.
- Vine Lane - a single new building rising to 5 storeys, providing market residential units with a flexible town centre use (Class E) at ground level.
- West Central Street - a series of new and refurbished buildings rising to ground plus 5 storeys, providing residential accommodation (market, Low-cost rent and Intermediate rent) on upper levels (Class C3) and flexible town centre uses (Class E) at ground level. This development takes account of the recent Grade II listing of 10-12 Museum Street and 35-37 New Oxford Street, both of which sit within the application boundary.

These are shown in Figure 2.

Figure 2 Proposed development with sections breakdown for references.



1.2 Reference publications

The following planning policy and best practice guidance documents have been considered when developing this OWMP:

National policy documents:

- Revised National Planning Policy Framework, 2021;
- The Waste (England and Wales) Regulations, 2011;
- DEFRA Government Review of Waste Policy in England, 2011; and
- BS5906 Waste Management in Buildings – Code of Practice, 2005.

Regional policy documents:

- The London Plan, 2021;
- London Plan Guidance Circular Economy Statements, 2022

Key local policy:

- Camden Planning Guidance – Design, 2021; and
- Camden's Environment Service technical guidance for recycling and waste.

1.3 Scope

This OWMP will include the following key elements as per The London Plan (2021) Circular Economy Statement requirements:

- Expected operational and municipal waste generation and storage requirements;
- The segregation of waste streams and how and where (on-site vs offsite) operational waste will be disposed of;

  Collection points and frequency;
- The various responsibilities of 'facilities management' (FM) team and future occupants;
- How operational performance will be monitored and reported;
- That measures such as consolidated, smart logistics and community-led waste minimisation schemes have been explored.

The required elements will be covered in the following sections:

- Section 2: Waste generation and storage:
  - Including waste stream separation, storage and operational waste generation
- Section 3: Waste disposal and collection strategy
  - Including operational and municipal waste management
- Section 4: Operational waste reduction measures:
  - Including exploration of measures such as consolidated, smart logistics and community-led waste minimisation schemes
- Section 5: OWMP review process
  - Including operational waste monitoring and reporting

1.4 Area schedule and residential unit mix

Table 1 shows the area schedule for the development; balcony and terrace areas are excluded, and due to lack of clarification retail space is assumed to be 50% food retail and 50% non-food retail to give robust delivery and servicing data that reflects the likely mix of future retail uses.

Table 1 Area schedule

Building	Use Class	GIA (m²)	NIA (m²)	Units
Museum Street	Office E(g)i	22,650	15,707	-
	Retail (Non-Food)	317	289	-
	Retail (Food)	317	289	-
	Subtotal	23,284	16,285	-
Vine Lane	Market residential (C3)	1,579	1,078	19
	Retail (Non-Food)	160	152	-
	Retail (Food)	160	152	-
	Subtotal	1,899	1,382	19
High Holborn	Retail (Non-Food)	12	11	-
	Retail (Food)	12	11	-
	Residential (Private)	426	290	4
	Subtotal	450	312	4
West Central Street	Retail (Non-Food)	346	323	-
	Retail (Food)	346	323	-
	Residential	1,987	1,482	21
	Subtotal	2,679	2,128	21
Total		28,312	20,107	44

Table 2 Residential unit mix

Residential unit Mix				
Block	**Affordable**		**Private**	**Total**
	Low-Cost Rent	**Intermediate**		
High Holborn	-	-	4	**4**
West Central Street	11	8	2	**21**
Vine Lane	-	-	19	**19**
Total	**11**	**8**	**25**	**44**

2. Waste policy & guidance

This document sets out the Operational Waste Management Plan (OWMP) for the development. It is noted that the information provided in this OWMP is based on the design as it has been submitted to the Local Authority for planning approval. Currently there has been no involvement in any formal pre-application process with the Council's waste management team.[1]

2.1 Guidance and policy requirements

2.1.1 British Standard and Camden Planning Guidance Requirements

The requirements for waste storage and management below relate to those set out in 'BS5906:2005 Waste management in buildings' and the Council's document 'Camden Planning Guidance - Design':

- All waste containers will be accessible to the waste collector with unimpeded access to each individual container;
- The waste collector will not be required to pull full containers more than 10m to the collection vehicle;
- Containers will be stored or presented within 10 metres of vehicle access with unhindered access to each individual bin;
- A minimum clear space of 150 mm will be allowed between each bin and the walls on each side;
- The waste room walls will be constructed of, or lined with, hard impervious material with a smooth finish suitable for washing down. The floor will not be less than 100 mm thick, and formed of hard impervious material with a smooth finish, and there will not be steps and projections at the entrance;
- If a gate or door is added to the enclosure or chamber it should be metal, hardwood or softwood clad with metal;
- Ideally it should have a fire resistance of 30 minutes when tested to BS 476-22. The door frame should allow clearance of 150 mm either side of the bin, when it is being pulled out for collection;
- The door frame should be rebated into the reveals of the opening. There should be a latch or clasp to hold the door open while the collection process takes place;
- If the chambers are inside the building, they should have a light. The lighting should be a sealed bulkhead fitting (housings rated to IP65 in BS EN 60529:1992);
- Drainage and hose-down facilities will be provided to allow cleansing of waste storage rooms;
- Waste collection vehicles will not be required to reverse more than 12 metres;
- Access roads for waste vehicles will have a minimum clear width of 3.5 metres, the gradient will not exceed 1:12;
- Internal bin chambers should have appropriate passive ventilators to allow air flow and prevent unpleasant odours. The ventilation must be fly, and vermin proofed and near to either the roof or floor, but away from the windows of dwellings; and
- The ground between the storage location for bulk bins and the loading position will be level, smooth, hard surfaced and provide a drop kerb should a container be required to be brought to ground level. The ground may have a maximum gradient of 1:20 if the ground slopes down towards the collection vehicle.

[1] The Council's waste officer Linda Hall-Brunton was contacted by Arup on April 18th by email and April 19th by telephone, but we did not, and have not since, received any response.

2.1.2 The London Plan (2021) waste policies

The London Plan (2021) waste related policies have the following requirements which the OWMP plan should demonstrate:

- Policy SI 7 A (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;
- Policy SI 7 A (3) ensure that there is zero biodegradable or recyclable waste to landfill by 2026;
- Policy SI 7 A (4) meet or exceed the municipal waste recycling target of 65 per cent by 2030; and
- Policy SI 7 A (6) and Policy D6 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.

2.2 Alignment with circular economy requirements

The proposed OWMP aligns with the following policies and requirements required for the circular economy statement as detailed in Table 3.

Table 3 The London Plan (2021) policies and other requirements

The London Plan (2021) policies and other requirements	
Target/ Requirements	**Demonstration/ evidence**
Policy SI 7 A (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	This is addressed in Section 7. Relevant reuse schemes have been evaluated with schemes such as Globechain and Warp it being chosen.
Policy SI 7 A (3) ensure that there is zero biodegradable or recyclable waste to landfill by 2026	Commercial waste is to be collected by a single contractor and the waste contractor appointed will be required to demonstrate that no waste is sent to landfill
Policy SI 7 A (4) meet or exceed the municipal waste recycling target of 65 per cent by 2030	Across the development the site is aiming to achieve 65% of waste to be recycled and the waste generation is shown in Section 6.1.3
Policy SI 7 A (6) and Policy D6 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	Commercial waste from 1 Museum Street and Vine Lane waste streams will be residual, paper, card, plastic, metal, glass and food waste. Due to the relatively small quantities of waste at the other commercial units and the requirements of the Local Authority in relation to residential waste, all other waste across the site will be separated into residual, mixed dry recycling (MDR) and food waste. The MDR will be sorted off-site at a mixed recycling facility. Sections 3, 4, 5, and 6 explain the waste collection process, routes, generation calculations and storage containers that demonstrate the space is adequate and accessible for all users.
GLA requirement: how operational performance will be monitored and reported	This is shown in Section 7 and 8. Guidance will be provided to tenants to encourage the correct use of waste facilities and minimise the risk of

	contamination. Data on waste collected will be collected and communicated to tenants.
GLA requirement: that measures such as consolidated, smart logistics and community-led waste minimisation schemes have been explored.	This is shown in Section 7. Relevant schemes have been evaluated with community lead circular economic reuse schemes such as Globechain and Warp it being chosen.

2.3 Municipal waste generation overview

Achieving The London Plan (2021) target of 65% of municipal waste to be reused, recycled or composted by 2030 will be promoted by the provision of a suitably sized, dedicated, and labelled space for storing/segregating recyclable waste within the scheme. These will be provided centrally and locally and will be in accordance with The London Plan (2021) and Local Authority requirements.

The use of smart waste minimisation schemes is being explored for implementation. Exploration of the schemes, Globe Chain and Community Wood have been considered for the Development. Current exploration suggests Globe Chain is most appropriate for operational waste minimisation on this scheme.

In support of the target of 65% of municipal waste to be reused, recycled or composted by 2030, an estimation of municipal waste generation and treatment has been completed. The site is estimated to reuse, recycle or compost 65% of municipal waste, and achieve the GLA targeted 65%. The detailed breakdown and calculations are in Sections 3.2.4, 4.3.4 and 6.1.1 to 6.1.4.

3. Residential waste

3.1 Assumptions

Waste generation and storage requirements have been calculated in accordance with the Local Authority's technical guidance documents, supplemented by the British Standard for Waste Management in Buildings - Code of practice (BS5906:2005). This assessment has been based on the following key assumptions:

- Recycling – 140 litres of storage space per dwelling;
- Refuse – 120 litres of storage space per dwelling;
- Food Waste – 23 litres of storage per dwelling;
- Residual waste will be stored in 1100 litre bins (and 240 litre bins where needed);
- MDR will be stored in 1100 litre bins (and 660 litre bins where needed);
- Food Waste will be stored in 140 litre bins; and
- Waste will be collected weekly by the Council's nominated Local Authority contractor.

3.2 Residential waste generation

3.2.1 High Holborn - waste generation

As shown in Table 2, the High Holborn block contains four private residential units. The amount of waste generated for the High Holborn market units is shown in Table 4.

Table 4 High Holborn residential waste generation

High Holborn – Residential waste generation per week		
Waste Stream	**Private (L)**	**Total (L)**
Residual	480	480
MDR	560	560
Food	92	92
Total	**1132**	**1132**

3.2.2 West Central Street –waste generation

As shown in Table 2, the West Central Street block contains 11 low cost rent units, eight intermediate cost units and two private residential units The amount of waste generated for the West Central Street residential waste is shown in Table 5.

Table 5 West Central Street residential waste generation

West Central Street – Residential waste generation per week				
Waste Stream	**Affordable**		**Private (L)**	**Total (L)**
	Social (L)	**Intermediate (L)**		
Residual	1320	960	240	**2520**
MDR	1540	1120	280	**2940**
Food	253	184	46	**483**
Total	**3113**	**2264**	**566**	**5943**

3.2.3 Vine lane – waste generation

As shown in Table 2, the Vine Lane block contains 19 private residential units. The amount of waste generated for the Vine Lane residential units is shown in Table 6.

Table 6 Vine Lane residential waste generation

Vine Lane – Residential waste generation per week		
Waste Stream	**Private (L)**	**Total (L)**
Residual	2280	2280
MDR	2660	2660
Food	437	437
Total	**5377**	**5377**

3.2.4 Total residential waste generation estimate

The waste generation data inputted used to complete estimation was obtained from the following locations, residential waste generation: Table 4, Table 5 and Table 6.

The sitewide residential waste generation is summarised in Table 7.

Table 7 Sitewide residential waste generation

Residential waste generation per week					
	High Holborn (L)	**West Central Street (L)**	**Vine Lane (L)**	**Total (L)**	**Total (m3)**
Residual	480	2520	2280	5280	5.28
MDR	560	2940	2660	6160	6.16
Food	92	483	437	1012	1.01
Total	1132	5943	5377	12452	12.45

3.3 Residential waste storage

There are three residential waste stores with one located in each block: High Holborn, West Central Street and Vine Lane. Located at ground floor near block cores and near lifts were relevant to minimise waste transfer distances for residents.

