ECOWORLD
LONDON
CREATING TOMORROW & BEYOND

POPLAR HARCA

Circular Economy Statement

ABERFELDY VILLAGE MASTERPLAN

Greengage

Brighter strategies
for greener projects

Client: The Aberfeldy New Village LLP

Project: Aberfeldy Village

Report: Circular Economy Statement

QUALITY ASSURANCE

Issue/Revision:	Draft	Final
Date:	September 2023	September 2023
Comments:		
Prepared by:	Ajjay Dhesi	Ajjay Dhesi
Authorised by:	Liz Grove	Liz Grove
File Reference:	551566ad22Sep23_F06_CE Statement.docx	551566ad22Sep23_F06_CE Statement.docx

CONTENTS

1.0 EXECUTIVE SUMMARY 1
2.0 CONTEXT AND DESCRIPTION OF THE DEVELOPMENT 3
3.0 CIRCULAR ECONOMY PRINCIPLES 7
3.1 WHAT IS THE CIRCULAR ECONOMY? 7
3.2 WHY IS THE CIRCULAR ECONOMY IMPORTANT? 7
3.3 KEY PRINCIPLES OF CIRCULAR ECONOMY 8
4.0 POLICY, REGULATIONS AND GUIDANCE 9
4.1 NATIONAL POLICY 9
4.2 REGIONAL POLICY 9
4.3 LOCAL POLICY 10
5.0 METHODOLOGY 12
5.1 CORE PRINCIPLES 12
5.2 REPORT STRUCTURE 12
5.3 WORKSHOP 13
5.4 CIRCULAR ECONOMY TARGETS 13
5.5 BUILDING IN LAYERS APPROACH 13
5.6 SUPPORTING DOCUMENTATION 14
6.0 CIRCULAR ECONOMY STRATEGY 15
6.1 CIRCULAR ECONOMY TARGETS 15
6.2 CIRCULAR ECONOMY DESIGN APPROACHES 15
6.3 CIRCULAR ECONOMY DESIGN PRINCIPLES BY BUILDING LAYER 21
6.4 EXCAVATION WASTE 24
6.5 DEMOLITION WASTE 25
6.6 CONSTRUCTION WASTE 25
6.7 OPERATIONAL WASTE 26
7.0 BUILDING MATERIALS 29
8.0 REPORTING CIRCULAR ECONOMY OUTCOMES 30
8.1 PLANS FOR IMPLEMENTATION AND MONITORING 30
9.0 END OF LIFE STRATEGY 32
APPENDIX A PRE-REDEVELOPMENT AUDIT
APPENDIX B PRE-DEMOLITION AUDIT
APPENDIX C LEAN DESIGN ASSESSMENT

APPENDIX D SITE WASTE MANAGEMENT PLAN
APPENDIX E OPERATIONAL WASTE MANAGEMENT PLAN
APPENDIX F CIRCULAR ECONOMY WORKSHOP MINUTES
APPENDIX G CUT & FILL DIAGRAM
APPENDIX H ADAPTABILITY SCENARIO MODELLING
APPENDIX I RECYCLED CONTENT BY VALUE CALCULATIONS
REFERENCES

Tables

Table 5.1 Building layers as per GLA guidance 14
Table 6.1 Existing building circular economy approach 15

Figures

Figure 2.1 Existing Plan of the Aberfeldy Village with site boundary. 4
Figure 2.2 Visualisation of public realm including entrance to Plot F. 6
Figure 2.3 Illustration of The Residents' Hub located within Highland Place at the base of Building B3 6
Figure 3.1 Circular Economy diagram. Source: Circular Flanders 7
Figure 5.1 Building layers (Source: GLA) 13
Figure 6.1 GLA circular economy decision tree 17
Figure 6.2 Decision tree for design approach for the new building (Source: GLA) 19

1.0 EXECUTIVE SUMMARY

Greengage Environmental Ltd have been commissioned by The Aberfeldy New Village LLP (the "Applicant") to prepare a Circular Economy Statement in relation to a hybrid planning application for a mixed-use development located at Aberfeldy Village, Poplar.

The hybrid application is seeking detailed planning permission for Phase A and Outline planning permission for future phases, comprising:

Outline planning permission (all matters reserved) for the demolition of all existing structures and redevelopment to include a number of buildings (up to 100m AOD) and up to 140,591 (GEA) of floorspace comprising the following mix of uses: Residential (Class C3); Retail, workspace, food and drink uses (Class E); Car and cycle parking; Formation of new pedestrian route through the conversion and repurposing of the Abbott Road vehicular underpass for pedestrians and cyclists connecting to Jolly's Green; Landscaping including open spaces and public realm; and New means of access, associated infrastructure and highway works.

In Full, for residential (Class C3), retail, food and drink uses and a temporary marketing suite (Class E and Sui Generis), together with access, car and cycle parking, associated landscaping and new public realm, and open space. This application is accompanied by an Environmental Statement.

This Circular Economy Statement was produced in response to the policies and aspirations of the GLA (Policy SI7) and The London Borough of Tower Hamlets and will be submitted as part of the hybrid planning application for the Proposed Development.

The statement has been carried out in line with the Circular Economy Statements Guidance document[1] produced by the GLA and is accompanied by the Circular Economy Statement template in Microsoft Excel format.

Circular Economy principles and approach

Circularity principles of building in layers; designing out waste; designing for longevity/adaptability/flexibility/disassembly; and using materials that can be reused or recycled have been used as the fundamental principles that underpin the circular economy strategy.

The circularity approach for the existing buildings is to demolish and re-use materials where possible or recycle if not possible.

The new buildings have been designed with an approach that enables flexibility, adaptability and disassembly for each layer of the buildings to maintain longevity.

Material specifications will look to maximise recycled content wherever possible including in key materials such as concrete and steel. The project target is a minimum 20% recycled content by value.

Management of waste materials has been considered to initially reduce the waste and ensure any generated from construction, demolition, excavation and operation is diverted from landfill, achieving

targets of 95% landfill diversion (for construction, demolition and excavation waste) and 65% recycling of municipal waste.

Implementation plans are provided to ensure all targets can be achieved and the circularity of all materials is maximised. End of life procedures are also considered for each building material to ensure the circular economy approach is continued throughout the full building lifecycle.

2.0 CONTEXT AND DESCRIPTION OF THE DEVELOPMENT

This report supersedes the Circular Economy Statement dated October 2022 previously submitted in support of the Hybrid Application (LBTH Ref: PA/21/02377/A1 and GLA Ref: 2023/0300/S3) and should therefore be read on a standalone basis.

Following a resolution to refuse planning permission by the London Borough of Tower Hamlets (LBTH) Strategic Development Committee (SDC) in February 2023, and the subsequent direction that the Mayor of London will act as the local planning authority for the purposes of determining the Hybrid Application, the design of the scheme has been amended to accommodate second staircases in all buildings over 18m in height.

For the sake of completeness only it should be noted that the above referenced amendments follow previous amendments to the Hybrid Application, made prior to its consideration by the LBTH SDC, the assessments of which were set out within previous revisions of this Circular Economy Statement. In summary the previously assessed charges were: the incorporation of Jolly's Green within the red line boundary, the removal of the previously proposed Block A3 and associated increase in open space and play space, an increase in the number of affordable rented family homes, and the inclusion of second staircases in Plots F & I.

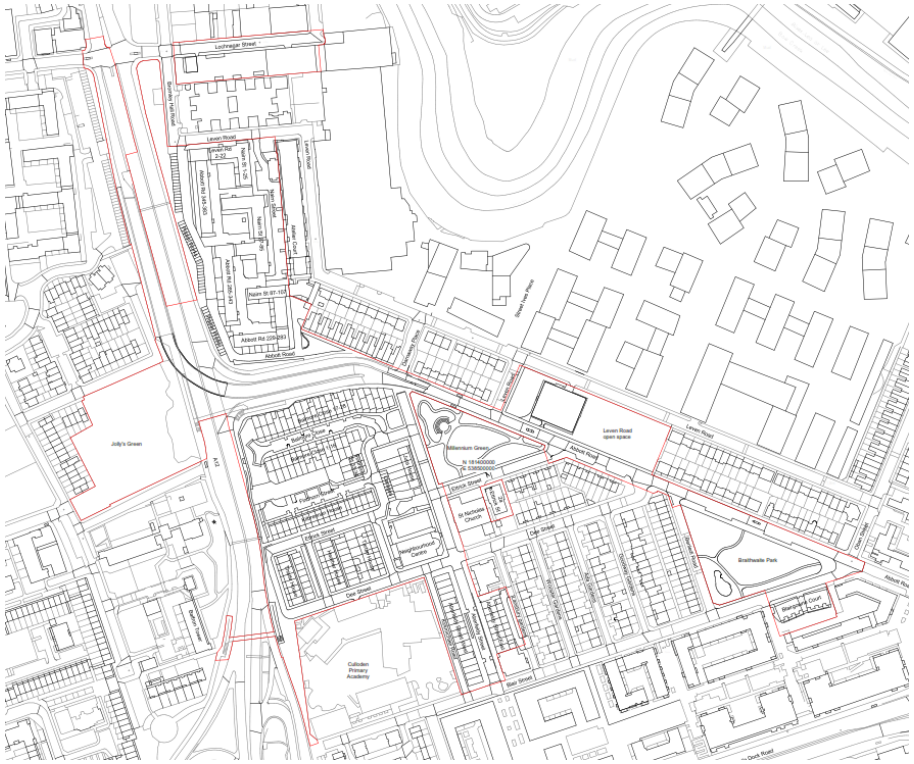
Further information is set out within the accompanying Covering Letter (as prepared by DP9 Ltd, dated September 2023) and the updated Planning Statement (as prepared by DP9 Ltd, dated September 2023).

The Aberfeldy New Village Plan LLP are submitting a Hybrid Planning Application for residential-led redevelopment of the Aberfeldy Village Masterplan in Poplar.

The hybrid planning application is submitted to the London Borough of Tower Hamlets for the comprehensive phased redevelopment of the Site, to provide new retail, workspace and community floorspace along with residential dwellings and the pedestrianisation of the A12 Abbott Road vehicular underpass. The Development will also provide significant, high quality public realm, including a new Town Square, a new High Street and a public park.

The site location is shown in Figure 2.1

Figure 2.1 Existing Plan of the Aberfeldy Village with site boundary.



The existing application site consists of the following buildings and hard landscaping areas:

- Blairgowrie Court;
  - A residential building ranging between three and six storeys constructed in the early 2000s. The layout internally is uniform with 30no. identical 2-bedroom dwellings, one central core and an external access deck.
  - The building is currently vacant, with all fixtures and fittings removed from kitchens and bathrooms.
- Aberfeldy Street West & East;
  - Both buildings are 3 storeys with residential units above a commercial use ground floor. They are understood to be constructed between the 1950-60s with central stair cores and external access decks.
  - The residential element of each building is currently vacant, with all fixtures and fittings removed from kitchens and bathrooms.
- Aberfeldy Neighbourhood Centre; and
  - A one storey building currently in use as community centre (including a nursery, computer suite and small café) of standard construction, built in the early 2000s.
- Lochnagar Street.
  - A currently vacant plot with overgrown vegetation.

The existing site is considered to be a poor environment, with certain areas used for servicing requirements only, narrow streets with poor surfacing causing congestion as well as observed anti-social behaviour of streets being used as a 'racetrack' by noisy high-performance vehicles. This has led to areas feeling very forgotten and hence driven the need for this re-development.

The hybrid planning application comprises:

- The Outline application is for the demolition of all existing structures and redevelopment to include a number of buildings (up to 100m AOD) comprising the following mix of uses:
    - Residential (Class C3);
    - Retail, workspace, food and drink uses (Class E);
    - Car and cycle parking;
    - Formation of new pedestrian route through the conversion of the existing vehicular underpass;
    - Landscaping including open spaces and public realm; and
    - New means of access, associated infrastructure and highways works.
- The Detailed application includes residential (Class C3), retail, food and drink uses and a temporary marketing suite (Class E and Sui Generis), together with access, car and cycle parking, associated landscaping and new public realm, and private open space.

Figure 2.2 Visualisation of public realm including entrance to Plot F.

Across Plots F, H and I of the Detailed application, there is a concrete construction across the substructure and superstructure, including reinforced concrete piles with pile caps, concrete frame and slabs. External wall construction entails a brickwork façade. For Plot J of Phase A, there is concrete foundations, with CLT floor slabs.

Across the Outline application, foundations are constructed of reinforced concrete alongside the frame and slabs.

As confirmed within the pre-demolition audit (Appendix B), the buildings on site are no longer fit for purpose, not meeting the current building standards therefore warrants their demolition.

Figure 2.3 Illustration of The Residents' Hub located within Highland Place at the base of Building B3

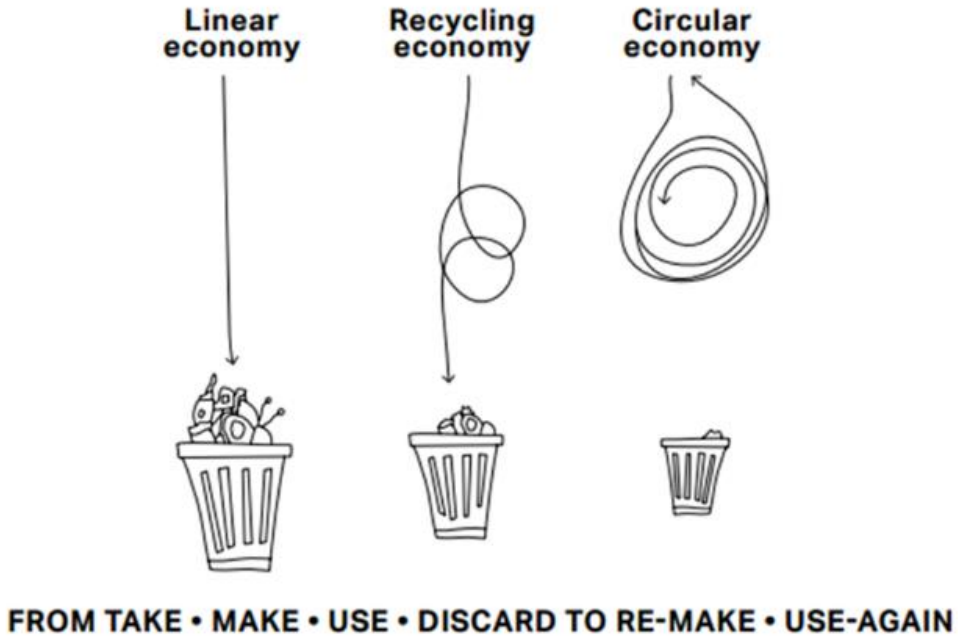
3.0 CIRCULAR ECONOMY PRINCIPLES

3.1 WHAT IS THE CIRCULAR ECONOMY?

A Circular Economy is defined in London Plan Policy SI7, 'Reducing waste and supporting the Circular Economy', as one where materials are retained in use at their highest value for as long as possible and are then reused or recycled, leaving a minimum amount of residual waste.