3.3.1 High Holborn – waste storage

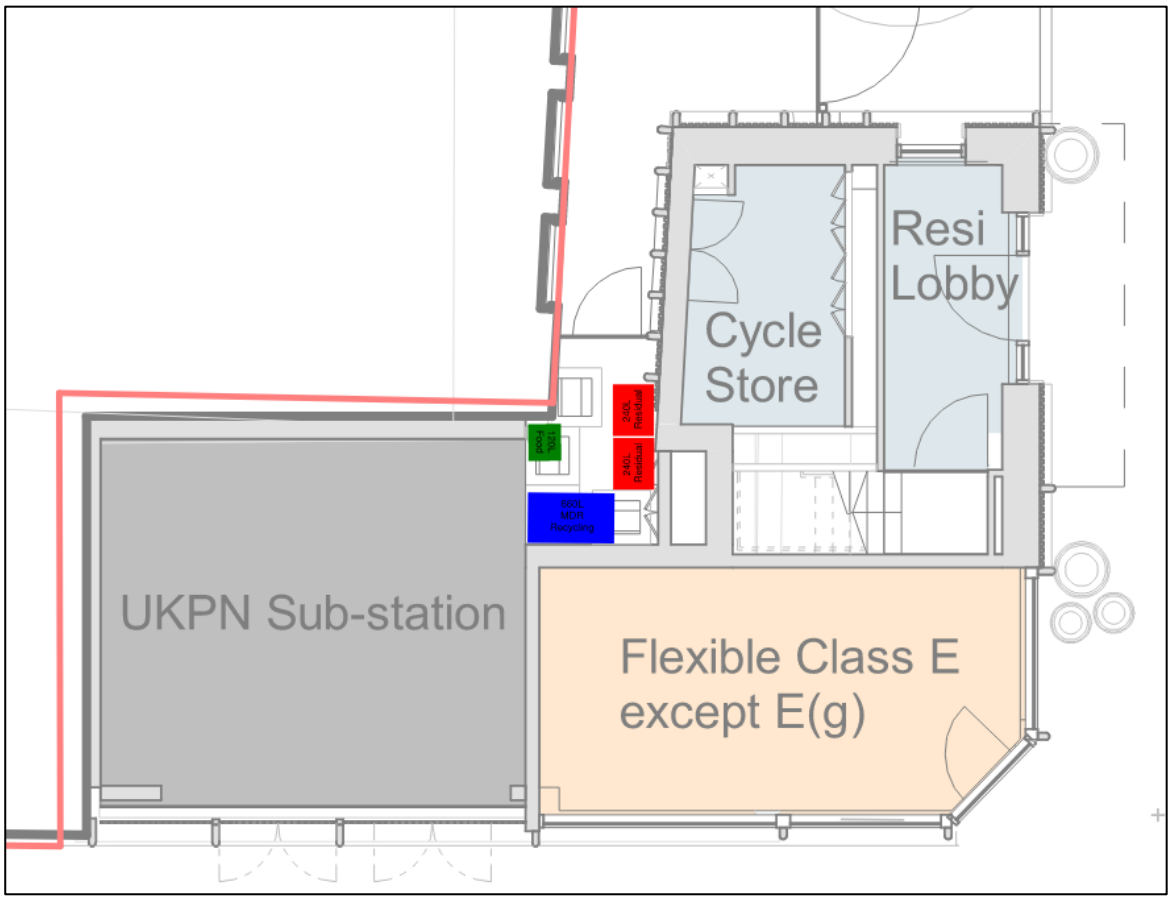
The estimated number of bins to store the waste generated for the High Holborn market units is shown in Table 8.

Table 8 High Holborn waste storage requirements

High Holborn Market Units Waste Storage Requirements			
Waste type	**Waste (L)**	**Waste Storage (rounded)**	
		Container	**Number**
Refuse	480	240 litre Eurobins	2
Recycling	560	660 litre Eurobins	1
Food waste	92	120 litre Eurobins	1
Total	1132	-	4

The layout of the residential bin store is shown in Figure 3.

Figure 3 High Holborn block residential waste storage



A waste store approximately sized 6.20m^2 has been provided and sufficiently holds the following:

- 2 No. 240 litre Eurobins for residual waste;
- 1 No. 660 litre Eurobins for MDR recycling waste;
- 1 No. 120 litre Eurobins for organic (food) waste.

The waste store will require 2.4m clear headroom and the Facilities Management (FM) team will be responsible for the wash-down and cleaning of the waste store, providing spill kits where necessary.

3.3.2 West Central Street – waste storage

The West Central Street block will have communal collections from the shared bin store provided (shared between the market residential unit tenants and the affordable residential unit tenants). The shared bin store is shown in Figure 4.

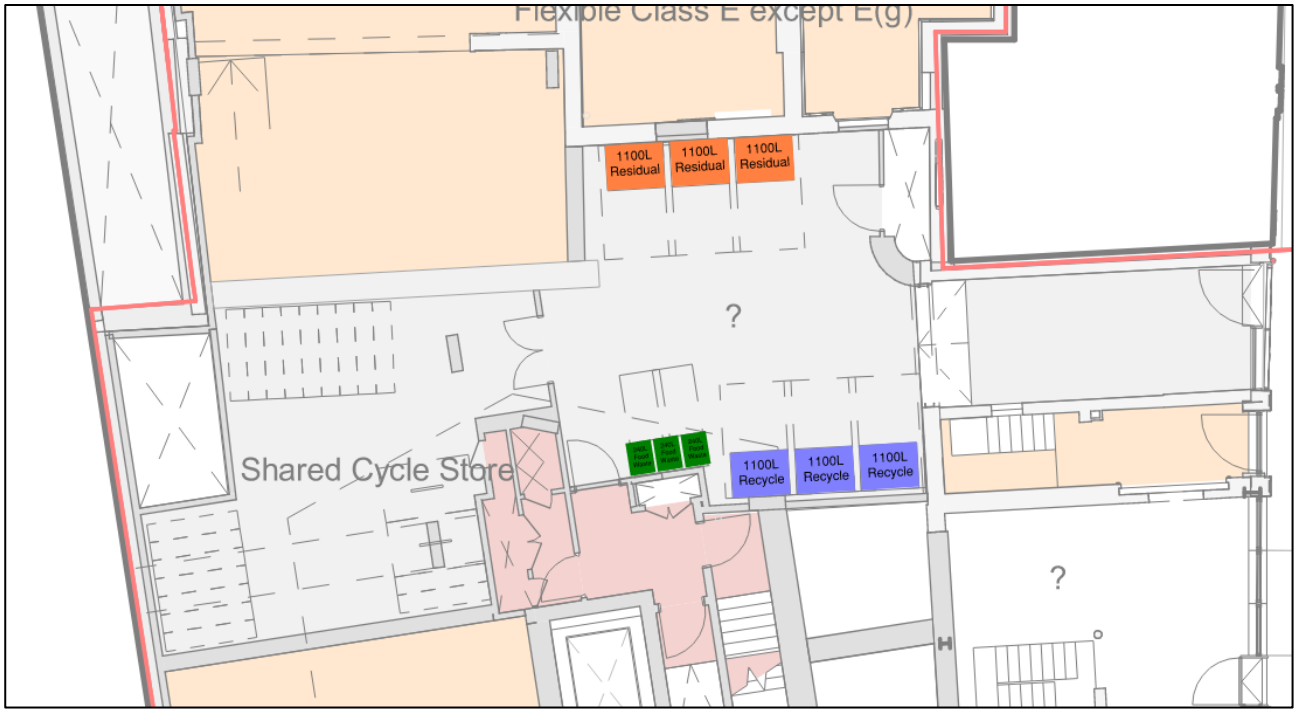
The estimated number of bins to store the waste generated for the West Central Street residential units is shown in Table 9.

Table 9 West Central Street residential waste storage requirements

West Central Street Residential Waste Storage Requirements			
Waste type	**Waste (L)**	**Waste Storage (rounded)**	
		Container	**Number**
Refuse	2520	1,100 litre Eurobins	3
Recycling	2940	1,100 litre Eurobins	3
Food waste	483	240 litre Eurobins	3
Total	5943	-	9

The layout of the shared residential waste store is shown in Figure 4.

Figure 4 West Central Street residential waste store



A waste store approximately sized 57.35m^2 has been provided and sufficiently holds the following:

- 3 No. 1,100 litre Eurobins for residual waste;
- 3 No. 1,100 litre Eurobins for MDR recycling waste;
- 3 No. 240 litre Eurobins for organic (food) waste.

The waste store will provide 2.4m clear headroom and the Facilities Management (FM) team will be responsible for the wash-down and cleaning of the waste store, providing spill kits where necessary.

3.3.3 Vine Lane - waste storage

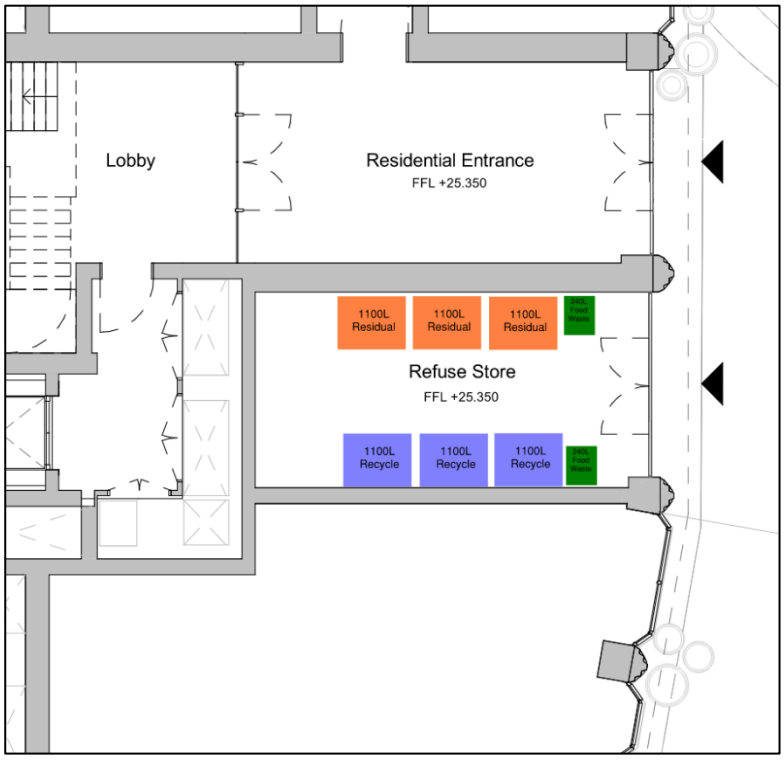
The estimated number of bins to store the waste generated for the Vine Lane residential units is shown in Table 10.

Table 10 Vine Lane residential waste storage requirements

Vine Lane Residential Waste Storage Requirements			
Waste type	**Waste (L)**	**Waste Storage (rounded)**	
		Container	**Number**
Refuse	2,280	1,100 litre Eurobins	3
Recycling	2,660	1,100 litre Eurobins	3
Food waste	437	240 litre wheelie bins	2
Total	5,377	-	8

The layout of the Vine Lane residential waste store is shown in Figure 5.

Figure 5 Vine Lane residential bin store



A waste store approximately sized 27.52m^2 has been provided and sufficiently holds the following:

- 3 No. 1,100 litre Eurobins for residual waste;
- 3 No. 1,100 litre Eurobins for MDR recycling waste;
- 2 No. 240 litre Eurobins for organic (food) waste.

The waste store will require 2.4m clear headroom and the Facilities Management (FM) team will be responsible for the wash-down and cleaning of the waste store, providing spill kits where necessary.

3.3.4 Bulky waste and in-unit storage

Refuse and recycling

A bin storage area is identified within the kitchen of each residential unit for internal temporary storage of refuse and recycling.

Bulky / non-standard waste items

Due to the constrained nature of the site, it is not possible to provide a residential bulky waste store for residents.