The end goal is to retain the value of materials and resources indefinitely, with no residual waste at all, see Figure 3.1. This is possible, requiring transformational change in the way that buildings are designed, built, operated and deconstructed.

Figure 3.1 Circular Economy diagram. Source: Circular Flanders



3.2 WHY IS THE CIRCULAR ECONOMY IMPORTANT?

Apart from the continuous consumption of finite resources, all processes involved in the extraction, manufacturing and processing of materials, as well as their ultimate disposal, has a significant impact on the global environmental system and the climate.

The built environment sector is a major consumer of natural resources. There is growing industry consensus that the way buildings are designed, built, operated and disposed of needs a major overhaul to prevent waste and increase efficiency. There is a large scope of opportunity that this shift in approach will create across the entire supply chain.

Mitigating the impacts of carbon emissions from the built environment and reducing waste generation associated with the sector becomes key to lessen the climate change impacts associated with its design, construction and operation.

3.3 KEY PRINCIPLES OF CIRCULAR ECONOMY

The core principles when applying a circular economy approach to the built environment promote a regenerative and restorative whole-systems approach applied from the top down. This supports the waste hierarchy so that avoiding or reducing waste is prioritised.

There are a number of key principles of the circular economy that should be embedded as part of the design in order to ensure it can address as many issues as possible. However, applying these principles and changing the construction system can be complex, and there will be many trade-offs and compromises that need to be made in order to optimise the design, construction, and deconstructability of a scheme.

The six key circular economy principles, as set out within the GLA Circular Economy Statements Guidance are:

1. Building in layers - ensuring that different parts of the building are accessible and can be maintained and replaced where necessary;
2. Designing out waste - ensuring that waste reduction is planned in from project inception to completion, including consideration of standardised components, modular build, and reuse of secondary products and materials;
3. Designing for longevity;
4. Designing for adaptability or flexibility;
5. Designing for disassembly; and
6. Using systems, elements or materials that can be reused and recycled.

4.0 POLICY, REGULATIONS AND GUIDANCE

The Proposed Development is submitted within the context of national, regional and local planning policies that seek to address the challenges of climate change and sustainable development. The policies outline how the Government, the Mayor of London, and London Borough of Tower Hamlets are striving to improve the way Circular Economy principles are embedded into the built environment.

4.1 NATIONAL POLICY

Climate Change Act 2008 (2050 Target Amendment)[2]

On 26th November 2008, the UK Government published the Climate Change Act 2008, the world's first long-term legally binding framework to mitigate against climate change. The Act initially set legally binding targets for greenhouse gas emission reductions of 80% by 2050 (from 1990 levels). This was amended in 2019 to a revised target of a 100% reduction in carbon emissions by 2050, over the 1990 baseline emissions levels, known as the net-zero target. In addition, there are interim carbon budget levels, which provide stepping stones to achieve the overall target.

National Planning Policy Framework, 2021[3]

The National Planning Policy Framework (NPPF) was published in July 2021, replacing the previous NPPF that was adopted in February 2019. The NPPF sets out the Government's planning policies for England and how they are expected to be applied. It sets out a framework that aims to achieve sustainable development throughout the planning system with three overarching objectives – economic, social and environmental.

At the heart of the NPPF is a 'presumption in favour of sustainable development', which requires Local Authorities as part of any plan-making or decision-making, to provide clear guidance on how the presumption should be applied locally.

4.2 REGIONAL POLICY

Greater London Authority, London Plan, 2021[4]

The London Plan was adopted in March 2021 and sets out the overall strategic plan for London over the next 20-25 years.

The London Plan includes the requirement for a Circular Economy Statement to be submitted for referable developments as part of Policy SI7 'Reducing waste and supporting the circular economy'. This states the following:

"Resource conservation, waste reduction, increases in material re-use and recycling, and reductions in waste going for disposal will be achieved by the Mayor, waste planning authorities and industry working in collaboration. Referable applications should promote circular economy outcomes and aim to be net zero-waste. A Circular Economy Statement should be submitted to demonstrate:

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

Some key overarching targets set out in this policy are:

- Zero biodegradable or recyclable waste to landfill by 2026;
- 65% of municipal waste recycled by 2030;
- 95% of construction and demolition waste reused/recycled/recovered; and
- 95% of excavation waste put to beneficial use.

Policy D3 'Optimising site capacity through the design-led approach' requires developments to aim for high sustainability standards that account for the principles of the circular economy.

Policy SI2 'Minimising greenhouse gas emissions' requires major developments to be net zero-carbon and for a whole life-cycle carbon (WLC) assessment to be submitted.

London Plan Guidance: Circular Economy Statements

In support of Policy SI7 - Reducing Waste and Supporting the Circular Economy, the GLA Circular Economy Statement Guidance (March 2022) explains how to prepare a Circular Economy Statement as well as how designing new buildings, and prioritising the reuse and retrofit of existing structures, can promote circular economy outcomes.

The guidance sets out how circular economy principles, the concept of building in layers and appropriate design approaches should inform referable applications.

4.3 LOCAL POLICY

London Borough of Tower Hamlets

Whilst the LBTH Local Plan 2031 does not detail requirements relating to Circular Economy directly, several policies discuss sustainable design and construction relating to its methodology.

These include:

Policy S.MW1 Managing our waste

"Development which seek to maximise the efficiency and/or capacity of waste facilities in the borough will be supported."

"New development will be expected to reuse and recycle construction, demolition and excavation waste on or close to the site where it arises."

Policy S.MW1 Managing our waste

All new development must include sufficient accessible space to separate and store dry recyclables, organics and residual waste for collection, both within individual units and for the building as a whole.

New major residential developments must incorporate high quality on-site waste collection systems that do not include traditional methods of storage and collection and are compatible with our waste collection methods outlined in Appendix 4. In instances where this is not practicable, supporting evidence must be submitted with the application to demonstrate this.

Policy D.SG4 Planning and construction of new development

Development is required to employ the highest standards of sustainable construction, including:

a. Sustainable construction methods, such as the use of sustainably sourced and recycled materials, and

b. The use of demolished material from the development site, where practicable, in order to minimise the transportation of waste and reduce carbon dioxide emissions.

Policy S.DH1 Delivering high quality design

Expecting all development to use high quality design, materials and finishes to ensure buildings are robust, efficient and fit for the life of the development.

5.0 METHODOLOGY

The methodology for the implementation of a circular economy at the Proposed Development as well as the content of this document has been set out in line with the Circular Economy Statement Guidance document produced by the GLA.

5.1 CORE PRINCIPLES

The circular economy strategy for the development is based around the core principles set out within the GLA guidance, see section 3.3, which have been used to guide the approach.

5.2 REPORT STRUCTURE

This circular economy statement aligns with the requirements in the GLA guidance document and covers these as outlined in the table below.

Requirement	Where demonstrated
How all materials arising from demolition and remediation works will be reused and/or recycled.	Pre-demolition audit (Appendix B)
How the proposal's 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.	CE design approaches - section 6.2 CE design principles by layer - section 6.3 Bill of materials - GLA CES template End of life strategy - section 9.0 CE targets - GLA CES template
Opportunities for managing as much demolition, excavation, construction, and operation waste as possible on-site.	Pre-demolition audit (Appendix B) Bill of materials - GLA CES template Recycling & waste reporting - GLA CES template
Adequate and easily accessible storage space and collection systems to support recycling and reuse during operation.	Operational waste management plan (Appendix E)
How much waste the demolition, construction and operation phase of the proposal is expected to generate, and how and where the waste will be managed in accordance with the waste hierarchy.	Pre-demolition audit (Appendix B) Operational waste management plan (Appendix E) Recycling & waste reporting - GLA CES template
How performance will be monitored and reported, during the demolition, excavation, construction, and operation	Section 8.1 Operational waste management plan (Appendix E)

Requirement	Where demonstrated
phases.	CE targets - GLA CES template

5.3 WORKSHOP

A circular economy workshop was held on 24th August 2021, attended by the Architect, Structural engineer, MEP engineer and transport consultant. The workshop enabled the development's circularity principles and approaches to be discussed as well as setting out targets and how the design team would work towards these.

Minutes from the workshop are provided in Appendix F.

5.4 CIRCULAR ECONOMY TARGETS

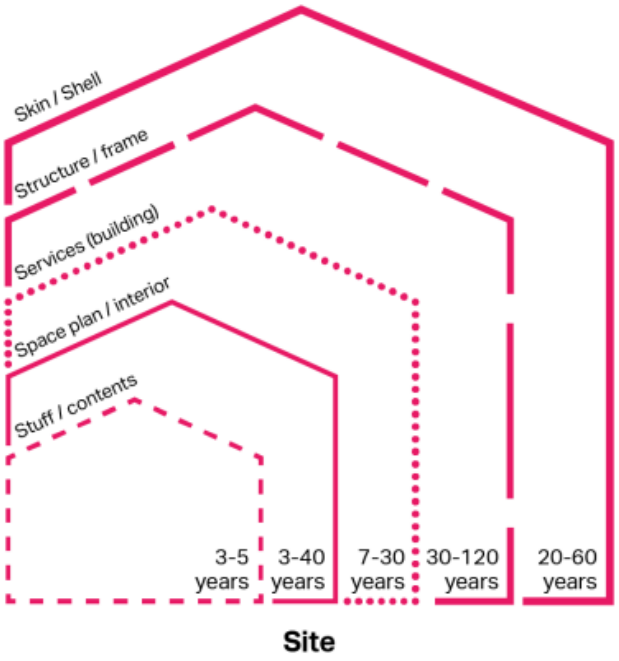
The Proposed Development has set targets in line with policy requirements and industry best practice.

While specific values and levels of ambition have been defined for some of the metrics, it is recognised that these are preliminary targets and commitments which will be reviewed and may be adjusted as appropriate during the detailed design.

5.5 BUILDING IN LAYERS APPROACH

In achieving circular principles within the development, the design team have explored certain approaches within each building element or layer. As shown in the indicative diagram below, each layer will have its own life cycle, life span and therefore relevant design approach.

Figure 5.1 Building layers (Source: GLA)



The table below confirms the building layers that have been considered as per GLA guidance.

Table 5.1 Building layers as per GLA guidance

Layer	Summary and Constituent Elements	RICS Reference
Site	The geographical location, context, external works, earth works and landscaping.	NRM 8
Substructure	Excavations, foundation, basements and ground floors.	NRM 1
Superstructure	Load-bearing elements above plinth including roof-supporting structure.	NRM 2.1. 2.2 & 2.4 – frame, upper floors, stairs
Shell/Skin	The layer keeping out water, wind, heat, cold, direct sunlight and noise. Includes exterior surfaces and façade.	NRM 2.3, 2.5, 2.6 – roofs, external walls, windows and external doors
Services	Installations to ensure comfort, practicality, accessibility and safety.	NRM 5
Space	The layout, internal walls, ceilings, floors, finishes, fixtures, doors, fitted furniture.	NRM 2.7, 2.8 & 3
Stuff	Anything that could fall if the building was turned upside down.	Fittings, furnishings and equipment
Construction materials	Any temporary installations/works/materials, packaging and equipment	NRM 0

5.6 SUPPORTING DOCUMENTATION

To support this assessment, Greengage have reviewed the following documents produced in support of the planning application:

- Whole Life Carbon Assessment prepared by Greengage Environmental Ltd
- Energy Strategy prepared by Meinhardt
- Sustainability Strategy prepared by Greengage Environmental Ltd

6.0 CIRCULAR ECONOMY STRATEGY

This section of the Circular Economy Statement demonstrates how the criteria of the London Plan Policy SI7 have been followed through the design strategy.

6.1 CIRCULAR ECONOMY TARGETS

Circular economy targets have been set as a minimum in line with those set out in the London Plan Policy SI7 and Guidance as set out below:

- Minimum 95% construction and demolition waste for reuse/recycling/recovery;
- Minimum 95% excavation waste diverted from landfill for beneficial use;
- Municipal waste recycling 65% by 2030; and
- Minimum 20% by value of materials to be comprised of recycled or reused content.

The design team will continually review the design as it develops to ensure the targets are met and look to identify methods through which the targets could be exceeded.

Further detail on how these targets will be met through design as well as implementation and monitoring is provided in the GLA Circular Economy Statement template accompanying this report.

6.2 CIRCULAR ECONOMY DESIGN APPROACHES

The design approach for the development supports the implementation of the circular economy principles and has informed the initial land-use planning and design.

Existing site

The circular economy hierarchy has been used to guide the approach and maximise the use of existing materials.

Full details of the approach taken for the existing site and redevelopment options considered by the project team are provided in Appendix A. The table below sets out a summary of the circular economy design approaches for the existing building and confirms to what extent they have been adopted.