The bulky waste collection protocols are detailed as follows. All residents will be made formally aware of the bulky waste collection protocols by the building management team prior to the beginning of their tenancy to ensure non-standard household waste items are managed correctly. Additionally, schemes such as Globechain and Warp It as detailed in Section 7.6 will be implemented to encourage reuse of bulky waste within the site between residents, in line with circular economic principals.

The majority of larger or non-standard household waste items such as bulky waste, builders waste, chemicals (i.e. paints) should be taken by the resident to the Reuse and Recycling Centre located at Regis Road, Kentish Town NW5 3EW (refer to https://www.camden.gov.uk/reuse-and-recycling-centre) or other appropriate location.

Typically, suppliers will remove old items when delivering new goods. Other large or bulky items not suitable for car travel will be temporarily stored in the waste room to be collected by the Council at the request of the residents. Information on booking bulky waste collection is available at the following website: https://www.camden.gov.uk/bulky-waste-collection.

No bulky items shall be presented or stored outside the demise of the site unless being immediately collected. Furthermore, residents shall report any observance of fly-tipping activity within the immediate area of the site to the appropriate authority (refer to https://www.camden.gov.uk/fly-tipping-street-obstructions).

3.4 Residential Waste Strategy

Residents are required to manually dispose of bagged residual and dry mixed recyclable waste at their respective block's residential waste store. Residents will have convenient access to the waste stores which are located at ground floor level of the development.

A high-level summary of the residential waste process is as follows: waste will be taken by the residents to their respective block's residential waste store using the lifts and internal service corridors. Immediately prior to collection Council operatives will collect the bins directly from the store and transfer them to the collection vehicle which will stop on the highway to carry out this collection.

Residential waste will be collected weekly by the nominated Local Authority contractor. The distance travelled by the operatives from the waste store to the waste collection vehicle must not exceed 10m therefore the onsite FM team will be required to transfer the bins directly from Vine Lane and High Holborn residential bin stores to their refuse collection vehicles. Bins will then be returned to the relevant waste stores by the FM team once they have been emptied.

3.4.1 High Holborn - waste process and collection

The High Holborn residential waste process and collection will operate as follows: residents will transfer their waste from their units to the allocated waste store and deposit it within the correct allocated waste stream bins (Residual, MDR, food waste). Immediately prior to collection the FM team transfer the bins to the nearby RCV location for collection by the Council waste operatives. Once empty the FM team will transfer the bins back to the store. Figure 6 shows this process of the internal waste disposal route from the upper floors to the residential waste store at ground floor level.

Figure 6 High Holborn ground floor residential waste collection

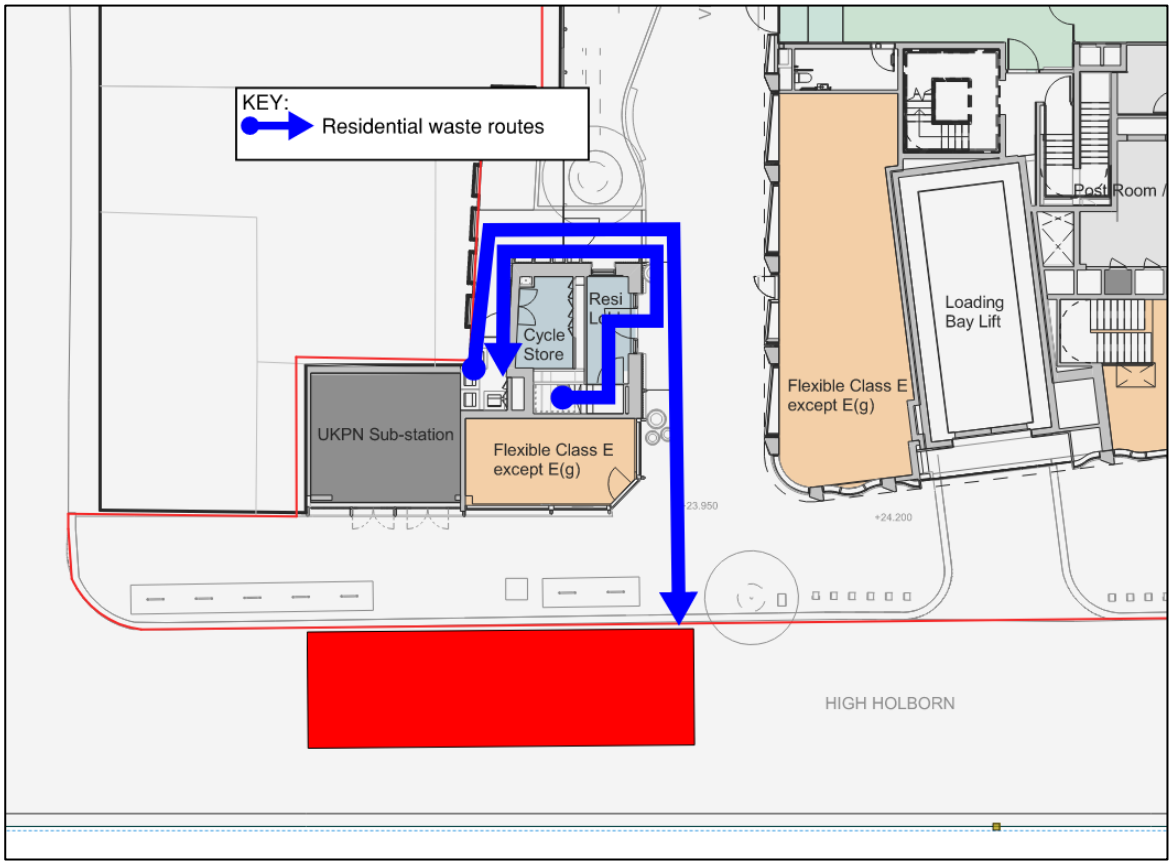
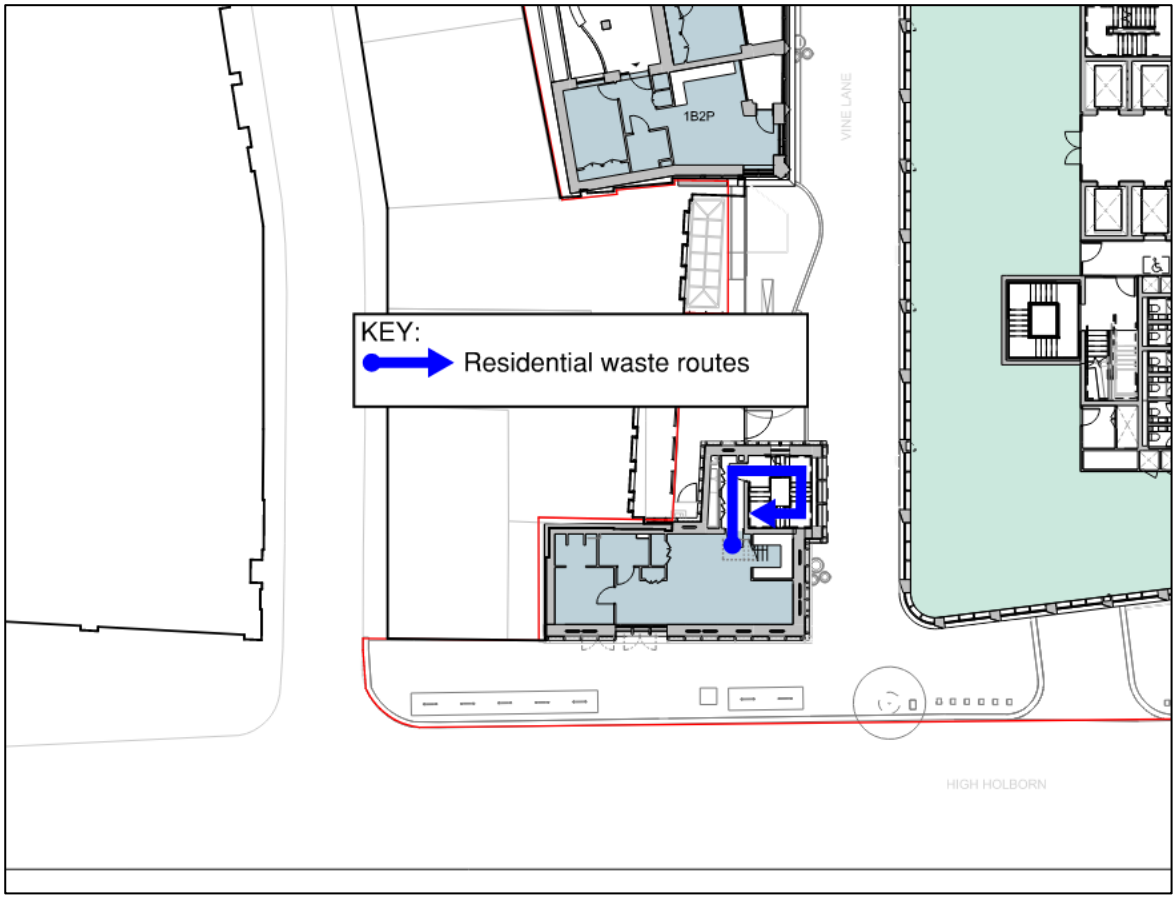


Figure 7 High Holborn upper floors residential waste routes



3.4.2 West Central Street - waste process and collection

West Central Street residential waste process and collection will operate as follows: residents will transfer their waste from their units to the allocated waste store via the provided lift and deposit it within the correct allocated waste stream bins (Residual, MDR, food waste).

Local Authority operatives will collect the bins directly from the store and transfer them to the collection vehicle. Figure 8 and Figure 9 show this process of the internal waste disposal route from the upper floors to the residential waste store at ground floor level. Residents will use the lifts to access the ground floor level.

In some instances, the distance for residents transferring bins to their waste store exceeds the 30m required maximum as per Camden Planning Guidance – Design, 2021. This additional distance is unavoidable due to there being various listed buildings within the site so there are limited options for bin store locations.

A summary of explored potential options to avoid the 30m distance being exceeded, before justifying it as necessary, is detailed below:

Option 1: Locating the bin store in the basement

- This solution was not feasible due to being unable to add a goods lift into the relevant areas of site to get the bins up to grade

Option 2: Adding bin stores to the façade along New Oxford Street

- The solution was deemed not possible due to the listed building status of the buildings in this location.

Option 3: Utilising the adjacent street to put bagged waste immediately prior to collection.

- This solution is indicated by Camden policy to be only acceptable in a last resort situation. The site has a secure residential bin store therefore it was deemed overall preferable to utilise it, despite the longer distances for residents, as opposed to the last resort of a street bagged waste strategy.

Figure 8 West Central Street upper floors residential waste routes

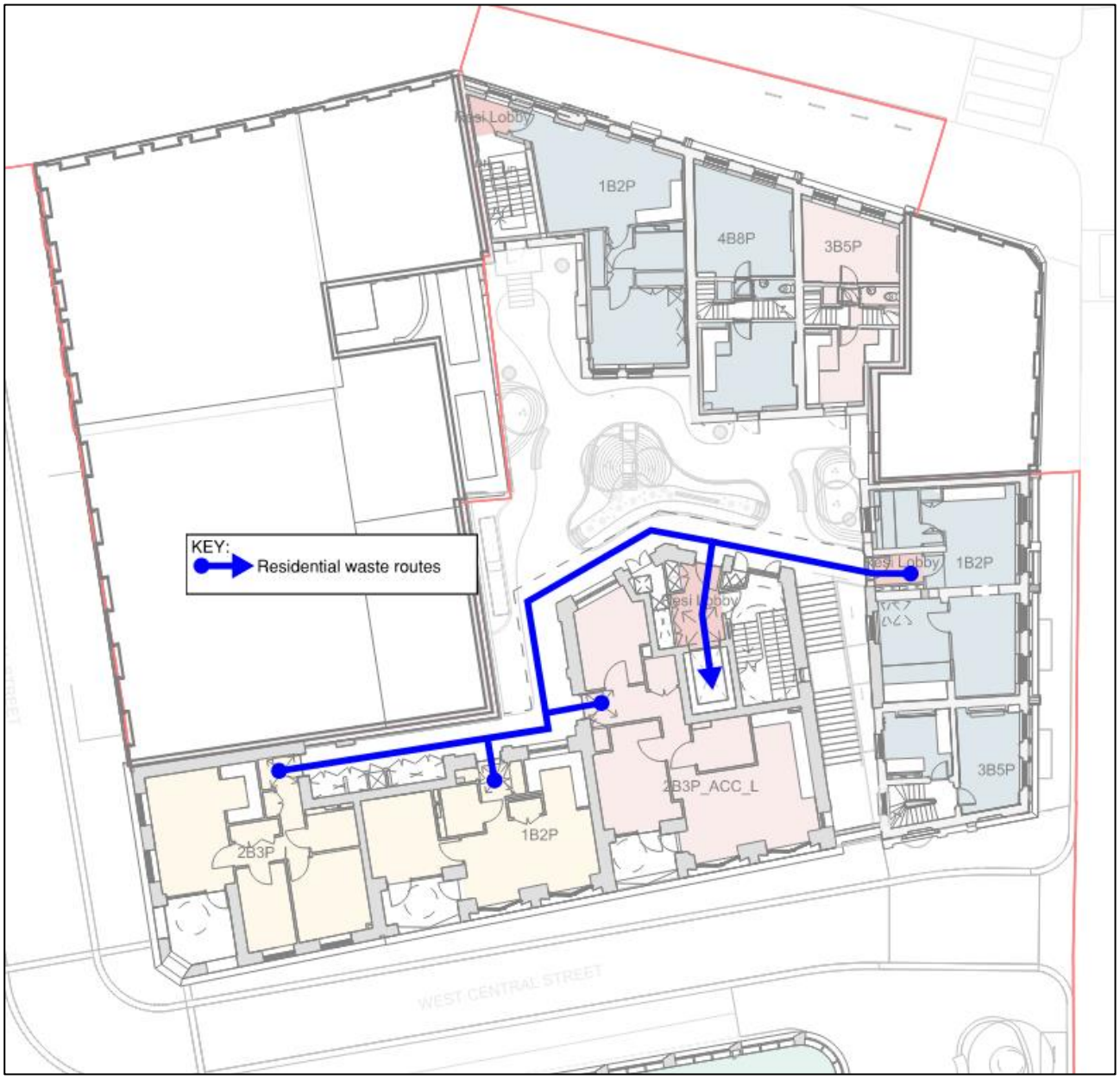
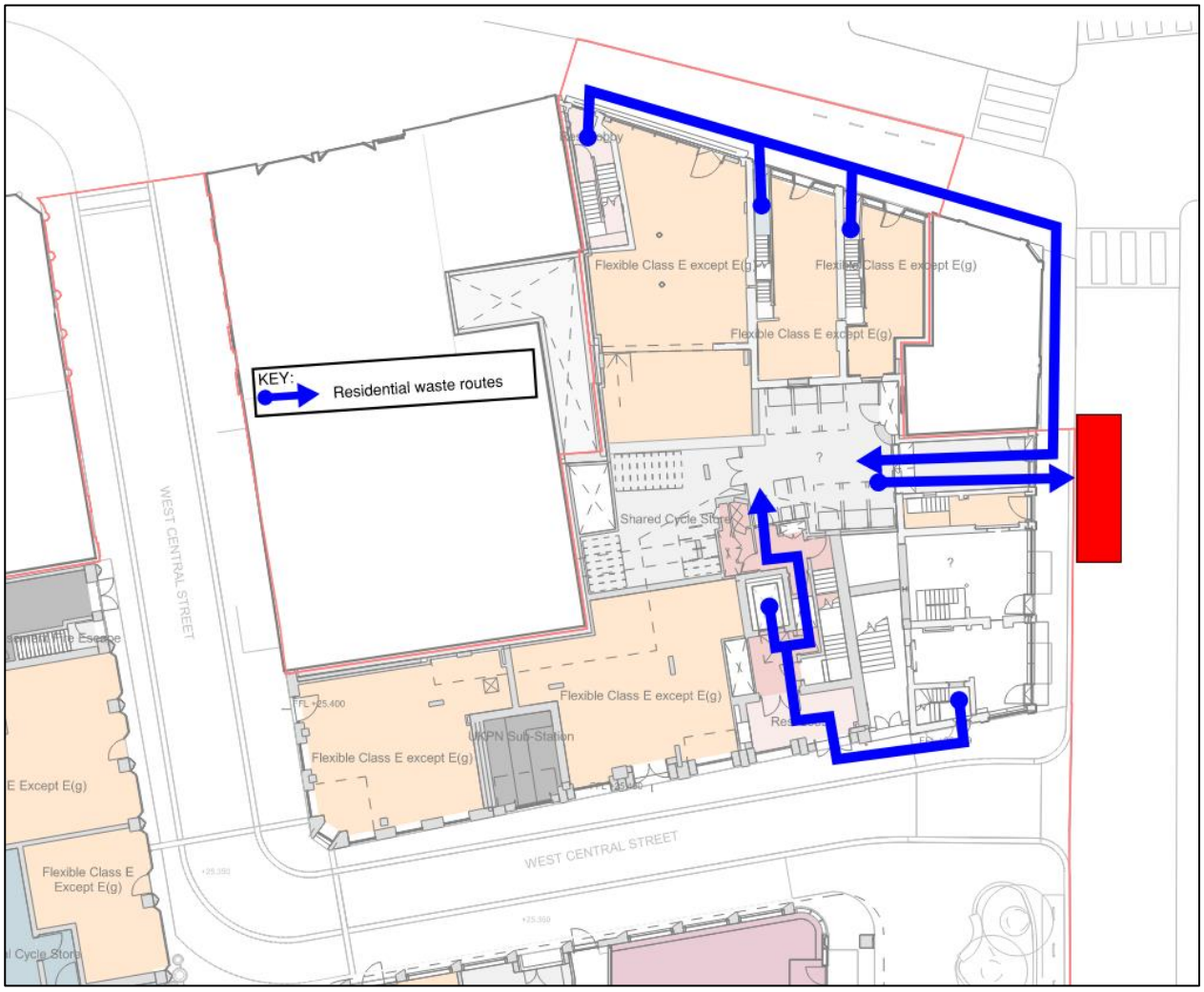


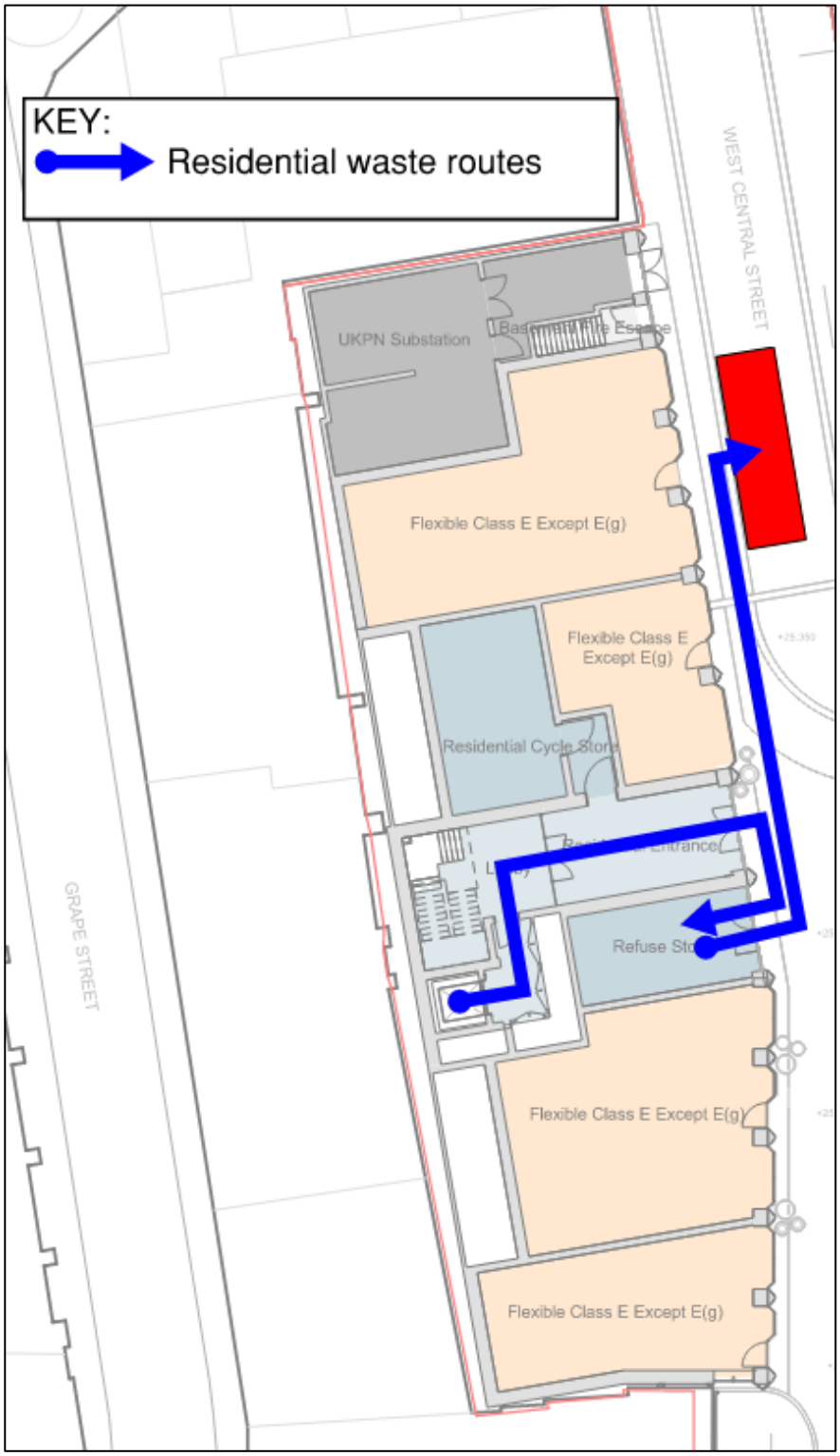
Figure 9 West Central Street residential waste collection



3.4.3 Vine Lane – waste process and collection

The Vine Lane residential waste process and collection will operate as follows. Residents will transfer their waste from their units to the allocated waste store via the provided lift and deposit it within the correct allocated waste stream bins (Residual, MDR, food waste). Immediately prior to collection the FM team transfer the bins to the nearby RCV location for collection by the Council waste operatives. Once empty the FM team will transfer the bins back to the store. Figure 10 shows this process of the internal waste disposal route from the upper floors to the residential waste store at ground floor level.

Figure 10 Vine Lane residential waste collection



4. Commercial waste

4.1 Assumptions

Waste generation and storage requirements for commercial waste have been calculated in accordance with Camden Council guidance documents, supplemented by the British Standard for Waste Management in Buildings - Code of practice (BS5906:2005). This assessment has been based on the following key assumptions:

- Waste from the retail units in West Central Street block will be stored within and collected directly from the retail units;
- Waste from the retail unit in the High Holborn block will be stored within and collected directly from the retail unit;
- Waste from the commercial units (offices and retail) in the Museum Street block and the retail units in the Vine Lane block will be stored in and collected from a central commercial waste store;
- One employee per 8m^2 NIA of office floor space (80% occupancy), with one employee working five days a week, generating 50 litres of waste;
- Commercial waste rooms have been sized for two days of waste storage – collections to be undertaken daily;
- Commercial waste collections will be undertaken by a nominated waste contractor using a waste collection vehicle up to 8 metres in length;
- Retail units are assumed to be 50% A1 Retail (non-restaurant/café) and 50% A3 retail (restaurant/café)
- The following splits have been applied:
  - Retail (A1): 12 % residual and 88% recyclable (27% paper, 40% cardboard, 13% plastic, 0% aluminium, 3% glass and 5% organic);
  - Retail (A3): 60% residual and 40% recyclable (5% cardboard, 3% plastic, 3% aluminium, 5% glass and 24% organic); and
  - Office (B1): 20% residual and 80% recyclable (65% paper, 7% cardboard, 6% plastic and 2% aluminium).
- In the main waste store:
  - Cardboard, paper and plastics will be processed using a baler producing 300kg bales. One 300kg bale can be stored on a 1,000mm x 1,200mm pallet;
  - Pre-baled cardboard will be stored in 660 litre Eurobins;
  - Glass waste and aluminium will be stored in 360 litre Eurobins; and
  - Food waste will be stored in 240 litre Eurobins.