Table 6.1 Existing building circular economy approach

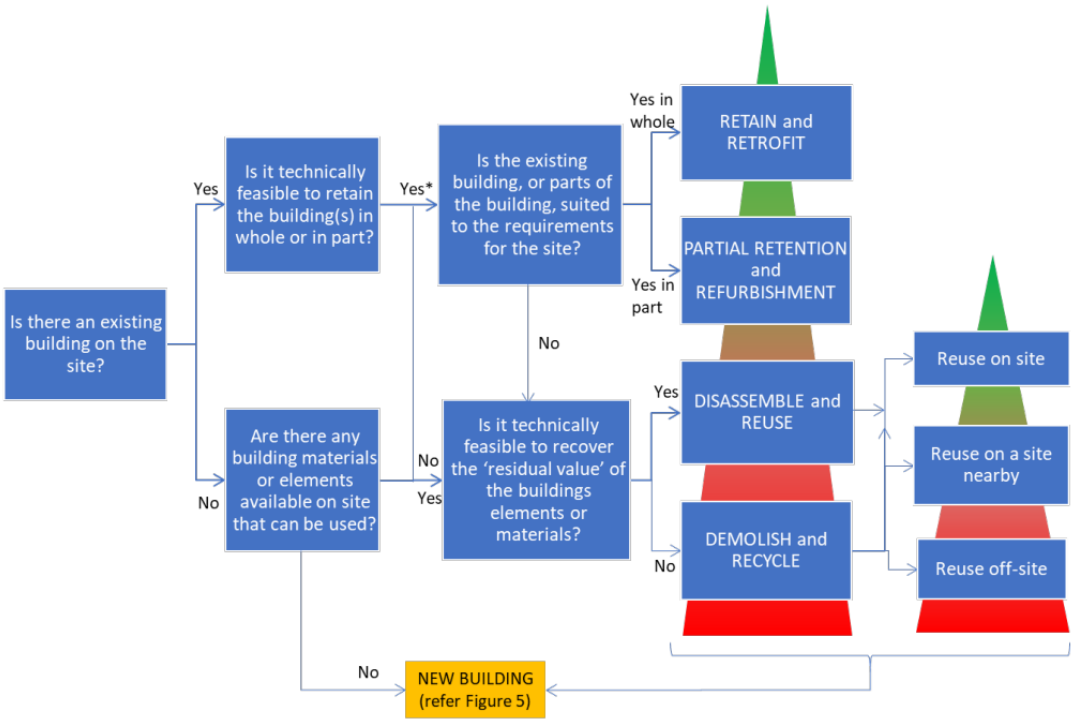
Approach	Response
Retain and retrofit	As confirmed within Appendix A, the existing buildings are of small scale and are not sufficient for the scale of the proposed development. The material quality is deemed to be poor and will require significant repair works. Poor quality brickwork would need repointing, insulation is not
Partial retention and refurbishment	

Approach	Response
	sufficient for modern building standards and fire performance. Structurally, there is limited options for expanding the current structural frame. It is confirmed within the pre-redevelopment audit, there would be a maximum capacity for one or two storey vertical extension, which is significantly below the requirements of the new site. A hybrid structure has also been explored, however was deemed not suitable due to incompatible structural dimensions, complex joints and differing floor levels. Options to bring the existing buildings up to current thermal performance requirements have been explored in the pre-redevelopment audit and detail how the retrofit measures are not achievable and the improvements that could be made would result in lower performance levels.
Disassemble and reuse	Deconstructing the existing structures to reclaim components or materials (rather than traditional demolition) is considered unfeasible due to the proximity to a number of sensitive neighbouring uses. Further, the existing buildings are constructed in a manner that does not facilitate repurposing specific elements or reclamation of materials, with demolition considered the only viable option.
Demolish and recycle	The pre-demolition audit confirms a total demolition material of 42,298tonnes, consisting largely of concrete and bricks. Inert materials constitute >90% of the waste, all of which is to be recycled as the potential for reclamation is relatively low due to their use, composition, and material qualities. It is expected this material will be crushed to form secondary aggregate, to be used as engineering fill. The potential for on-site crushing

Approach	Response
	for use on site will be subject to the demolition contractor obtaining the relevant permits. Mixed metals make up 3,017t of material, which also is expected to be recycled.

The existing site is considered to be a poor environment, with certain areas used for servicing requirements only, narrow streets with poor surfacing causing congestion as well as observed anti-social behaviour of streets being used as a 'racetrack' by noisy high-performance vehicles. This has led to areas feeling very forgotten and hence driven the need for this re-development.

Figure 6.1 GLA circular economy decision tree



The above decision tree forms the methodology that has been followed by the development, when analysing the existing buildings on site and their ability to be retained. This has been completed as follows:

Is there an existing building on site?/ Is it technically feasible to retain the buildings in whole or in part?

As detailed in Table 6.1 and the pre-redevelopment audit (Appendix A), there are a number of buildings on site and these cannot be retained in whole as they would not provide the required structural robustness to be redeveloped into residential units that meet current performance requirements. Partial retention of some of the buildings may have been possible with three options presented to residents for the development, in place of demolition and redevelopment. These consisted of planned maintenance & refurbishment, infill development or a one/two storey rooftop extension across the existing stock.

Is the existing building, or parts of the building, suited to the requirements for the site?

The proposed development is for over 1,500 dwellings, whilst the proposed options simply cannot meet this demand (due to the structural and foundational capacity), where a maximum two storeys extension could be achieved, which could only provide 60-75 dwellings.

Furthermore, to reach the current energy standards, further materials would be needed to increase the energy efficiency of the building which carry an embodied carbon value and would not allow the buildings to reach the same efficiencies as new build homes (as detailed within Appendix A).

A consultation with the residents found they voted for demolition and redevelopment as opposed to refurbishment or maintenance, where disruption will be caused with the possibility of temporary displacement.

It was therefore concluded that the existing buildings are not suited to the requirements of the site.

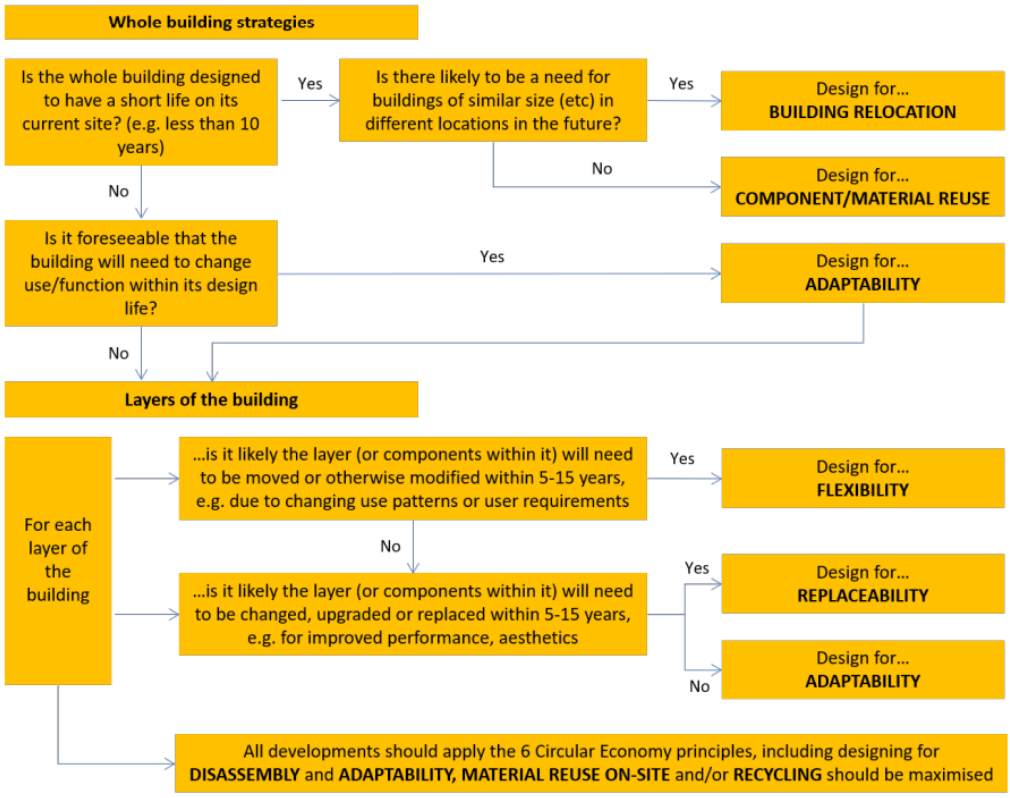
Is it technically feasible to recover the 'residual value' of the buildings, elements or materials?

A pre-demolition audit has been conducted which has analysed and quantified all the materials within the existing site. It was determined reclamation of materials is likely not possible due to their composition and quality, therefore it is expected that inert materials will be recycled into secondary aggregate (where possible on-site) and mixed metals will be recycled off site. Further review will be undertaken with the demolition contractor once on board to determine materials uses and reuse locations.

New development

The London Plan guidance encourages design teams to use the decision tree (see Figure 6.2 below) to determine the appropriate design approach for new buildings.

Figure 6.2 Decision tree for design approach for the new building (Source: GLA)



The table below sets out the circular economy design approaches that have been followed in line with the decision tree and explains how they have been implemented in the new development.

Approach	Response
Building relocation	The building will not be required for relocation through its lifecycle.
Component or material reuse	The substructure and superstructure materials will not need to be replaced or adapted throughout the lifecycle, therefore have been chosen to allow for recovery and recycling at end of life. The concrete and reinforcement can be separated; concrete can be crushed for use as aggregate and the reinforcement can be recycled back into the steel industry. Certain building elements of the building are being constructed off site and then installed on site in a modular nature. These elements are able to be removed as a unit and therefore has potential to be reused elsewhere on a different development.

Approach	Response
Adaptability	Adaptability strategies have been considered across the detailed proposal (Phase A) buildings where risers have been futureproofed considering any prospective tenanted fit out, such as retail portions and the respective demands of commercial operation. For Plot J, it will be possible to extend the townhouse layouts upwards. Further details on adaptability scenario modelling are provided in Appendix H.
Flexibility	The space layer forms the building layer which would require moving or modification throughout the next 5-15 years. Across the Detailed proposal (Phase A) buildings, retail units are flexibly sized, column free and can be configured for varying commercial demands. Internal walls within the residential units are non-loadbearing, facilitating alterations to layouts should this be required. For Plot J, it is proposed to implement the following additional measures: • Single bedrooms are dimensioned to permit several layouts and different bed sizes. Units accessed from ground floor have an integrated meter/ services cupboard incorporated into the entrance design to permit easy replacement of services.
Replaceability	The building elements which would require to be changed within 5-15 years are the services and stuff. All plots have through access at ground floor, with entrances off multiple streets, giving flexibility in access, servicing, connection, escape and future adaptability of the buildings. Services are provided within a dedicated room, where pipework is simple and accessible, consequently facilitating easy maintenance, increasing the likelihood of units being repaired as opposed to replaced. This elongates the service life of the units, reducing the embodied carbon impact associated with more regular replacement and disposal of service equipment. The stuff layer can easily be updated and replaced throughout the lifecycle as these are non-permanent and not fixed.
Disassembly	Specify low health impact materials such as low VOC content in paints to facilitate safe disassembly and reuse.

Approach	Response
	Certain elements are being constructed off site and then installed on site in a modular nature. This allows for easy deconstruction as complete units as opposed to demolition.
Longevity	The development proposals will ensure longevity is prioritised in the design of the building, through material selection. For the residential elements of the scheme, it will be unlikely significant change to the overall structure and design will take place within the buildings' lifespan. Therefore, selection of durable and resilient materials is key. As such, materials such as concrete, brick and timber have been specified. In future, the roof will be accessible to allow maintenance on the façade panels. A façade access system will be in place to ease this maintenance process, however the need for maintenance of the façade is significantly reduced through the adoption of durable building material such as brick. The building is designed for long life span – 60 years.

Each of the above approaches has been considered separately for each layer of the building, where appropriate.

6.3 CIRCULAR ECONOMY DESIGN PRINCIPLES BY BUILDING LAYER

The accompanying GLA Circular Economy Statement template provides full details on how each of the six circular economy principles have been applied to each layer of the building. A summary of the most significant design features for each principle is presented below.

Designing out waste

Appendix C provides a lean design assessment for the new buildings from both a structural and architectural perspective.

The building design has been optimised to reduce the overall use of materials within the building. Specific measures include:

- A lightweight structure and rationalised structural details have been specified across the development. Typical residential slab thicknesses have been reduced to 225mm thick (from a standard 250mm thick).
- Standardisation of building elements has been considered for the windows and door sizes across the buildings as well as for the floor layouts. In adopting these methods, material wastage and off-cuts on site are reduced as well as construction efficiency improving, due to less variation. Furthermore,

energy loads and transport emissions are minimised from reduced variation in installation method and the material source.

- Off-site manufacturing is being considered for elements as appropriate including bathroom pods, utility cupboards, façade elements, roof structures and balconies. The façade panels could be manufactured off site and delivered as the final products, then installed directly onto the building frame. Bathroom pods will be manufactured off-site then installed on site via a crane as one singular unit, removing the need to install all elements such as sanitaryware, therefore speeding up construction. However, pods will likely be constructed in Spain, Italy or Poland which would increase the associated transport emissions.

The use of prefabrication and standardisation can assist in reducing material wastage on site. Waste arising from damage from the external environment can be reduced considerably by offsite manufacturing.

In relation to reusing on site material, a pre-demolition audit has been conducted to assess the material available on site which can be directly reused for the development. It was determined:

- It is possible to reclaim bricks for reuse within another structure, though for this to be feasible the bricks are required to be of high quality to justify the resource and space required to recover them on site. As such this is unlikely to be possible;
- Whilst there is a small potential that some of the metals with the external areas such as fencing could be reused, this is considered unlikely due to logistical constraints. Reuse of these elements would likely require designated locations to transfer directly to at the time of demolition; and
- There is also a possibility of waste being crushed and reused as piling mat.

In the later stages of the design and in consultation with the contractor, consideration will be made for a 'just-in-time' delivery strategy to reduce the likelihood of damage to materials and components being stored on site and therefore reducing waste. To ensure the use of low-waste materials, contractor tender documents will encourage low waste materials. In addition, recycled content by value within the development has been specified at 20%.

Designing for longevity

The development proposals will ensure longevity is prioritised in the design of the building, through material selection. Given the predominant use of the scheme as residential, it will be unlikely significant change to the overall structure and design will take place within the buildings' lifespans. Therefore, selection of durable and resilient materials is key. Concrete, for the superstructure, and brick, for the facades, have been chosen for robustness and durability for large areas of Phase A and Phases B-D. Plot J will have timber frame, slabs and studs. The reinforced concrete frame facilitates a long service life, however disassembly and reuse at the end-of-life stage can be difficult as a result, where crushing may be required to prevent the material going to waste.

Future climate change has also been considered throughout the development through the following:

- The architectural design features balconies and terraces, that will provide a good amount of solar shading;
- Sensible glazing ratios for the facades to reduces excessive solar gains (that also responds to orientation) and
- Increasing the proportion of dual-aspect units, enabling them to benefit from cross-ventilation.