4.2 Commercial waste streams and processes

For commercial waste the following process will be followed for waste streams.

4.2.1 General waste

Non-recoverable waste streams will be colour coded and clearly labelled to help waste producers and the FM team responsible for transferring the waste to the waste room to ensure that they place waste in the correct storage units.

Any waste related signage must use the iconography and style developed by the 'Waste and Resources Programme' (WRAP) for continuity with any Local Authority communications.

4.2.2 Dry recyclables

Dry recyclables will be segregated from other waste. Bins and bags will be colour coded and clearly labelled to help waste producers and the FM team responsible for transferring the waste to the waste room to ensure all recyclable waste is placed in the correct waste storage units.

Any waste related signage must use the iconography and style developed by WRAP for continuity with any Local Authority communications.

4.2.3 Specialist waste stream disposal

4.2.3.1 Waste Electrical and Electronic Equipment (WEEE)

WEEE and other specialist waste are to be stored, alongside bulky waste, in an allocated area and will be collected by the producer was per the Waste Electrical and Electronic Equipment Directive is the European Community Directive 2012/19/EU.

4.2.3.2 Confidential Paper Waste

Confidential waste must be collected in secure bins located around the buildings. To be fully compliant with the Data Protection Act, a written contract with a certified confidential waste company is required. This waste stream will be collected in situ by a specialist contractor and shredded and disposed of off-site.

4.2.3.3 Batteries

Batteries will be collected in pots (separate for lithium and alkaline types) located by the photocopiers, which will be periodically collected by the FM team for storage in the general waste store prior to collection by a waste contractor.

The terminals of lithium batteries will require covering with an insulating, non-conductive material e.g., using electrical tape, to prevent the risk of fire. The FM team will ensure this is completed, though staff disposing of the batteries will be expected to complete this where possible.

4.2.3.4 Photocopier cartridges

Photocopier and printer cartridges will be collected in boxes located by the photocopiers, which will be periodically collected by the FM team for storage prior to collection by a waste contractor.

4.2.3.5 LED Fluorescent Tubes and Light Bulbs

A specific request should be sent to the FM team for the collection of fluorescent tubes and light bulb waste. Upon collection, the FM team will take it to the general waste store prior to collection by a waste contractor. This waste will then be stored in the same area of the waste room as the WEE and bulky waste.

Waste streams such as florescent tubes and batteries will be required to be collected by a licensed specialist contractor as they are designated as hazardous waste. The FM team will be required to register the site for a Hazardous Waste Licence to permit this waste to be collected safely and reprocessed.

4.3 Commercial waste generation

The development includes 19 retail units and office areas located on and between the first and 18th floor, the office units are located within the upper levels of the 1 Museum Street block. The retail units are located as follows,

- Five at 1 Museum Street ground floor level (1 unit with stairs connecting to 1 B1 level unit)

- Five in West Central Street ground floor (2 units featuring stairs connecting to 2 B1 level units)
    - 1 in the West Central Street B1 level accessed from ground floor level.
- Five at Vine Lane block ground floor level
- One at High Holborn block ground floor level

4.3.1 1 Museum Street and Vine Lane blocks - waste generation

Based on the area schedule in Table 1, the estimated two-day waste generation for the commercial users at the Museum Street and Vine Lane blocks is 53.14m³ as shown in Table 11.

Table 11 Two-day commercial Museum Street and Vine Lane waste generation

Museum Street and Vine Lane Commercial Two-Day Waste Generation (m³)				
Waste stream	**50% Class E (Non-Food Retail)**	**50% Class E (Food Retail)**	**Class E(g)(i) (Office/Business)**	**Total (m³)**
Residual	0.14	2.31	9.63	12.08
Paper	0.31	0.00	31.29	31.60
Cardboard	0.46	0.19	3.37	4.02
Plastic	0.15	0.12	2.89	3.15
Aluminium	0.00	0.12	0.96	1.08
Glass	0.03	0.19	0.00	0.23
Food Waste	0.06	0.92	0.00	0.98
Total	**1.16**	**3.85**	**48.13**	**53.14**

4.3.2 West Central Street - waste generation

Based on the area schedule in Table 1, the estimated two-day waste generation for the commercial tenants in the West Central Street block is 5.10m³ as shown in Table 12.

Table 12 Two-day West Central Street commercial waste generation

Commercial West Central Street Two-Day Waste Generation (m³)			
Waste stream	**50% Class E (Non-Food Retail)**	**50% Class E (Food Retail)**	**Total (m³)**
Residual	0.14	2.35	2.49
Mixed Dry Recycling (Paper, Card, Plastic, Aluminium)	0.94	0.43	1.37
Glass	0.04	0.20	0.24
Food Waste	0.06	0.94	1.00
Total	1.18	3.92	5.10

4.3.3 High Holborn block - waste generation

Based on the area schedule in Table 1, the estimated two-day waste generation for the commercial tenant in the High Holborn block is 0.17m³ as shown in Table 13.

Table 13 Two-day High Holborn commercial waste generation

Commercial West Central Street Two-Day Waste Generation (m^3)			
Waste stream	**50% Class E (Non-Food Retail)**	**50% Class E (Food Retail)**	**Total (m^3)**
Residual	0.00	0.08	0.08
Mixed Dry Recycling (Paper, Card, Plastic, Aluminium)	0.04	0.01	0.05
Glass	0.00	0.01	0.01
Food Waste	0.00	0.03	0.03
Total	0.04	0.13	0.17

4.3.4 Commercial total waste generation

The waste generation data inputted used to complete estimation was obtained from the following locations Table 11, Table 12 and Table 13.

The sitewide commercial waste generation is summarised in Table 14.

Table 14 Sitewide commercial waste generation

Commercial waste generation (m^3)				
Waste stream	**High Holborn (m^3)**	**West Central Street (m^3)**	**1 Museum Street and Vine Lane (m^3)**	**Total (m^3)**
Residual	0.08	2.49	12.08	14.65
Paper	0.01	0.34	31.60	31.96
Cardboard	0.01	0.34	4.02	4.38
Plastic	0.01	0.34	3.15	3.51
Aluminium	0.01	0.34	1.08	1.44
Glass	0.01	0.24	0.23	0.48
Food Waste	0.03	1.00	0.98	2.01
Total	0.17	5.10	53.14	58.41

4.4 Commercial waste storage

The section below sets out the storage facilities required to accommodate two days' worth of waste. Retail units within West Central Street and High Holborn blocks will store their waste within their unit demise. The commercial units located within 1 Museum Street and Vine Lane have been provided with a dedicated shared commercial bin store at B2 level as shown in Figure 11.

4.4.1 1 Museum Street and Vine Lane blocks - waste storage

The 1 Museum Street and Vine Lane blocks require a waste store containing the equipment shown in Table 15.

Table 15 Commercial Museum Street and Vine Lane waste storage equipment

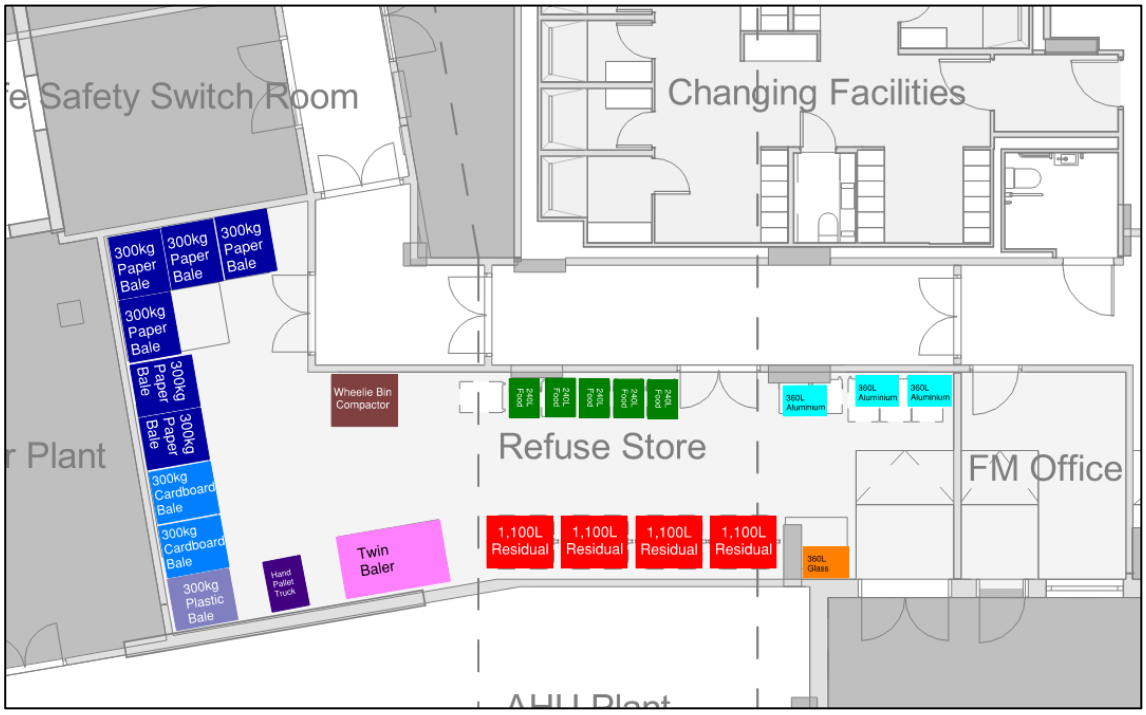
Museum Street and Vine Lane Commercial Waste Storage Equipment			
Waste type	**Compacted Waste (m^3)**	**Waste Container**	**Number Required**
-	-	Baler/Compactor	1
-	-	Wheelie Bin Compactor	1
Residual	4.03	1,100 Litre Bin	4
Paper	15.80	300kg Bale	6
Cardboard	1.34	300kg Bale	2
Plastic	1.05	300kg Bale	1
Aluminium	1.08	360 litre Bin	3
Glass	0.23	360 litre Bin	1
Food Waste	0.98	240 litre Bin	5
Total	**24.51**	**-**	**22**

A waste store sized at 50.70m^2 has been provided to hold the following:

- 1 No. Twin cardboard baler;
- 1 No. Wheelie Bin compactor;
- 1 No. Hand pallet truck;
- 4 No. 1,100 litre Eurobins for residual waste;
- 6 No. 300kg bale for paper waste
- 2 No. 300kg bale for cardboard waste
- 1 No. 300kg bale for plastic waste
- 3 No. 360 litre Eurobins for aluminium;
- 1 No. 360 litre Eurobins for glass; and
- 5 No. 240 litre Eurobins for organic (food) waste.

The waste store layout is shown in Figure 11.

Figure 11 Museum Street and Vine Lane waste store layout



4.4.2 West Central Street – waste storage

The West Central Street waste will be stored within the unit's demise and taken in bins or bags to the kerb outside once a day immediately prior to collection. This procedure and potential vehicle stopping locations on the highway are shown in Section 4.5.2.

4.4.3 High Holborn block

This waste will be stored within the unit and taken in bins or bags to the kerb outside once a day immediately prior to collection. This procedure and the potential vehicle stopping location on the highway is shown in Section 4.5.3.