Designing for adaptability or flexibility

The design allows for adaptability in the Detailed Proposals (Phase A) buildings through the following:

- Flat concrete slab construction and block depths were employed that are inherently flexible for future adaptation, with internal partitions non load bearing;
- Internal walls within the residential units are lightweight and non-loadbearing which allows for ease of reconfiguration and will not require significant further materials if the end user changes in future;
- Risers have been incorporated for a multitude of ground floor uses, including ones for prospective tenanted fit out in order to futureproof the retail portions and the respective demands of commercial operation;
- Ground floor areas also benefit from the structural solution, with retail units flexibly sized, primarily column free and able to be configured to varying commercial demands; and
- All plots have through access at ground floor, with entrances off multiple streets. This provides flexibility in access, servicing, connection, escape and future adaptability of the buildings.

For Plot J, it is proposed to implement the following additional measures:

- Townhouse layouts could be extended upwards to increase occupancy;
- Single bedrooms are dimensioned to permit several layouts and different bed sizes; and
- Units accessed from ground floor have an integrated meter/ services cupboard incorporated into the entrance design to permit easy replacement and replacement of services.

Services are provided within a dedicated room, where pipework is simple and accessible, consequently facilitating easy maintenance, increasing the likelihood of units being repaired as opposed to replaced. This elongates the service life of the units, reducing the embodied carbon impact associated with more regular replacement and disposal of service equipment.

Similarly, the roof will be accessible to allow maintenance on the façade panels. A façade access system will be in place to ease this maintenance process, however the need for maintenance of the façade is significantly reduced through the adoption of durable building material such as brick.

Detailed adaptability scenario drawings are provided in Appendix H, demonstrating the different potential future uses for the building and how the design and structure would allow for these to be realised.

Designing for disassembly/ Using systems, elements or materials that can be re-used and recycled

In line with the accompanying WLC assessment, at the end of life stage the following scenarios are expected:

- Substructure and superstructure materials have been chosen to allow for recovery and recycling at end of life. The concrete and reinforcement can be separated; concrete can be crushed for use as aggregate and the reinforcement can be recycled back into the steel industry;
- Recycling for steel elements such as balconies and suspended ceilings;
- Cement/mortar to be used in backfill; and
- Gypsum recycling.

Where possible, low health impact materials will be specified across elements such as finishes to facilitate easy disassembly at the end of life stage without potential harm to the health of those deconstructing the building.

Building elements will be standardised, prefabricated and designed with disassembly/ adaptability in mind as discussed in previous sections.

Internal partitions, which are expected to have a shorter lifespan and form the Space building layer, are largely not structural and are demountable. This facilitates easy disassembly for reuse in its maximum material value form.

Options to utilise recycled aggregate will be explored in the concrete specification, however this is dependent on supply and availability. Reduced cement consumption will be targeted using Ground Granulated Blast Furnace Slag (GGBS), with 20% minimum replacement for the superstructure and substructure. Higher levels have been explored throughout the accompanying Whole Life Carbon assessment to be considered in future design stages.

The recyclability of building services materials when they come to their end of life will be considered.

6.4 EXCAVATION WASTE

Through a land contamination survey, low levels of contamination were found on site facilitating the reuse of excavation material.

A site waste management plan (SWMP) has been produced by Velocity Transport Planning Limited. This confirms that excavation is kept to a minimum, limited to the made ground and foundations. This totals 8,658m^3 of excavated material.

Excavated concrete is to be crushed on site for recycling as secondary aggregate. At this stage it is assumed all will be reused off site, with a review of this at a later design stage.

Therefore, in line with London Plan Policy SI7, a minimum 95% of excavation waste will be targeted for diversion from landfill for beneficial reuse.

Further detail is provided in the GLA Circular Economy Statement template accompanying this report and also within the Appendix G cut and fill diagram.

6.5 DEMOLITION WASTE

A pre-demolition audit has been conducted, as shown in Appendix B. Within this it is confirmed the site to be demolished includes residential, commercial and community use buildings. It is not possible to deconstruct the existing buildings on site, due to the proximity to sensitive neighbouring residential areas and in addition, the construction of the existing buildings does not allow repurposing elements or the reclamation of material, resulting in demolition being the only option.

The pre-demolition audit confirms that demolition across Phase A produces a large range of material amounting to 42,298 tonnes. There are two key demolition products identified which could be recovered: inert materials and metals. The inert materials are located in the structure, internal walls, external walls and landscaping. Within this, it is identified these materials are bricks, ceramics and asphalt (38,361 tonnes), all of which are recommended to be 100% recycled into secondary aggregate.

Metals were identified in the structure, mechanical and electric plant (MEP), balconies, doors, windows, walls, lifts, roof and pipework. The total mixed metal volume was identified as 3,017 tonnes. Of this, again, 100% is recommended to be recycled at a licensed facility.

It is also shown that separate skips are recommended on site for easy sorting of waste and therefore efficient collection.

The audit also identifies possible local waste carriers, for the contractor to consider once the tender stage is completed.

Consequently, in line with London Plan Policy SI7, a minimum 95% of non-hazardous demolition waste will be targeted for diversion from landfill for reuse, recycling or recovery.

Further detail is provided in the GLA Circular Economy Statement template accompanying this report.

6.6 CONSTRUCTION WASTE

The Site Waste Management Plan (SWMP) confirms that the following will be avoided to minimise the potential of on-site waste during construction:

- Over-ordering (order ‘just in time’);
- Ordering standard lengths rather than lengths required;
- Ordering for delivery at the wrong time (update programme regularly);
- Damage materials during unloading;
- Delivery to inappropriate areas of the site;
- Accepting incorrect deliveries, specification or quantity;
- Damage to materials from incorrect storage;

- Loss, theft or vandalism through secure storage and on-site security; and
- Damage or spillage through incorrect or repetitive handling.

A designated area will be provided for the segregation of construction waste. This will contain skips of different material streams.

Off site and standardised elements will aid in reducing construction waste as detailed in previous sections and improve on construction efficiency.

A SWMP has been produced by Velocity Transport Planning Limited (Appendix D). The contractor is expected to register with the Considerate Constructors Scheme, to reduce the impact of construction on site.

It is expected across the residential and non-residential developments, construction waste will total 1,967 tonnes (or 0.093 tonnes per m^2).

It is confirmed that in line with London Plan Policy SI7, a minimum 95% of construction waste will be targeted for diversion from landfill for reuse, recycling or recovery, which will be enforced within the contractor's package requirements.

The location of the waste storage areas will be clearly labelled, identifying the materials that can be received.

To reduce construction waste, the client will explore the possibility of utilising material supplier with low waste standards. This will be explored with the principal contractor where possible as early as possible to create the largest influence on the design and the resultant waste. The contractor will also aim to:

- Reuse as much concrete and hardcore waste as possible on site. Any remaining material unable to be used will follow the waste hierarchy to avoid sending to landfill; and
- Explore options to reuse as much of the material in their highest value form, e.g reuse bricks rather than crushing down for aggregate. Utilise material sharing platforms such as Globechain.

Further detail is provided in the GLA Circular Economy Statement template accompanying this report.

6.7 OPERATIONAL WASTE

In line with London Plan Policy SI7, a minimum recycling rate for municipal waste of 65% by 2030 will be targeted for the residential elements and 75% for the commercial elements.

To encourage minimisation of waste, residential and commercial waste quantities were reviewed in an Operational Waste Management plan prepared by Velocity (Appendix E).

The residential waste was calculated as per LBTH waste storage requirements which dictate the recycling rates (total of food waste and recycling percentages).

The commercial waste was calculated using British Standard BS5906:2005 Waste Management in Plots – Code of Practice metrics. Most retail space was assumed to be Food & Beverage to allow for worst case waste generation.

Operational waste production will be monitored and reported during the use phase by the building manager.

To ensure all building users understand the recycling process and to avoid contamination, the space will be clearly labelled to assist with segregation, storage and collection of the recyclable waste streams.

Commercial elements would seek a zero-landfill waste contract through a commercial waste contractor and residential waste will be disposed of by LBTH in their contracted facilities.

Each residential property will be provided with a segregated waste bin, which will be fixed into an appropriate kitchen unit with 10l of residential waste, 20l recyclables and 10l food waste. The following waste containers are provided for each individual dwelling:

- Residual Waste - 240l wheeled bin;
- Dry mixed recyclables - 240l wheeled bin;
- Food waste - 23l food caddy; and
- Garden waste - garden waste sack.
- The following was provided for communal waste stores:

Unit Type	Residual Waste (litres)	Dry Mixed Recyclables (DMR) (litres)	Food Waste (litres)
1-Bed	70	60	12
2-Bed	120	90	
3-Bed	165	120	
4-Bed (+)	215	150	

Residents will also be provided with access to a bulky waste storage area for large redundant items such as furniture or appliances.

For the residential units, LBTH currently do not segregate dry mix recycling into individual waste streams (card, paper, mixed plastics, metals, or glass). As the overall storage capacity would not increase (only the number of separate waste streams) the residential waste stores could be configured to accommodate further waste stream segregation should it become necessary due to changes to the LBTH collection contract or prevailing legislation.

Residential waste will be collected fortnightly for waste and recycling, whilst food waste will be collected weekly. Garden and bulky waste can be collected through a chargeable collection service. Reuse and recycling centres are available within close proximity to the site as well as local recycling points.

For the commercial units, whilst it is not anticipated to be necessary, commercial tenants will segregate dry mixed recycling into individual waste streams (card, paper, mixed plastics, metals, or glass) if required by their business practice or prevailing legislation.

The potential for alternate measures for handling operational waste has been explored as part of this statement. The following measures have been investigated:

- Communal composting scheme: This involves a central composting facility which is used by those within the building. This can help divert organic waste from landfill. Where this is a potential for the site, additional services and facilities will need to be installed on site, which carries an associated cost.
- Smart Logistics: Incorporating smart logistics into the development such as smart bins or Automatic Waste Collection Services (AWCS) is a possibility. This would allow monitoring of bin levels to facilitate more efficient collection of waste. Big Belly Solar UK who produces smart bins with sensors powered by solar energy could supply the facility to do this on site. It is currently difficult to determine the viability of such a scheme, as such this may be explored at a further stage of detailed design by a specialist waste consultant.
- Community led waste minimisation schemes: This would involve the community or building occupiers organising and following principles to reduce waste. Schemes have been conducted across London including Love Food Hate Waste (LFHW) and Zero Waste Brixton. A similar scheme could be conducted within the current development, though this would require engagement from the community or building owners. It is currently difficult to determine the viability of such a scheme, as such this may be explored further at a later stage of detailed design by a specialist waste consultant.

Further detail is provided in the GLA Circular Economy Statement template accompanying this report.

7.0 BUILDING MATERIALS

The circular economy strategy for the development has been developed in parallel with the WLC assessment to ensure the strategies are complimentary and the circular economy outcomes also reduce the WLC of the development.

The GLA Circular Economy Statement template includes a bill of materials setting out the material quantities for each building element and the weight of these materials. The bill of materials has been produced using software OneClick LCA, which calculates the mass of each building element based on its component materials. More detailed building weight calculations will be carried out as the design develops.

The following responsible material sourcing methods will be followed throughout the development:

- All timber and timber-based products will be 'Legal' and 'Sustainable' as per the UK Government's Timber Procurement Policy (TPP).
- An SPP has not been produced at this stage, however the client will explore the possibility to produce one at further stage to guide the procurement process.
- Priority will be given to materials sourced locally and those sourced responsibly, minimising the need for virgin material extraction and manufacture. Most materials used within the building are considered 'common', such as bricks and concrete which will be sourced locally. However specialised material such as stonework will likely be sourced from overseas. It has been suggested that where possible this be within Europe as opposed to China.

Recycled content

In line with London Plan Circular Economy Statement guidance, the development is targeting a minimum recycled content of 20% by value. In order to achieve this, the following materials are expected to have a proportion of recycled content:

- The recycled content of reinforcement steel is expected to be 97%. The contractor will engage with the steel suppliers to ensure the highest available recycled content steel will be sourced;
- Specifying 20% ground granulated blast furnace slag (GGBS) across concrete mixes within the substructure, frame, slabs and stairs; and
- A proportion of recycled content in other materials such as steel stud, plasterboard and insulation.

Appendix I contains the recycled content by value calculations. The development achieves 21.36% recycled content by value, thus exceeding the target 20%. Materials will be regularly reviewed through design development and material procurement during construction to ensure this level of recycled content is maintained or improved upon,

8.0 REPORTING CIRCULAR ECONOMY OUTCOMES

The appointed contractor will use their sustainability processes and systems to report against the team's targets set out in this Circular Economy Statement. Where the contractor is forecast to fall short of targets, they will put in place measures to address this.

8.1 PLANS FOR IMPLEMENTATION AND MONITORING

Short term

To ensure design targets highlighted in this report are met, the design team must follow the methodology detailed in this report. The project team will incorporate the requirements of this strategy into their specifications and contract documents, which will set out clear performance requirements for each of the targets and proposals outlined in this statement and will specify appropriate materials and solutions to meet these.

Relevant members of the team will report on the progress for their respective targets. The MEP engineers will analyse energy and the resultant energy reduction from relevant measures. Elements including incorporating standardised elements or designing out waste will be carried out by the architect, which will likely be registered within RIBA stage reports and the Design and Access Statement providing the narrative for achieving each target.

Certain design elements that will be reviewed in the next stage are as follows:

- Confirm the final mix of concrete, associated percentages of GGBS and recycled aggregate, and choice of admixtures;
- Hard landscaping design shall consider where high recycled content materials can be specified;
- Specification of materials with high recycled content for finishes, fittings and furniture;
- Consideration shall be given to the recyclability of building services materials at end of life;
- Further analysis to guide material efficiencies in the structure shall be incorporated in the next stages;
- Explore the opportunity to use precast concrete columns, prefabricated facade elements and bathroom pods going forward; and
- Planting choices within the landscape design shall be specified considering the changing climate and to minimise irrigation requirements.

Medium term

Many of the principles will be the responsibility of the contractor upon appointment. Consequently, for such principles including material sourcing, off site manufacturing, material specification, waste targets and on-site reuse of material, practices will be explored by the contractor.