4.5 Commercial waste strategy

The FM team will be responsible for communicating with commercial tenants on the requirements for transferring waste and recycling to the storage facility, including the requirements for bulky and non-standard waste. The waste store and individual zones within the store shall be clearly labelled at all times. Commercial tenants must be aware of and follow their responsibilities under the waste duty of care: Code of Practice (2016) i.e.:

- Waste collections will be undertaken by a nominated waste contractor. Collections are usually out of hours between, 05:00 and 08:00 and after closing, between 19:00 and 22:00.
- As it is proposed to present full waste bins, issues associated with fly tipping will be minimised as members of the public will not have general access to the waste bins.
- In the event of a missed collection, full waste bins will be returned to the waste store. Storage has been provided to accommodate two days' waste generation, therefore, missing a single waste collection will not have a detrimental impact on waste storage.

4.5.1 1 Museum Street and Vine Lane blocks - waste process and collection

The site FM team will be responsible for managing communal services such as waste. Commercial tenant's staff will have the responsibility to transfer their waste from their unit demise to the B2 waste store.

The commercial units located within 1 Museum Street and Vine Lane have been provided with a dedicated shared commercial bin store at B2 level as shown in Figure 11. At the end of each day the commercial unit's

respective staff will transfer the waste down to the B2 level commercial waste store and deposit the waste in the appropriate stream's waste container.

The FM staff will be responsible for operating the baler and in-bin compactor. Immediately prior to collection the bins or pallets will be moved directly from the store to near the collection vehicle by the FM team and collected in the refuse collection vehicle by the Council waste operatives. The collection vehicle will be parked correctly in loading bay which is accessed via the vehicle lift connected to High Holborn. The floor surface between the waste store and the collection point will be a suitable material to drag bins across. The described process is shown in Figure 12 and Figure 13. Once empty the bins will be returned to the waste store by the FM team.

Figure 12 Museum Street and Vine Lane waste collection procedure ground floor

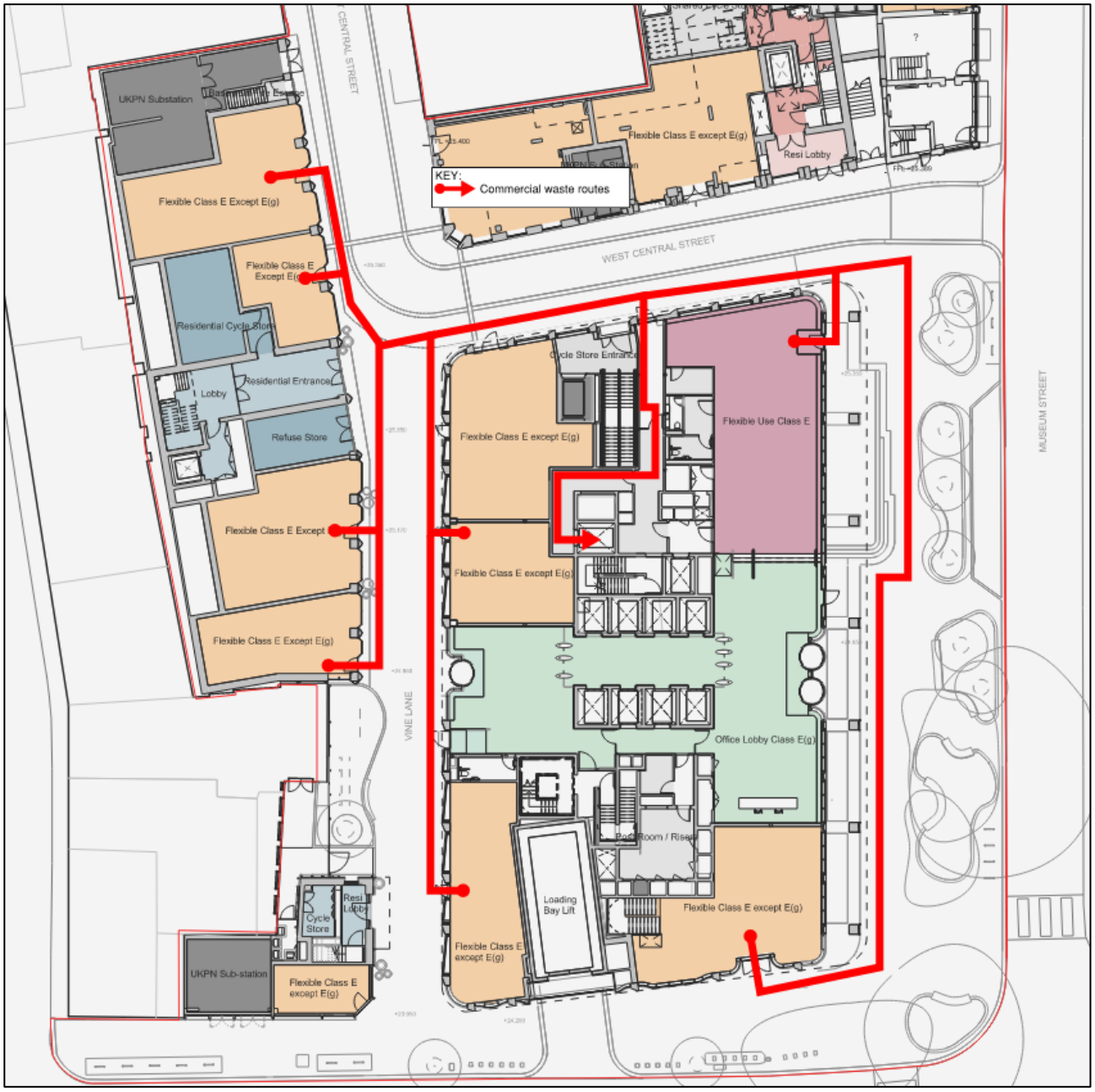
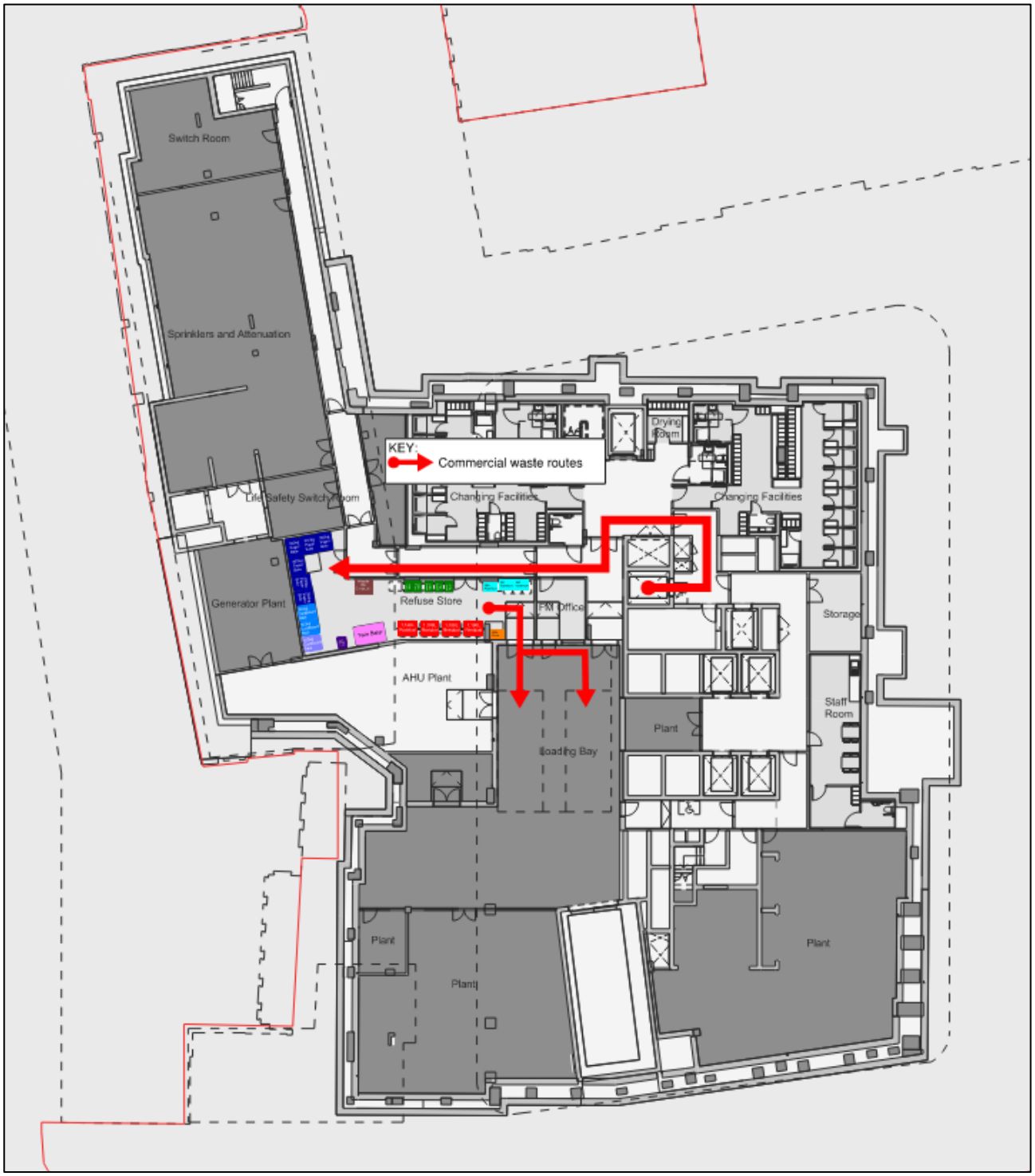


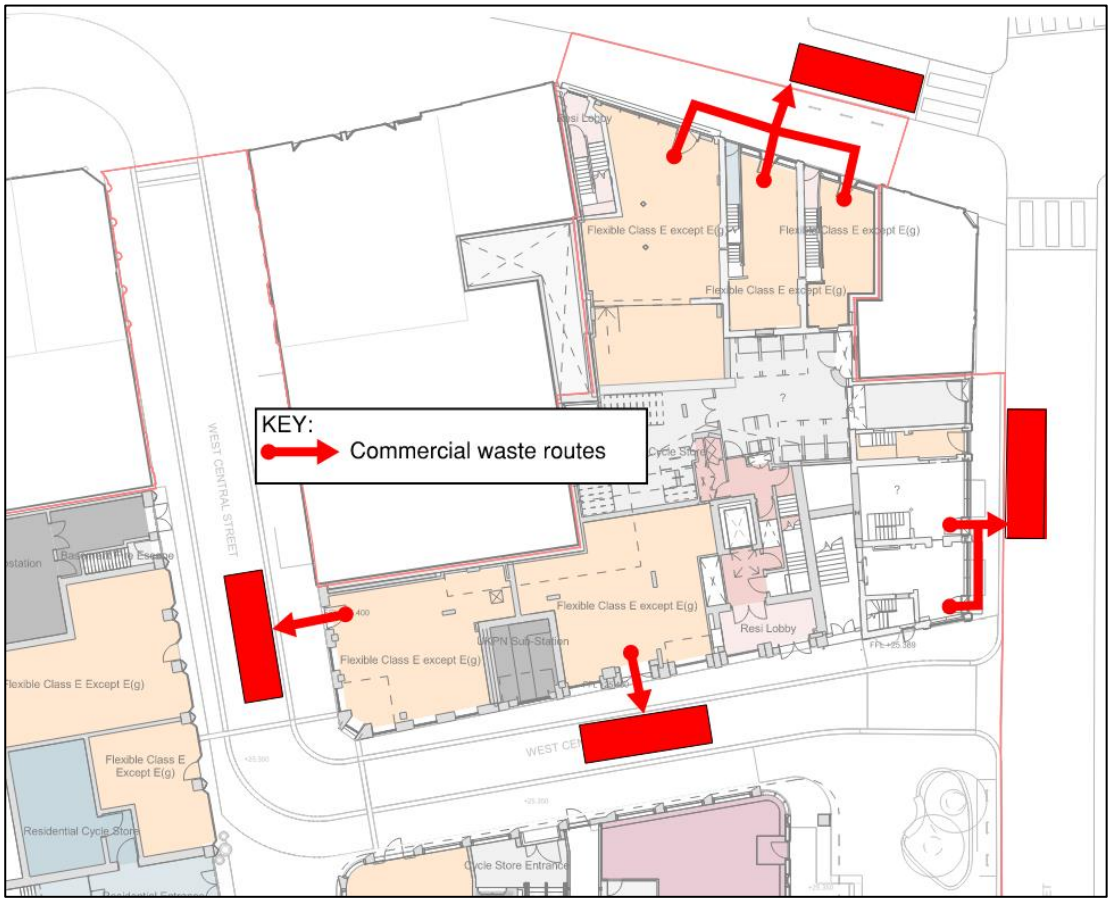
Figure 13 Museum Street and Vine Lane waste collection procedure B2



4.5.2 West Central street - waste process and collection

This waste will be stored within the units and taken in bins or bags to the kerb outside once a day immediately prior to collection by the respective commercial units' staff. This procedure and potential vehicle stopping locations on the highway are shown in Figure 14. Due to the narrowness of West Central Street, an 8-metre-long waste collection vehicle will be used for these collections.

Figure 14 West Central Street commercial waste collection procedure



4.5.3 High Holborn – waste process and collection

This waste will be stored within the unit and taken in bins or bags to the kerb outside once a day immediately prior to collection by the respective commercial unit's staff. This procedure and the potential vehicle stopping location on the highway is shown in Figure 15.

Figure 15 High Holborn commercial waste collection procedure

5. Other waste

5.1 General public waste

Waste will be collected from any public bins provided within the site by the FM team. Public areas such as seating, stairways and pathways will be monitored throughout the day and cleaned by the FM team.

5.2 Litter picking

Litter picking will be conducted by the FM team throughout the day to allow for both a safe and clean environment.

5.3 External/surrounding areas

The cleaning of external areas will follow the programme set out in .

Table 16 Cleaning schedule

Activity	Frequency
Clear debris, litter from entrances and public areas	Daily
Empty waste bins	Daily
Clear leaves from all entrances and fire exits	Weekly
Clean and wash down external signs	Weekly

5.4 Cleaning and Maintenance

The FM team will be responsible for the cleaning (including spillages) of the following:

- Commercial and residential refuse stores; and
- Waste storage containers within these refuse stores.

Waste stores will be washed down and refuse bins cleaned by FM team a minimum of once per quarter.

6. Municipal waste summary

The calculated annual waste tonnage has been calculated with the following assumptions:

- Residential: 7-day waste working week
- Commercial: 5-day waste working week
- The tonnage per annum has been calculated utilising WRAP conversion rates.

6.1.1 Residential municipal waste

Table 17 uses data from Table 7 to detail the sitewide residential municipal waste 'reuse/ recycle/ compost' ('RRC') percentage. Due to being required to follow Local Authority guidance on to residential waste generation it is not possible to achieve a residential RRC percentage of 65%; the site's residential RRC percentage is 56%.

However, actions can be taken to encourage residents to recycle more and therefore have residential municipal waste reach the target of 65%. Methods to achieve this could be increased signage such as the signage detailed in Section 7.2, frequent communications on what is recyclable, waste audits conducted by the FM team and including recycling requirements in the terms of leases and tenant handbooks.

Table 17 Sitewide residential waste tonnage and waste reuse, recycle, compost percentage

Sitewide residential waste reuse, recycle, compost percentage							
Waste stream	**Total per week (7-day week) (m^3)**	**Total per year (52 weeks) (m^3)**	**WRAP conversion rates (tonnes/m^3)**	**Tonnes per annum**	**Recyclable?**	**% of total waste**	**Total reuse/ recycle/ compost %**
Residual	5.28	274.56	0.21	57.6576	No	44%	-
MDR	6.16	320.32	0.2	64.064	Yes	48%	56%
Food Waste	1.01	52.62	0.2	10.5248	Yes	8%	
Total	12.45	647.50	-	132.2464		100%	56%

6.1.2 Commercial municipal waste

Table 18 uses data from Table 14 to detail the sitewide commercial municipal waste RRC percentage. The site's commercial RRC percentage is 74% which is above the GLA CES 2030 target of 65%.

Table 18 Sitewide commercial waste reuse, recycle, compost percentage

Sitewide commercial waste reuse, recycle, compost percentage								
Waste stream	**Waste per 2 days (m^3)**	**Total per week (5-day week) (m^3)**	**Total per year (52 weeks) (m^3)**	**WRAP conversion rates (tonnes/m^3)**	**Tonnes per annum**	**Recyclable?**	**% of total waste**	**Total reuse/ recycle/ compost %**
Residual	14.65	36.63	1904.50	0.21	399.945	No	26%	-
Paper	31.96	79.89	4154.15	0.2	830.83	Yes	53%	74%
Cardboard	4.38	10.94	568.75	0.2	113.75	Yes	7%	
Plastic	3.51	8.76	455.65	0.22	100.243	Yes	6%	
Aluminium	1.44	3.59	186.55	0.22	41.041	Yes	3%	
Glass	0.48	1.20	62.40	0.33	20.592	Yes	1%	
Food Waste	2.01	5.03	261.30	0.2	52.26	Yes	3%	
Total	58.41	146.03	7593.30	-	1558.661		100%	74%

6.1.3 Total municipal waste

Table 19 combines the results concerning residential and commercial municipal waste amounts from Table 17 and Table 18. The overall sitewide RRC percentage is 65% which successfully meets the 2030 target. Despite the sitewide RRC percentage meeting the target, as mentioned above it is not possible to achieve a residential RRC percentage of 65% due to being required to follow Local Authority guidance on to residential waste generation. Therefore, actions such as increased signage, frequent communications on what is recyclable, waste audits conducted by the FM team and including recycling requirements in the terms of leases and tenant handbooks will be completed in order to encourage residents to reach the 65% target.

Table 19 Overall sitewide reuse, recycle, compost percentage

Overall sitewide reuse, recycle, compost percentage			
	Residential total	**Commercial waste**	**Total**
Non-reusable/ non- recyclable/ non-compostable	44%	26%	35%
Reusable/ recyclable, compostable	56%	74%	65%
Total	100%	100%	100%

Not included within the estimate is bulky waste such as furniture, white goods etc. residents will be encouraged to either reuse or mend them through utilisation of schemes such as Globechain and Warp It as detailed in Section 7.6.

6.1.4 Municipal waste management routes

The GLA CES requires an estimate of the waste management routes of all municipal waste within the site to be completed. However, residential waste is managed by the Local Authority and so is outside of the control of this report. Therefore, the estimate of municipal waste management routes below related exclusively to commercial waste. The proposed commercial municipal waste management estimate is below:

Residual waste will be treating with circular economic values and therefore not be sent to landfill, instead all residual waste will be taken to a local offsite to a waste-to-energy plant, such as Edmonton EcoPark.

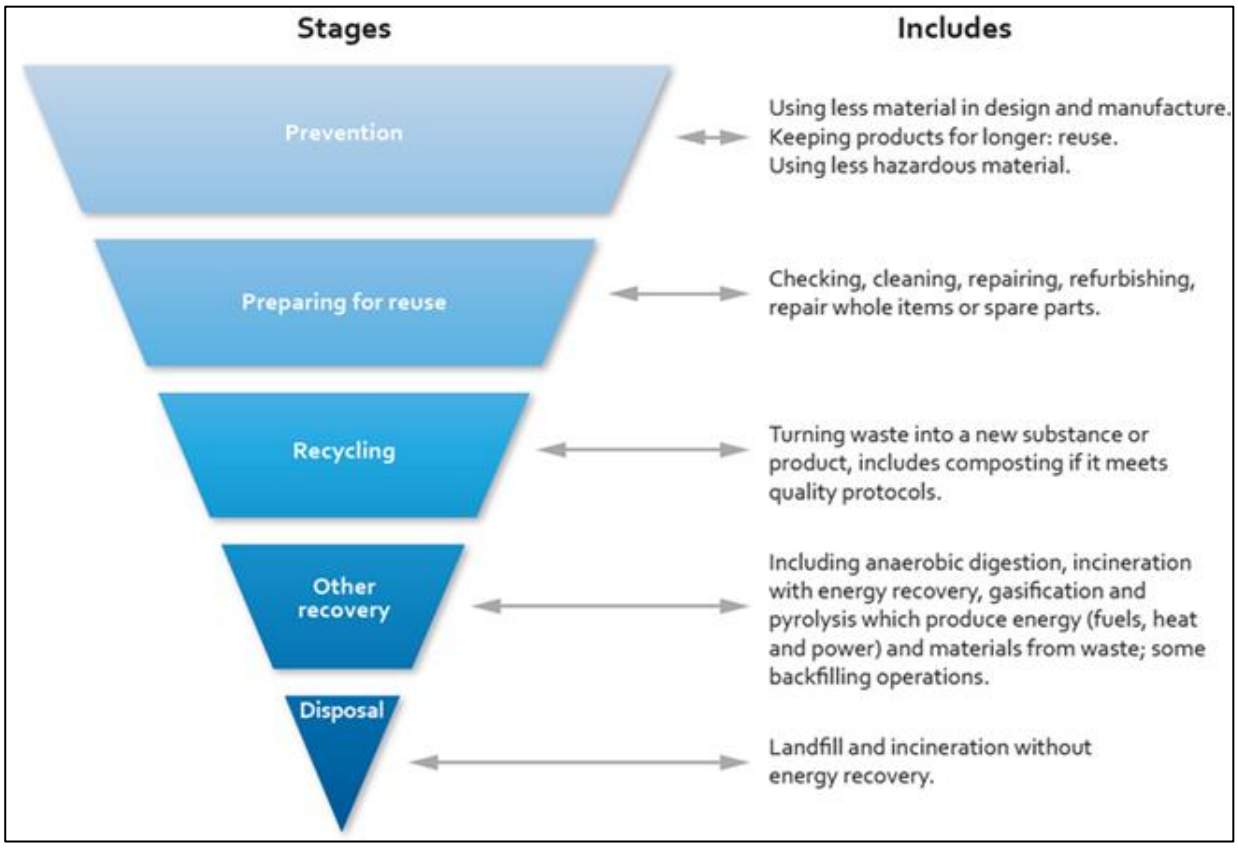
All recycling waste will be taken to the respective recycling stream's offsite recycling centre. All food waste will be taken offsite and composted at an appropriate facility. Finally, where possible bulky waste will be reused in line with the Globechain and Warp It schemes; as per Section 7.6. Due to the scheme's sporadic current usage within pilot schemes, it is currently not possible to estimate the percentage of bulky waste that will be reused on site. However, in future as the site operates these levels will be monitored and relevant reasonable actions taken to ensure a good reuse percentage.

7. Operational waste reduction and improvement measures

7.1 Waste hierarchy

When considering waste reduction methods, the waste hierarchy pyramid provides a useful guide to the order in which waste reduction measures should be considered, from most to least effective as shown in Figure 16.

Figure 16 Waste hierarchy (adopted from the EU WFD7)



Preventing the generation of waste is considered the most effective way of improving recycling rates, followed by reuse of materials, and then moving into recycling, recover and, eventually, disposal in landfill.

7.2 Waste segregation

Since January 2015, UK regulations require the separate collection of paper, plastic, metals and glass for recycling from all waste producers including commercial waste. There is often confusion for people around what is and is not recyclable. In order to improve the amount of waste to be recycled and reduce contamination of waste streams, the items that are recyclable should carry obvious visual clues about which bin they should be placed into and the bins themselves should be clearly labelled. Some examples of how this can be achieved is shown in Figure 17.

Figure 17 Waste signage

7.3 Behaviour change

People often attach a low priority to pro-environmental behaviour. To encourage such behaviour and drive a move towards reusing and recycling materials, the FM team should address both the physical and the psychological environment.

The goal should be to create an environment that guides decision making, and helps people act out those decisions. Some examples on how this could be achieved are as follows:

- Collect data on current waste generation and splits between waste streams will be communicated to tenants to encourage them to strive for improvement. This is particularly relevant to commercial tenants who may have their own commitments on recycling rates and continuous improvement and may find the data useful;
- Gather feedback from residents and tenants on the waste infrastructure and processes to understand users' experience of waste infrastructure and how it could be improved;
- Ensure container design, signage and colour coding is consistent across all waste bins and encourage commercial tenants to use the same colour coding and signage in their demise; and
- Bins to be located within stores to be easily accessible by all users, including the provision of accessible bins for residents.