Circular economy opportunities to explore with the contractor include, but are not limited to:

- In the later stages of the design, and in consultation with the contractor, consideration will be made for consolidated and smart logistics such as a just in time delivery strategy; and
- Identify likely waste destinations and obtain confirmation from receiving waste sites that sufficient capacity is available to receive waste.

Within this, the development must produce framework documentation, including the Site Waste Management Plan (SWMP), to which the contractor must adhere to achieve the targets highlighted in this report.

During construction, site managers or supervisors will ensure those under their control follow the best practice environmental procedures, abiding by the relevant plans and documentation for each task.

Throughout the further stages of the development the following monitoring procedures will be in place to ensure compliance with the commitments set out within this statement

- Monitoring of construction waste, including reuse and recycling rates;
- Regular site inspections to ensure construction plans and targets are being fulfilled;
- Site managers or supervisors will ensure those under their control follow the SWMP, applying the best practice environmental options. Site managers or supervisors will complete a SWMP check list and data sheet at relevant stages of site operations; and
- To ensure smooth implementation of the plans listed above, the relevant team will report back regularly on any potential improvements or justification for deviation from the plans to the contracts manager. The contracts manager will then take on board the concerns or recommendations, putting them to the managing director where necessary.

Long term (Post Completion)

Following project completion, an update to the Circular Economy Statement will be prepared. This updated statement will detail progress against the targets and commitments defined in this statement and report the outcomes and lessons learned.

Throughout the operational phase, an operational performance review will be undertaken to analyse how the building is being used in comparison to the designed use and whether there are further avenues for improvement.

Post Completion Report

The contractor tender documentation will include a requirement to produce a Post Completion Report and submit this to the relevant local authority and the GLA within three months of completion. This report will set out the predicted and actual performance against numerical targets and provide updated versions of the Recycling and Waste Reporting form and Bill of Materials.

9.0 END OF LIFE STRATEGY

This section sets out the end-of-life strategy for the main building materials. Full details are provided within the GLA Circular Economy Statements template accompanying this report.

The building's design and construction will reduce material demands as set out in the previous sections. Consideration has been given to how the building materials, components and products can be disassembled and reused at the end of their useful life.

Disassembly measures implemented within the design including pre-cast façade panels and non-load bearing internal wall partitions allow for these elements to be easily removed and directly reused off site or recycled.

The following activities will be carried out at the building end-of-life to disassemble and reuse materials, where possible:

- Concrete crushed and recycled; reinforcement recycled;
- Bricks reclaimed or crushed to form aggregate;
- Glass recycled;
- Products and MEP reclaimed or recycled where possible. As services have been designed for easy access for maintenance, these mechanical services can be easily removed from the building for reuse, refurbishment or recycling;
- Arrangements should be made for fixtures, fittings and furniture to be taken away by a company for refurbishment for reuse, recycle or sold/given away in a local salvage market; and
- The remaining building elements will likely require demolition or crushing, such as the concrete into Recycled Concrete Aggregate (RCA) for further use as concrete replacement in a new site.

A BIM model may also be used to aid this process, where building information can be provided to the future occupier facilitating a better understanding of the building prior to deconstruction. This encourages material reuse and a reduction in demolition/ deconstruction waste. Following the design stages, the Design Team will pass the 3D construction model on to the Contractor at RIBA Stage 5.

At handover, the building design and maintenance information will be captured in the O&M Manual produced by the Contractor. This will include the as-built drawings, system descriptions, and contact details for product and material suppliers. The O&M shall contain a section on the envisaged end-of life strategy.

A barrier to successful end-of-life is lack of awareness by those demolishing the building at the end-of-life stage of these measures. As such, communication with the future owner or those who will be demolishing the building is key.

APPENDIX A PRE-REDEVELOPMENT AUDIT

Existing buildings

The Aberfeldy Village site contains 19 no. blocks of varying sizes that were built predominantly in the 1950s, 1960s and 1970s with one more recent building from the 2000s. These are typically a concrete frame with brick infill, brick cavity walls, uPVC aluminium windows, tiled roofs and individual heating/hot water systems with communal ventilation.

Redevelopment options

The design team have provided potential redevelopment options for a typical low-rise block, of which many of the existing blocks are, and also Blairgowrie House, which has a structure typical of that of the larger blocks on the existing site.

The redevelopment options are provided as marked up drawings at the end of this audit, with further explanatory narrative provided below.

Low-rise structures

Option 01 (single storey lightweight buildover)

A single storey extension to buildings on the western edge of the Nairn Estate could deliver approximately 11no. additional homes. This approach would be very onerous relative to the uplift in dwellings and would require significant structural modification and additional circulation to access the additional levels. This approach would be costly and would result in significant disruption for existing residents for very little benefit.

In addition to the limitations of this approach on the number and quality of new homes, a single storey extension would not deliver on some of the key aims of the masterplan, including the provision of new affordable workspace, activation of the street and improvements to the permeability of the estate.

Option 02 (transfer new structure over existing)

The incorporation of a transfer structure facilitating the retention of buildings on the western edge of the Nairn Estate would add significant cost to the scheme and would reduce the number of new high quality homes that could be delivered by at least 38no. across Phase B. A large proportion of the homes lost would family homes. Entrances, circulation and ancillary spaces would also be compromised, redesigning the scheme to accommodate these spaces would result in a further loss of homes.

As with Option 01, this approach would prevent the scheme from delivering some of the changes that will benefit residents and the wider community including improved permeability and increased opportunities for active travel as well as new and upgraded public spaces. The quantum and quality of new workspace would be significantly reduced and the level of activation that could be achieved on the street would be limited. The quality of the residents' podium amenity would be compromised.

Blairgowrie Court

Blairgowrie Court is a modern structure, and in contrast to post war examples, the frame for this period was designed far more efficiently in line with the loading of the proposed and without capacity for additional storeys. Therefore, to increase the size of the building any retention of the frame would require onerous modification, with substantial thickening of the columns and additional piling and foundations. Whilst the former would compromise residential layouts the latter would have significant cost implications deeming the remediation unviable. For this reason, the above would be precluded, and any retention of the existing building be constrained to remain as per the existing footprint and scale.

In this scenario, the housing quantum would not see any uplift and not be delivering additional homes required to meet local demand including market homes to support the delivery of further affordable homes and the other local benefits. Notwithstanding the residential arrangements and core design that would also be out of date with current policy and requiring wholescale adjustment. Whilst the envelope could be revised to target current standards, this was not deemed substantively efficient to negate the aforementioned. For all these reasons, retention of the existing was precluded.

Structural summary

The height and construction of the existing buildings severely limits adaptations for re-use. In order to preserve the majority of the existing structural fabric and foundations, modifications would need to be limited to effectively superficial alterations and the potential addition of a maximum of one or two lightweight stories on top of the existing structures. This is incompatible with the clients brief for the site.

Alternatively, new structures could be built around and transfer over the existing structures, leaving them in-situ as part of a hybrid structure. This approach is impractical for the following reasons:

- The existing structural dimensions are unsuitable for the proposals so uses within these would be limited.
- Complex movement joints (due to differences in the nature of foundations) and significant transfer structures would be required between and over existing and new structures which would make the proposals economically unviable.
- The new portions of structure would be at different floor levels to the existing, creating elaborate architectural detailing to rationalise and reducing efficiency.

In this case the existing building stock to be removed equates to a small proportion of that proposed to be provided and the compromises required to retain it would prove impractical and uneconomical.

Architectural summary

The scale, design and location of the existing buildings are incompatible with retention as they do not meet the aspirations of the masterplan, which proposes a comprehensive and ambitious regeneration of Aberfeldy Village with significant improvements to public space and infrastructure.

Existing buildings are of small scale and low quality and the street network limits permeability and legibility. The estate does not provide enough good quality public space, and streets prioritise drivers over pedestrians and cyclists. There would be significant limitations to the improvements that could be made without demolition, and retaining the existing buildings would prevent the delivery of new homes, including a significant uplift in affordable housing provision. The existing homes do not reflect current housing need and layouts are unlikely to make suitable provision for disabled residents. Transformative improvements to infrastructure, including the re-purposing of the vehicular underpass into a pedestrian/cycling only route which will benefit residents well beyond the estate itself, would not be possible without demolition.

The material quality of the existing buildings seems relatively poor and is likely to require significant repair and remediation work if retained. Cleaning and re-pointing of brickwork may be required in addition to any structural interventions. Some buildings have been clad in what seems to be an insulating panel with a pebbledash finish. Given the time at which this work was carried out, it is likely that a rigid foam board type insulation was used, in which case, remedial works would be required to improve fire performance. Further remedial works to improve fire performance may be required on other parts of the site.

Wall build-ups are likely to contain insufficient insulation and so intervention to improve the thermal performance of the buildings is likely to be required, either in the form of over cladding in internal insulation, both of which would present significant technical challenges in terms of condensation and thermal bridging. The existing balcony design means that significant thermal bridging issues may remain after any other works to improve performance are carried out.

The existing buildings do not reflect the aspirations of the scheme in terms of and appearance and quality. In addition to poor quality brick which shows signs of damage and staining, corrugated metal pitched roofs, which are not in keeping with a residential aesthetic, poor quality UPVC windows, and piecemeal repairs and alterations contribute to a perception of low quality.

MEP summary

An assessment has been carried out to determine what improvements would be necessary to the existing buildings to bring them up to current minimum building regulations standards and the enhanced performance necessary to comply with London Plan planning policy.

The existing buildings on the site were primarily constructed between 1956 and 1977. Replacement windows have been installed at different times over the last 20 to 30 years, but it is understood that significant refurbishments have not been carried out to improve the other elements of the thermal envelope.

As an example, the properties in Nairn Street were constructed in 1969 and the windows were replaced in around 2001 as part of proposed minor refurbishment and repair works which obtained planning approval in January 2001.

In the absence of detailed survey information, the thermal performance of the existing buildings has been assessed using the NCM Construction Database as shown below:

Construction type	Date	U Value (W/m²K)
Pitched roof	1981 to 1989	0.36
Wall	1974 to 1980	1.7
Ground floor	1980 to 1985	0.58
Double glazing	1997 to 2001	2.8
Double glazing	2002 to 2006	2.0

Appendix 3 of the GLA Energy Assessment Guidance 2022 recommends an air permeability of 25 $m^3/h\ m^2$ @ 50Pa for buildings constructed prior to 1995.

The parameters required to achieve compliance with current Building Regulations and Planning Policy for new build properties are shown below:

	Part L 2021	London Plan	Improvement measures required to existing
Roof U value	0.11	0.10	Increase insulation to 400mm thick
Wall U value	0.18	0.14	Add 300mm of external insulation
Floor U value	0.13	0.08	Add 100 to 200mm insulation. May not be possible to achieve any improvement if the floor is solid concrete.
Window U value	1.3	1.3	Replace with new DGU
Air permeability $m^3/h\ m^2$ @ 50Pa	5	3	New airtight barrier with external wall insulation and also at roof level.

Buildings using these new build parameters should deliver homes with an energy usage intensity of around 35 kWh/m²/year.

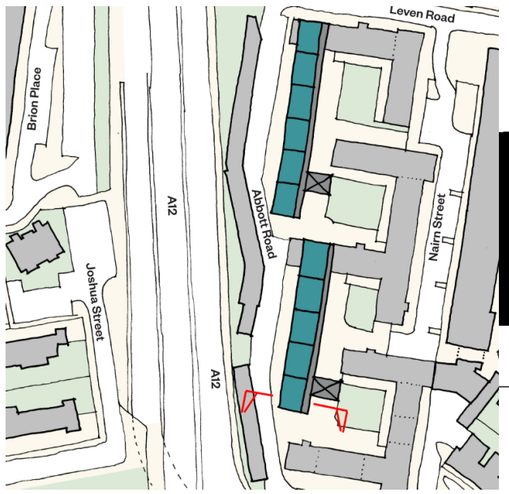
However, it would be impractical to achieve these new build parameters in a retrofit scheme, where the existing materials and construction limit the opportunity for improvement. This is recognised in the LETI Climate Emergency Retrofit Guide where the Best Practice targets are significantly lower, as shown below:

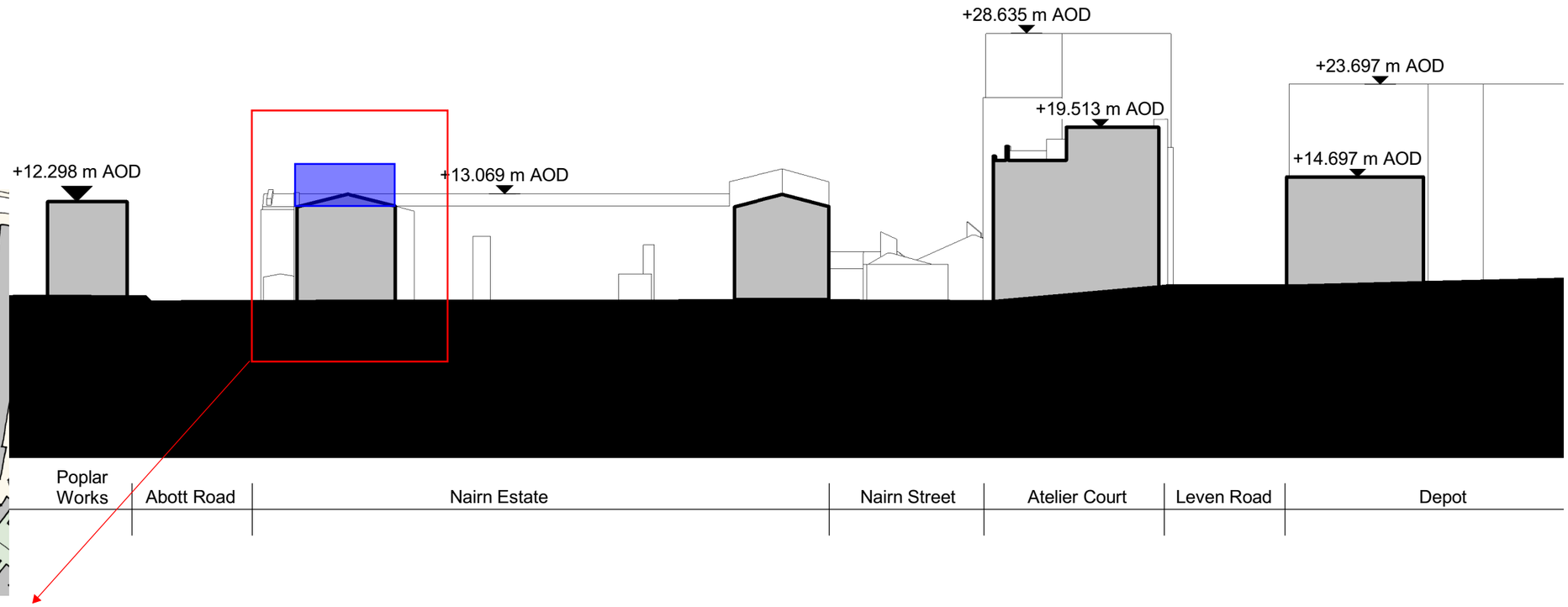
	Best Practice target	Notes
Roof U value	0.12	Cold roof