Figure 18 Accessible residential bin

7.4 Training and education

The FM Team and any other on-site staff handling and segregating waste will need full training on how to properly dispose of different types of waste and the procedures will be included in any tenant/resident handbook and portals available to occupiers.

Waste audits should be carried out to check on contamination levels or any issues with certain types of waste being incorrectly disposed of. Further training with relevant tenants can then be provided.

Any newsletters or other communications sent to residents and tenants should include any updates or reminders on the waste management procedures to help residents and tenants properly dispose of their waste. Any reuse or special recycling schemes that the development is part of should be promoted through any communications sent to residents and tenants and should be included in the handbook and portal.

7.5 Procurement

The FM team should endeavour to procure items for use in the common parts of the estate that align with the following principles:

- Reusable items instead of disposable items;
- Recycled materials;
- Hired items such as furniture, artwork or equipment that can be returned to the hire company;
- Items that are recyclable;
- Items that are made of single, recyclable materials or if they are made of multiple materials they can be easily taken apart to recycle;
- Working with suppliers to minimise amount of packaging used and ensure any packaging is recyclable; and
- Using a recyclable pallet system for larger deliveries.

7.6 Community waste

This section describes two potential ways in which waste generated within the development could be reduced by introducing the following:

- Re-use of furniture and household items

- Make and mend clinics.

Companies such as Warp It and Globechain are reuse marketplaces which allow businesses, charities and individuals to dispose of unwanted items to those in need of that item through a cloud-based platform.

Overall, the system works by the organisation/individual wishing to dispose of an item, posting it onto the portal. This becomes available for those with a need to search the portal for that item. The key benefits for these schemes are presented in Figure 19 and Figure 20.

Figure 19 Warp It re-use scheme (source: warp it Daniel O'Conner 16th June 2022)

Figure 20 Warp It benefits (source: warp it Daniel O'Conner 16th June 2022)

These schemes have the potential to develop into a scheme that could allow residents to offer unwanted items to their neighbours through a managed portal. In this way, residents would have the opportunity to

avoid using the bulky waste route to dispose of unwanted but perfectly usable household or furniture items. The scheme will need to be organised through the building management team for the development, using a third-party host if required.

Make and mend schemes allow residents to meet those able to conduct minor repairs to small electrical items or other pieces of equipment. Often held in local community spaces, these clinics allow items that would end up in landfill to be mended and so extend their operational life. An adaptation to the make and mend clinic is the sustainable market, such as the Buck Street Market, Camden. This hosts a place where sustainable makers promote up-cycling through mend and re-work through open workshops.

8. OWMP review process

8.1 Monitoring

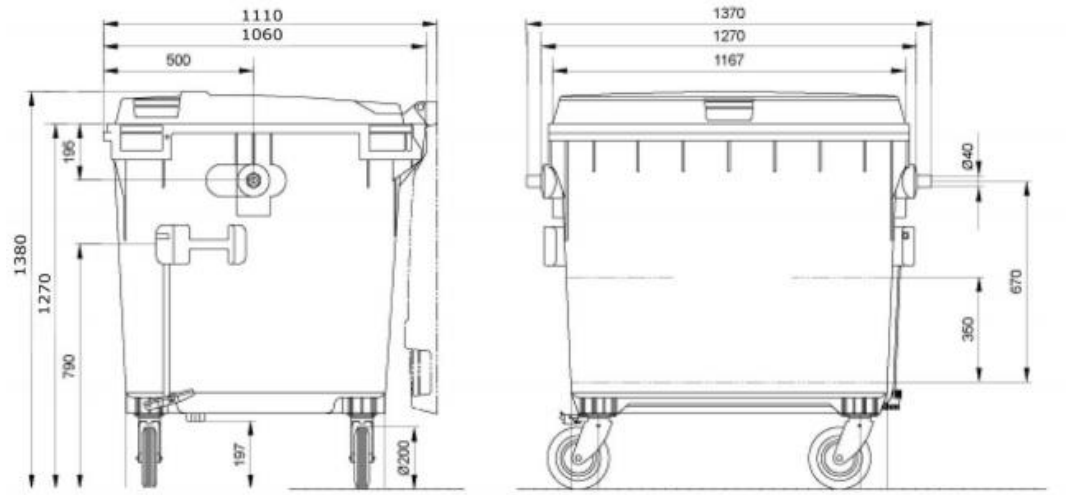
Using the information provided from the waste contractor (weight of waste collected) for residual and recyclable waste streams, the on-site FM team would record the level of recycling achieved by the commercial tenants within the development.

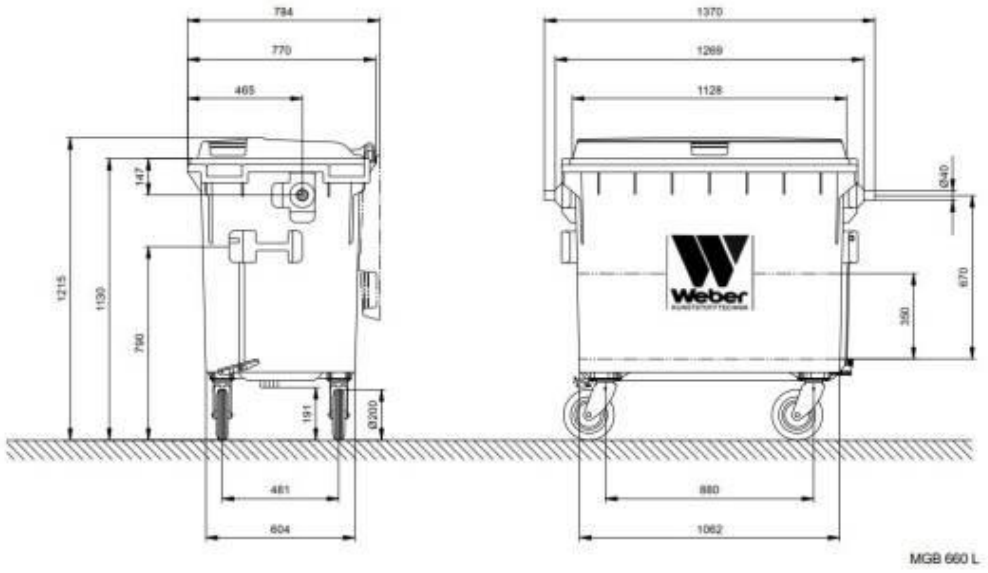
Where the level of recycling falls below an agreed level, then the on-site FM team will work with the commercial tenants to agree measures to increase the level of recycling within the commercial areas within the development. Additionally, the Globechain and Warp It bulky waste reuse schemes will have their utilisation and engagement monitored by the FM team. An initial survey of waste activity will be undertaken following 12 months of occupation.

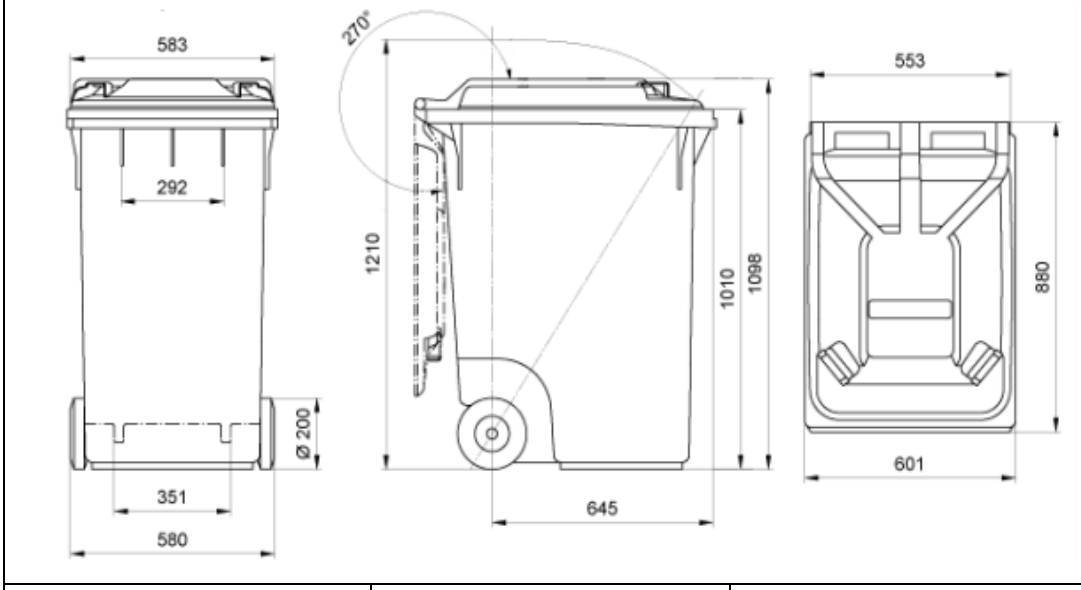
8.2 Review process

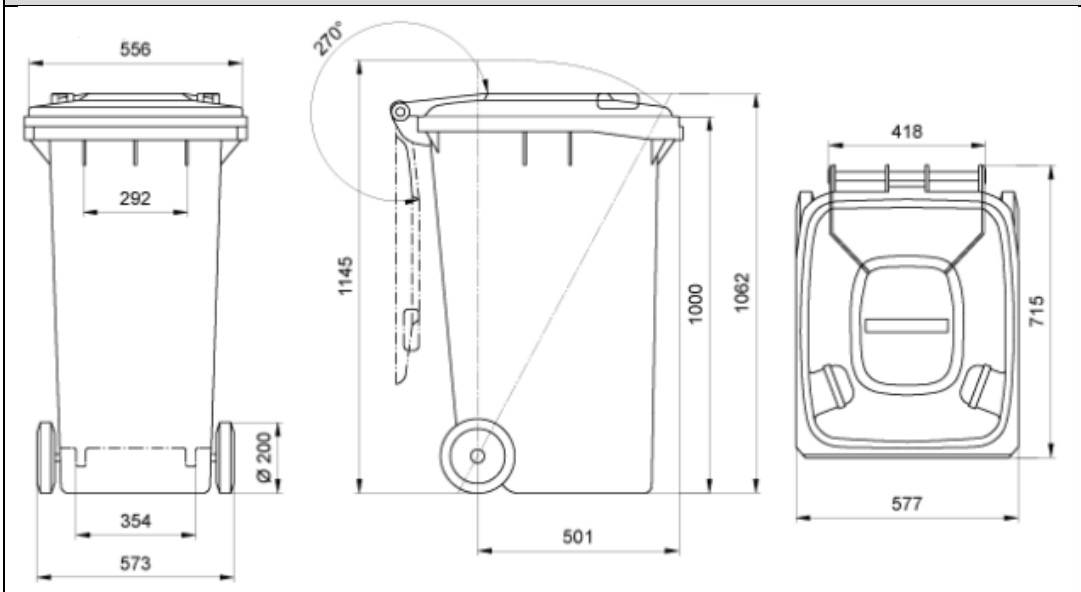
The success of the strategy as detailed above will be closely monitored by the FM team. Feedback from tenants, suppliers, and residents will be provided as a minimum monthly and as and when required where immediate action is required and dealt with in accordance with this strategy. The strategy will be updated and amended as appropriate to ensure the development is within the perimeters of what is deemed necessary to maintain a clean and safe environment all year round.

9. Waste equipment

1,100 Litre Eurobin		
		
Length: 1.37m	Width: 1.11m	Height: 1.38m

660 Litre Eurobin		
		
Length: 1.26m	Width: 0.78m	Height: 1.20m

360 Litre Wheelie Bin		
		
Length: 0.88m	Width: 0.53m	Height: 1.21m

240 Litre Wheelie Bin		
		
Length: 0.72m	Width: 0.55m	Height: 1.15m

In-bin compactor		
		
Length: 1.15m	Width: 1.15m	Height: 2.1m

Baler		
		
Length: 1.03m	Width: 1.56m	Height: 2.63m

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