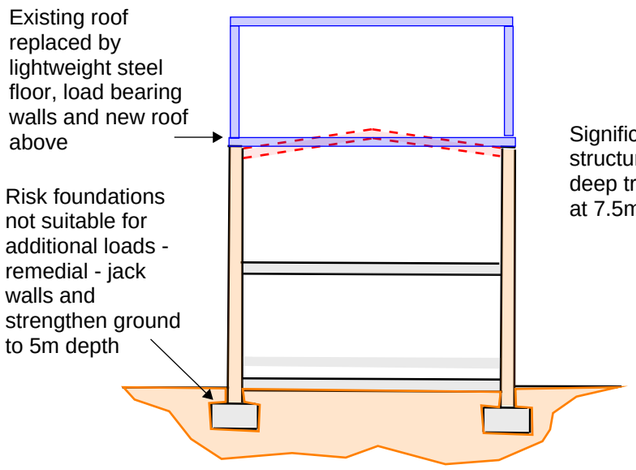
	Best Practice target	Notes
Wall U value	0.32	Solid wall
Floor U value	0.8	Solid floor
Window U value	1.3	Replace
Air permeability	3	Air changes per hour (equates to around 15m^3/h m^2 @ 50Pa)

LETI suggest that retrofit homes uses these Best Practice parameters should achieve an energy usage intensity of around 50 kWh/m^2/year, which is 43% higher than building new.

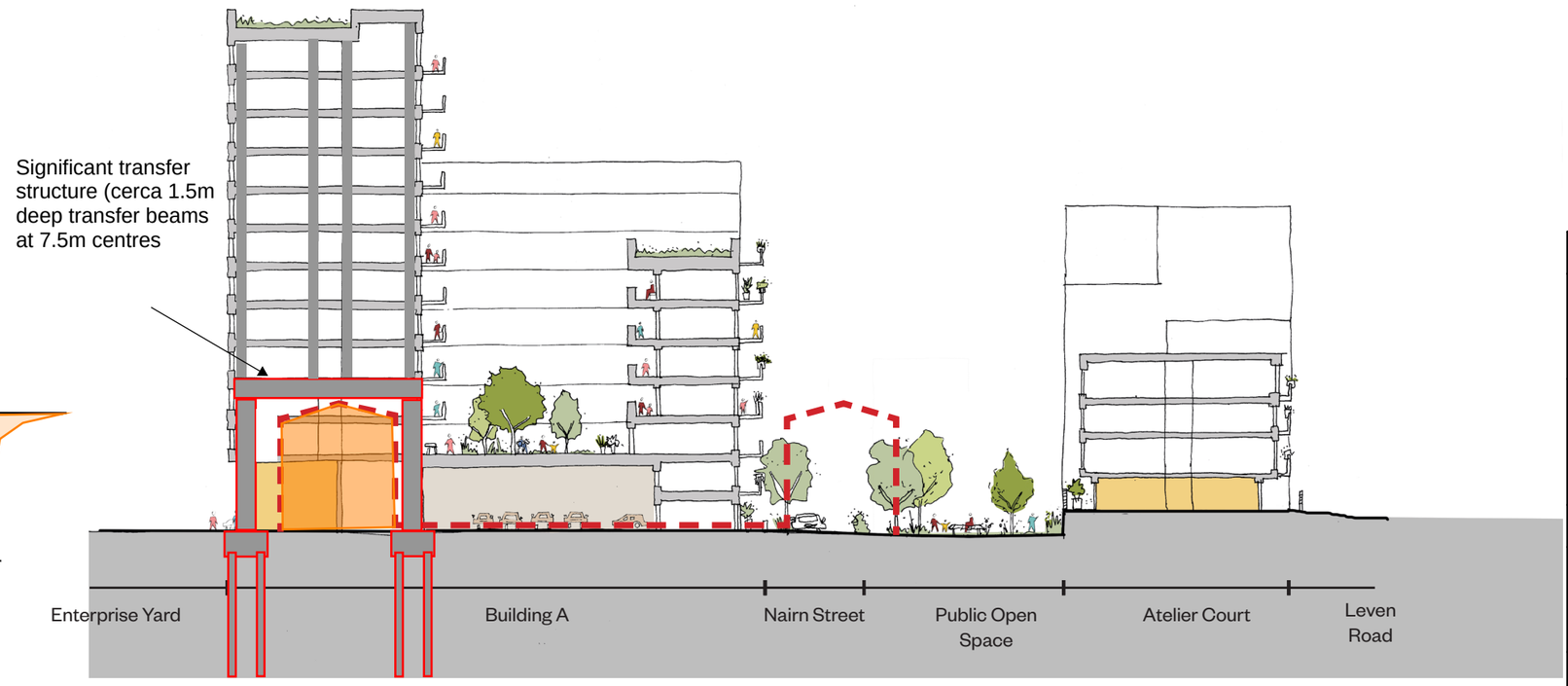
Community Lane North 1:500







Retain existing OPTION 1
Single storey lightweight buildover



Retain existing OPTION 2
Transfer new structure over existing

FOR INFORMATION

MEINHARDT
10 Aldersgate Street, London EC1A 4HJ.
Telephone: +44 (0)20 7831 7969
www.meinhardt.co.uk

PROJECT
Aberfeldy Village Masterplan

CLIENT
Ecoworld

TITLE
Re-use of existing building options
Typical low-rise blocks

DISCIPLINE	DATE	SCALE @ A3
STRUCTURAL	13/09/23	NTS

DRAWN	DESIGNED	CHECKED	APPROVED
VA	VA	TFP	

2812-MHT-S-SK0058-1 | ISSUE P01

TWO ADDITIONAL FLOORS

ONE ADDITIONAL FLOOR

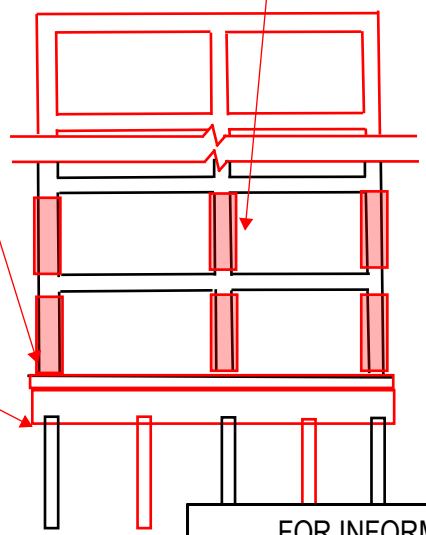
ONE ADDITIONAL FLOOR

1) GROUND FLOOR REMOVED AND TEMPORAY COLUMN JACKING STRUCTURE INSTALLED

2) EXISTING COLUMNS JACKED AND NEW MINI RIG PILES INSTALLED WITH 1.5m DEEP RC RAFT FOUNDATION

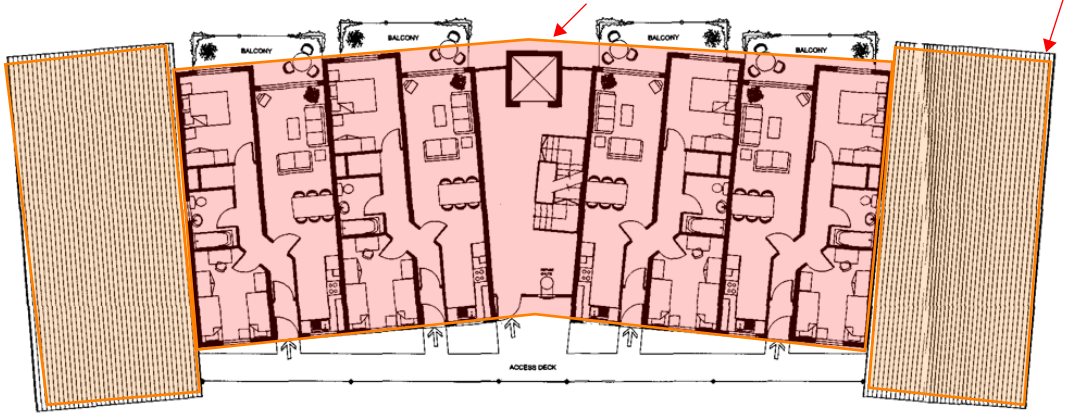
3) EXISTING COLUMNS RESUPPORTED ON NEW FOUNDATION

3) 150 THICK CONCRETE COLLARS INSTALLED TO LOWEST 2 LEVELS OF EXISTING COLUMNS



TWO ADDITIONAL FLOORS

ONE ADDITIONAL FLOOR



GIVEN AGE OF EXISTING BUILDING - DESIGN LIKELY TO HAVE BEEN OPTIMISED MEANING EXTENSIVE STRENGTHENING REQUIRED FOR ADDITIONAL FLOORS

FOR INFORMATION

MEINHARDT
10 Aldersgate Street, London EC1A 4HJ.
Telephone: +44 (0)20 7831 7969
www.meinhardt.co.uk

PROJECT
Aberfeldy Village Masterplan

CLIENT
Ecoworld

TITLE
Re-use of existing building options
Blairgowrie House

DISCIPLINE	DATE	SCALE @ A3
STRUCTURAL	13/09/23	NTS

DRAWN	DESIGNED	CHECKED	APPROVED
VA	VA	TFP	

	ISSUE
2812-MHT-S-SK0058-2	P01

APPENDIX B PRE-DEMOLITION AUDIT

ABERFELDY VILLAGE (PHASE A)

PRE-DEMOLITION AUDIT

PROJECT NO. 4060/1100 DOC NO. D014

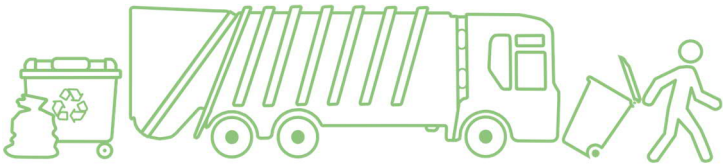
DATE: SEPTEMBER 2022

VERSION: 1.0

CLIENT: ABERFELDY VILLAGE LLP

Velocity Transport Planning Ltd

www.velocity-tp.com



VELOCITY
Transport Planning

DOCUMENT CONTROL SHEET

Document Reference

Project Title	Aberfeldy Village (Phase A)
Document Title	Pre-Demolition Audit
Project Number	4060/1100
Document Number	D014
Revision No.	1.0
Document Date	SEPTEMBER 2022

Document Review

	Name	Date completed
Prepared By	Peter Hambling	30/09/2022
Reviewed By	Tom Mabelson	30/09/2022
Authorised By	Tom Mabelson	30/09/2022

Notes

The document reference number, revision number and date are given on the footer of each page

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY 1
2 PROJECT INTRODUCTION 2
3 DEMOLITION PROPOSALS 5
4 PRE-DEMOLITION AUDIT RESULTS 14
5 KEY DEMOLITION PRODUCTS 15
6 SUMMARY AND CONCLUSIONS 21

FIGURES

FIGURE 2-1 ABERFELDY VILLAGE PHASE A 3
FIGURE 3-1 BUILDING EXTERIOR - FRONTAGE 6
FIGURE 3-2 BUILDING EXTERIOR - REAR 6
FIGURE 3-3 EXAMPLE FLOORPLAN 7
FIGURE 3-4 ABERFELDY STREET PLAN VIEW 8
FIGURE 3-5 BUILDING EXTERIOR – FRONTAGE 8
FIGURE 3-6 BUILDING EXTERIOR - REAR 9
FIGURE 3-7 EXAMPLE FLOORPLAN - COMMERCIAL 9
FIGURE 3-8 BUILDING EXTERIOR – FRONTAGE 10
FIGURE 3-9 BUILDING EXTERIOR - REAR 10
FIGURE 3-10 EXAMPLE FLOORPLAN – GROUND FLOOR 11
FIGURE 3-11 EXAMPLE FLOORPLAN - RESIDENTIAL FIRST FLOOR LEVEL 11
FIGURE 3-12 BUILDING EXTERIOR – ABERFELDY STREET FRONTAGE 12
FIGURE 3-13 NEIGHBOURHOOD CENTRE MUGA 12
FIGURE 3-14 LOCHNAGAR STREET 13
FIGURE 4-1 WASTE STREAMS BY WEIGHT 14
FIGURE 5-1 KDP EXAMPLE - INERT 16
FIGURE 5-2 EXAMPLE CRUSHER 17
FIGURE 5-3 EXAMPLE 32-TONNE TIPPER LORRY 18
FIGURE 5-4 KDP EXAMPLE - METAL 19
FIGURE 5-5 EXAMPLE 40YD3 ROLL-ON ROLL-OFF CONTAINER 20

TABLES

TABLE 4-1 SUMMARY OF DEMOLITION WASTE GENERATED 14
TABLE 5-1 QUANTITY OF INERT MATERIALS 16
TABLE 5-2 QUANTITY OF METALS 19
TABLE 5-3 LOCAL WASTE CARRIERS 20

1 EXECUTIVE SUMMARY

This report aims to identify and quantify where the key materials and components are present within the existing buildings of Aberfeldy Village (Phase A) and to further identify the potential recycling or reuse strategy for them.

Recommendations made within this report are based on the findings of the pre-demolition audit conducted by Velocity Transport Planning, including a non-intrusive site survey on 12th September 2022.

The information in this report demonstrates the benefits of recycling and re-use of KDPs based on economic value, the number of units and viability of deconstruction.

The demolition proposals include four sites of residential, commercial and community use buildings, as well as one vacant plot.

In total it is estimated that 42,298.07 tonnes of material will be generated by the demolition process. It is not anticipated that there are any materials on site suitable for reclamation.

Inert materials and mixed metals were identified as the KDPs on site, which represent 97.79% of the total tonnage of material generated by the demolition process. These materials can achieve a recycling rate of 100%, through a combination of on-site segregation and subsequent processing.

2 PROJECT INTRODUCTION

2.1 INTRODUCTION

2.1.1 This Pre-Demolition Audit (PDA) has been undertaken for Aberfeldy Village LLP and contributes towards the Site Waste Management Plan and Circular Economy Statement for Phase A of the Aberfeldy Village development proposals. The purpose of the audit is to identify and quantify where the key materials and components are present within the existing buildings, and to further identify the potential recycling or reuse strategy for them.

2.1.2 This report identifies materials and components for potential reuse or recycling from structures and hard landscaped areas due for demolition once all furniture and loose items have been removed.

2.1.3 The information in this report will help to demonstrate the benefits of recycling and re-use of Key Demolition Products (KDPs) based on economic value, the number of units and viability of deconstruction.

2.1.4 The findings and values contained in this report represent the best estimate of the materials and components based on the information available for the structures within the scope of the project. Estimates were made using the following information (where available):

- Architectural Plans
- Site surveys; and
- Photographs.

2.2 COMPETENCY – PROJECT MANAGER

2.2.1 The project manager was Peter Hambling who is a Chartered Waste Manager working for the past 11 years within the resource and waste management industry. His background began in environmental compliance and his experience includes contract management, waste stream analysis, collection methodologies and infrastructure development. With experience working for a construction waste contractor, commercial waste contractor and within a local authority as well as development planning, he has comprehensive understanding of the subject matter.

2.3 PROJECT SCOPE

2.3.1 The scope of the project includes the buildings and hard landscaped areas due for demolition as part of Phase A of the Aberfeldy Village masterplan, located within the administrative boundary of the London Borough of Tower Hamlets (LBTH).

2.3.2 Figure 2-1 below shows the extent of Phase A of the Aberfeldy Village masterplan.

Figure 2-1 Aberfeldy Village Phase A

2.3.3 The buildings and hard landscaped areas due for demolition are as follows:

- Blairgowrie Court;
- Aberfeldy Street West;
- Aberfeldy Street East;
- Aberfeldy Neighbourhood Centre; and
- Lochnagar Street.

2.3.4 The audit will cover the following content:

- Identification and quantification of the key materials where present on the project
- Potential applications and any related issues for the re-use and recycling of the key materials in accordance with the waste hierarchy
- Identification of local re-processors or recyclers for recycling 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

2.4 AUDIT METHODOLOGY

2.4.1 This audit is based on a non-intrusive survey methodology; a site visit was conducted on Monday 12th September 2022 by the project team with access granted by the building owner to vacant areas and tenanted areas with prior permission. A thorough inspection was made of the structures and external areas where possible, though inaccessible areas such as rooves were not included within the survey.

2.4.2 Site plans were available for some of the buildings, predominantly obtained through the publicly accessible planning records as well as other sources. Where details of construction methodology were not included on the plans, appropriate assumptions have been made to facilitate the audit results, based on industry knowledge.

2.4.3 The scope of the audit does not include any loose items or furniture but does include fittings such as kitchens and bathrooms where they were encountered during the site visit.

2.4.4 Where information is not available to inform the audit results, suitable assumptions have been made using relevant published material and prior knowledge based on industry experience.

2.4.5 Hazardous wastes such as Asbestos Containing Materials (ACM) including fibrous insulation or floor tiles are not included within the audit findings. It is recommended that a dedicated asbestos survey is commissioned, and all materials removed by an appropriately licenced contractor prior to demolition works.

2.4.6 Following the site visit and desktop study, the information was analysed to identify the principal material types present within the buildings. These materials were consolidated and established as the Key Demolition Products (KDPs) with total quantities provided in addition to recommendations for their reuse, recycling, or disposal. These recommendations are based on assumptions regarding material conditions and should be considered indicative, subject to refinement by the appointed demolition contractor.

2.5 KEY DEFINITIONS

2.5.1 To inform the audit process and results, key definitions were established.

2.5.2 Reclamation is reuse of a material or product in the same form. An example of reclamation is the removal of carpet tiles from an office for reuse in another location.

2.5.3 Recycling is reprocessing of a material of product for an alternative use. An example of recycling is crushing of house bricks (on- or off-site) for use within secondary aggregate materials.

2.5.4 Closed loop recycling is the process by which a product is used, recycled, and then made into a new product again without losing any of its material properties. An example of materials suitable for closed loop recycling are aluminium cans, which can be reprocessed multiple times in to the same product.

2.5.5 Open loop recycling is where the recycled materials are converted into both new raw materials and waste product. Typically, materials recycled through open-loop recycling go on to be used for purposes different from their former purpose. This means that the input into the recycling process is converted to a new raw material, which can be used as an input into another manufacturing process. An example of open loop recycling is plastic water bottles that are reprocessed to provide material for sleeping bags or fleece jackets.

3 DEMOLITION PROPOSALS

3.1 PROPOSALS

3.1.1 The demolition proposals include four sites of residential, commercial and community use buildings, as well as one vacant plot.

3.1.2 The buildings are planned for demolition as they are no longer fit for purpose and do not meet current standards.

3.1.3 The development proposals comparatively represent significant improvements in terms of energy efficiency, future climate adaptation and overall quality for residents.

3.1.4 Deconstructing the existing structures to reclaim components or materials (rather than traditional demolition) is considered unfeasible due to the small site footprint and proximity to a number of sensitive neighbouring uses.

3.1.5 Further, the existing buildings are constructed in a manner that does not facilitate repurposing specific elements or reclamation of materials, with demolition considered the only viable option.

3.1.6 The new development proposals will represent a move towards methods of construction that incorporate circular economy principles.

3.1.7 The following sections will provide a summary of existing structures and hard landscaping for each site planned for demolition.

3.2 BLAIRGOWRIE COURT

3.2.1 Blairgowrie Court is located on Blair Street, adjacent to the earlier phases of the Aberfeldy Village development.

3.2.2 It is a residential building ranging between three and six storeys constructed in the early 2000s. The layout internally is uniform with 30no. identical 2-bedroom dwellings, one central core and an external access deck.

3.2.3 Access was granted to vacant units and common areas within the building to conduct the survey.

3.2.4 Figure 3-1 and Figure 3-2 below show the building exterior.

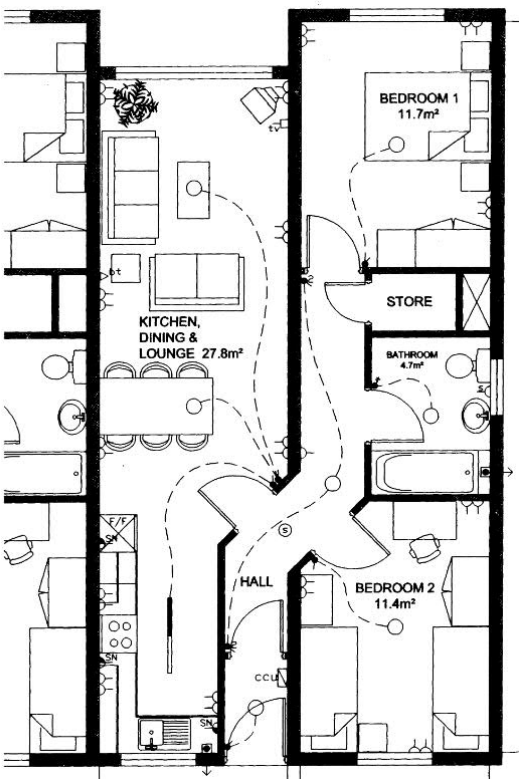
Figure 3-1 Building Exterior - Frontage

Figure 3-2 Building Exterior - Rear

3.2.5 The building is currently vacant, with all fixtures and fittings removed from kitchens and bathrooms.

3.2.6 Figure 3-3 below shows the typical floorplan for each of the residential units.

Figure 3-3 Example Floorplan



3.3 ABERFELDY STREET (WEST & EAST)

3.3.1 Two of the buildings proposed for demolition are on either side of Aberfeldy Street, with commercial uses at ground level and residential units above of assumed standard construction type.

3.3.2 For the purpose of the audit, the buildings have been termed as follows:

- Aberfeldy Street West (No. 25-55); and
- Aberfeldy Street East (No. 36-50).

3.3.3 Both buildings are 3 storeys and understood to be constructed between the 1950-60s with central stair cores and external access decks. Within each block the residential units were uniform in their composition as 3-bedroom maisonettes with an external terrace.

3.3.4 The residential element of each building is currently vacant, with all fixtures and fittings removed from kitchens and bathrooms. The commercial parts remain occupied, with an anticipated transfer to alternative premises within the Aberfeldy Village masterplan prior to demolition works.

3.3.5 It is expected that all commercial equipment would be removed and transferred to the new business premises for reuse.

3.3.6 Access was granted to vacant residential units as well as common areas. Access was possible to the ground floor commercial units with tenant permission.

3.3.7 Figure 3-4 shows a plan view of Aberfeldy Street.

Figure 3-4 Aberfeldy Street Plan View

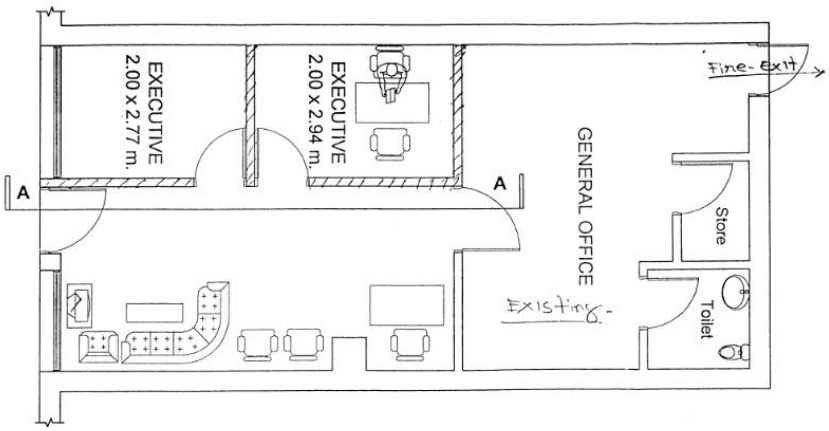
3.3.8 Figure 3-5 and Figure 3-6 below show the building exterior of Aberfeldy Street West.

Figure 3-5 Building Exterior – Frontage

Figure 3-6 Building Exterior - Rear

3.3.9 Figure 3-7 below shows the typical floorplan for one of the sixteen commercial units at ground floor level in Aberfeldy Street West.

Figure 3-7 Example Floorplan - Commercial



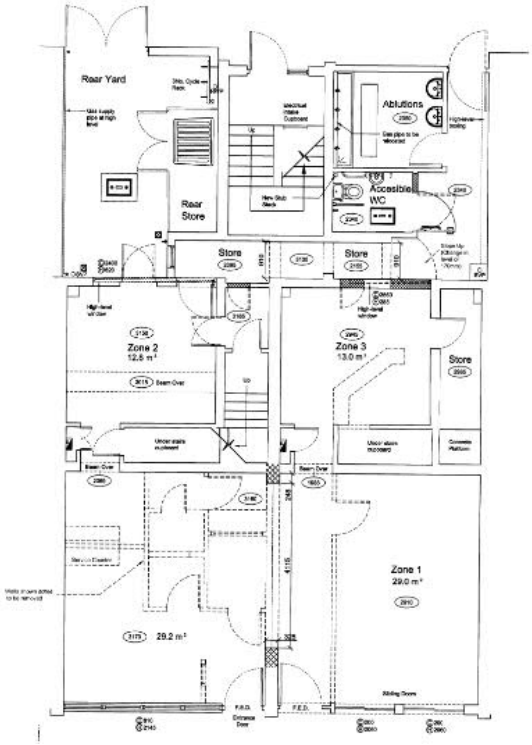
3.3.10 Figure 3-8 and Figure 3-9 below show the building exterior of Aberfeldy Street East.

Figure 3-8 Building Exterior – Frontage

Figure 3-9 Building Exterior - Rear

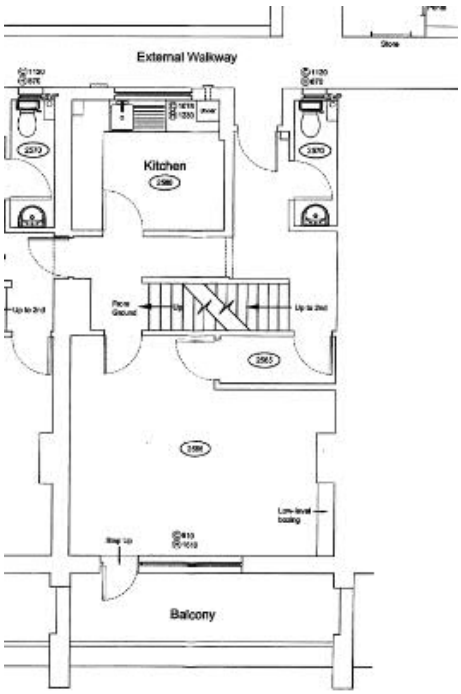
3.3.11 Figure 3-10 below shows the typical floorplan for two of the eight commercial units at ground floor level in Aberfeldy Street East.

Figure 3-10 Example Floorplan – Ground Floor



3.3.12 Figure 3-11 below shows a floorplan for one of the residential units in Aberfeldy Street East.

Figure 3-11 Example Floorplan - Residential First Floor Level



3.4 ABERFELDY NEIGHBOURHOOD CENTRE

3.4.1 The Aberfeldy Neighbourhood Centre on the corner of Aberfeldy Street and Dee Street.

3.4.2 It is a one storey building currently in use as community centre (including a nursery, computer suite and small café) of standard construction, built in the early 2000s.

3.4.3 To the rear is a MUGA that is available for public hire.

3.4.4 Access was granted to common areas within the building to conduct the survey.

3.4.5 Figure 3-12 below shows the exterior frontage of the building from Aberfeldy Street.

Figure 3-12 Building Exterior – Aberfeldy Street Frontage

Figure 3-13 Neighbourhood Centre MUGA

3.5 LOCHNAGAR STREET

3.5.1 The site located at Lochnagar Street is currently a vacant plot with overgrown vegetation.

3.5.2 It was not possible to access the site during the survey.

3.5.3 Figure 3-14 below shows the Lochnagar Street site viewed from Bromley Hall Road.

Figure 3-14 Lochnagar Street

4 PRE-DEMOLITION AUDIT RESULTS

4.1 OVERALL VOLUMES OF WASTE PRODUCED FROM DEMOLITION

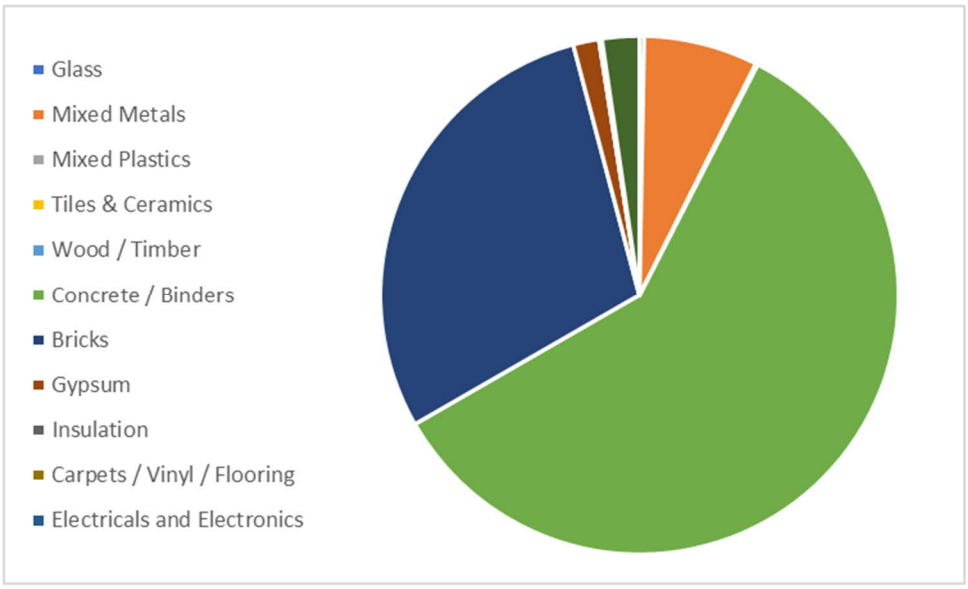
4.1.1 Table 4-1 below shows the estimated weight of materials generated by the demolition process.

Table 4-1 Summary of Demolition Waste Generated

Material	Tonnes	% By Weight
Glass	122.40	0.29
Mixed Metals	3,017.32	7.13
Mixed Plastics	13.20	0.03
Tiles & Ceramics	16.90	0.04
Wood / Timber	23.84	0.06
Concrete / Binders	25,018.45	59.15
Bricks	12,342.52	29.18
Gypsum	681.39	1.61
Insulation	6.21	0.01
Carpets / Vinyl / Flooring	40.90	0.10
Electricals and Electronics	31.69	0.07
Asphalt	983.25	2.32
Mixed	-	0.00
Total	42,298.07	

4.1.2 Figure 4-1 below shows the percentage of each waste stream by weight, as per Table 4-1

Figure 4-1 Waste Streams by Weight



5 KEY DEMOLITION PRODUCTS

5.1 IDENTIFICATION OF KEY DEMOLITION PRODUCTS

5.1.1 This section of the report discusses the KDPs that have been identified for the sites following analysis of the audit findings. The KDPs present on site represent an estimated 97.79% of all waste occurring on site.

5.1.2 The two KDPs identified are as follows:

- Inert Materials; and
- Metals.

5.2 BEST PRACTICE METHODOLOGIES

5.2.1 There are some general methods of good practice to be considered during any demolition project looking to maximise the reuse and recycling of materials. These measures include the following:

- Agree targets for reclamation and recycling as part of the demolition management plan;
- During the strip-out/demolition phase, details of the actual materials arising and the waste management methods used should be recorded to compare actual with forecast and to assess performance against the targets set.
- Following completion of the project, any barriers to achieving the targets should be reviewed to ensure that in future projects these barriers can be overcome.
- Early promotion of available materials for reclamation through appropriate channels, particularly community projects;
- Contact local architectural salvage contractors to discuss if there are items they would be interested in reclaiming;
- Provide space on site for reclaimed materials in addition to segregated containers per waste stream;
- Use resources such as SalvoWeb[1] that provide a directory of business dealing with salvaged items;
- Provide separate containers per waste stream on site to maximise recycling rates;
- Ensure demolition operatives are appropriately trained to recognise materials and understand how to segregate them correctly;
- Where it is not possible to recycle materials due to their composition, seek a commercial waste contractor who diverts waste from landfill and sends residual waste for energy recovery.

[1] https://www.salvoweb.com/

5.3 INERT MATERIALS

5.3.1 The predominant KDP on site has been identified as inert materials, representing 90.65% of the total material on site. The inert materials are a group of materials that are handled and processed in the same manner during demolition and subsequent processing.

5.3.2 The inert materials generated by the demolition process are located within the following elements on site:

- Structural building frame;
- Internal walls;
- External walls; and
- Areas of hard landscaping.

5.3.3 Figure 5-1 below shows example of inert materials present on site.

Figure 5-1 KDP Example - Inert

5.3.4 Table 5-1 below summarises the quantities of these materials on site generated by the demolition process, categorised by European Waste Catalogue (EWC) code.

Table 5-1 Quantity of Inert Materials

Material	EWC Code	Tonnage	Recommended Processing (%)	
			Reclamation	Recycling
Bricks	17 01 02	12,343	0	100
Tiles and Ceramics	17 01 03	16.9	0	100
Concrete / Hardcore	17 01 07	25,018	0	100
Asphalt	17 03 02	983	0	100
Total		38,361	0	100

RECOMMENDATIONS

5.3.5 Inert materials are the predominant KDP generated by the demolition process on site. The potential for reclamation of inert materials is relatively low due to their use, composition, and material qualities.

5.3.6 It is possible to reclaim bricks for reuse within another structure, though for this to be feasible the bricks are required to be of high quality to justify the resource and space required to recover them on site.

5.3.7 It is expected that all of the inert materials generated by the demolition process will be recycled to form secondary aggregate either on- or off-site.

5.3.8 Inert materials are processed using a crusher which reduces their fraction size.

5.3.9 Figure 5-2 shows an example crusher being loaded with inert materials.

Figure 5-2 Example Crusher

5.3.10 Crushed materials could be used for engineered fill on- or off-site, and at is expected that the material would be processed in accordance with prevailing guidance to ensure the secondary aggregate meets all requirements with regard to material properties.

5.3.11 The most efficient method of processing the materials would be to phase the demolition to allow space for on-site crushing, though this may not be possible due to the small footprint of the sites and the proximity to neighbouring residential properties.

5.3.12 Crushing the inert materials on site would reduce the number of vehicle movements associated with the demolition process. If the material is being used on-site as engineered fill, the requirement for imported material is decreased, and if it is being transferred for use off-site the volume of the material is reduced when loaded.

5.3.13 On-site crushing would be subject to the demolition contractor obtaining a permit from the relevant authority, to ensure operations would not adversely impact the environment with noise or dust generated.

5.3.14 If it is not possible to crush the inert materials on site, they would be transferred an appropriately licenced nearby facility for processing and subsequent use.

5.3.15 It is anticipated that crushed inert material would be transported in 32-tonne tipper lorries.

5.3.16 Figure 5-3 below shows a 32-tonne tipper lorry being loaded with crushed concrete.

Figure 5-3 Example 32-Tonne Tipper Lorry

5.3.17 The landfill diversion rate for the inert materials on site would be anticipated to be 100%.

5.4 METALS (FERROUS/NON-FERROUS)

5.4.1 The second KDP on site has been identified as metals, with use across all structures for a number of purposes.

5.4.2 The metal generated by the demolition process are located within the following elements on site:

- Structural building frame;
- Mechanical and Electrical Plant (MEP);
- Balconies;
- Doors and windows;
- Walls;
- Lifts and stairs;
- Roof; and
- Pipes and ducting.

5.4.3 Figure 5-4 below shows examples of metals present on site.

Figure 5-4 KDP Example - Metal

5.4.4 Table 5-2 below summarises the quantities of metals on site generated by the demolition process, including the EWC code.

Table 5-2 Quantity of Metals

Material	EWC Code	Tonnage	Recommended Processing (%)	
			Reclamation	Recycling
Mixed Metals	17 04 07	3,017	0	100

RECOMMENDATIONS

5.4.5 Metal is the second most prevalent material expected to be generated by the demolition process. A number of metal types are to be found within the structures and external areas.

5.4.6 Reuse of structural metal (such as rebar within reinforced concrete) is not possible due to the manner in which it is extracted.

5.4.7 Whilst there is a small potential that some of the metals with the external areas such as fencing could be reused , this is considered unlikely due to logistical constraints. Reuse of these elements would likely require designated locations to transfer directly to at the time of demolition.

5.4.8 It is recommended that segregated containers for metal generated by the demolition process are used to ensure that all waste metal is captured.

5.4.9 Scrap metal is usually stored in skips or roll-on roll-off containers on site for before transfer to an appropriately licenced facility.

5.4.10 An example 40yd^3 container is shown in Figure 5-5 below.

Figure 5-5 Example 40yd³ Roll-On Roll-Off Container

5.4.11 Scrap metal has a value by weight and will generate a rebate based on the quality of the material.

5.4.12 The landfill diversion rate for the metals on site would be anticipated to be 100%.

5.5 LOCAL LICENCED WASTE CARRIERS

5.5.1 Table 5-3 below details a selection of licenced waste carriers local to the site that could be contracted to facilitate removal of waste materials.

Table 5-3 Local Waste Carriers

Waste Contractor	Waste Carrier Licence	Address	Contact	Distance (Miles)
O'Donovan Waste Disposal	CBDU116673	82 Markfield Road N15 4QF	02088019561	7
GBN Leyton	CBDU90075	GBN Services, Estate Way, Church Road, E10 7JN	0203 887 5345	5
GBN Canning Town	CBDU90075	GBN Services Ltd, Canning Town Depot, 11a Cody Road Business Centre, South Crescent, Canning Town E16 4TL	020 7987 2220	2
Bywaters	CBDU100793	Bywaters (Leyton) Twelvetrees Crescent E3 3JG	07721 647392	1.5
Norris Greenwich	CBDU89511	Station Approach, Orpington, BR5 2NB	01689806420	12
Powerday PLC	CBDU123332	32 Stephenson Street Canning Town London E16 4SA	02089604646	1.6

6 SUMMARY AND CONCLUSIONS

6.1 SUMMARY

6.1.1 The purpose of the audit is to identify and quantify where the key materials and components are present within the existing buildings, and to further identify the potential recycling or reuse strategy for them.

6.1.2 This report identifies materials and components for potential reuse or recycling from structures and hard landscaped areas due for demolition once all furniture and loose items have been removed.

6.1.3 This report helps to demonstrate the benefits of recycling and re-use of identified KDPs based on economic value, the number of units and viability of deconstruction.

6.1.4 The scope of the project includes the buildings and hard landscaped areas due for demolition as part of Phase A of the Aberfeldy Village masterplan, located within the administrative boundary of the London Borough of Tower Hamlets.

6.1.5 The two KDPs on site identified are as follows:

- Inert Materials; and
- Metals.

6.1.6 The two KDPs present on site represent an estimated 97.79% of all waste occurring on site.

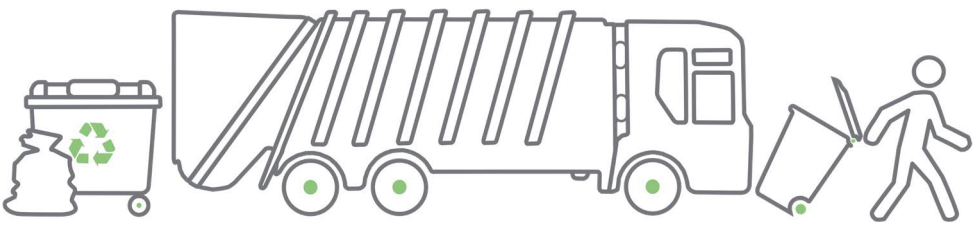
6.1.7 The landfill diversion rate for the KDPs on site would be anticipated to be 100%.

6.1.8 There are a number of waste carriers within the local area licenced to carry waste materials from site.

6.2 CONCLUSION

6.2.1 This Pre-Demolition Audit has taken into account the need to lessen the overall impact of waste generation through the reclamation and recycling of materials from the demolition phase of the Aberfeldy Village Development (Phase A).

6.2.2 The proposals set out in this strategy meet the requirements of relevant waste policy and follow applicable guidance.



VELOCITY
Transport Planning

APPENDIX C LEAN DESIGN ASSESSMENT

LEAN DESIGN STATEMENT

MEINHARDT UK

Aberfeldy Village Phase A

Doc Ref.: 2812-S-DN-002

MEINHARDT

Framing Options

CONCRETE FRAME
In-situ with flat slabs

STEEL FRAME
With profile concrete deck

MODULAR UNITS
With precast concrete slabs

CONCRETE WITH TIMBER INCLUDED
With CLT timber deck with Glulam beams for alternate floor levels.

During the planning stage different structural framing option were considered. These included traditional concrete Frame, traditional steel frame, modular construction and concrete frame with timber alternate levels.

Framing Appraisal

The following design considerations formed the decision to proceed with an reinforced concrete slab.

Design Considerations	Reinforced Concrete Frame/Flat Slab Design
Floor depth	Efficient slab depth - 250mm thick typical slabs
Embodied Carbon	Reduced using min 20% cement replacement and 40% recycled steel
Acoustics	Good natural acoustic damping qualities
Thermal mass	Good natural thermal massing qualities
Services integration	Thin structural floor depth with flat soffit simplifies service integration
Fire protection	Good natural resistance to fire
Future Maintenance	Low maintenance requirements

Embodied Carbon

The column spacings are efficiently located at approximately 7.0m centres throughout the builings:-

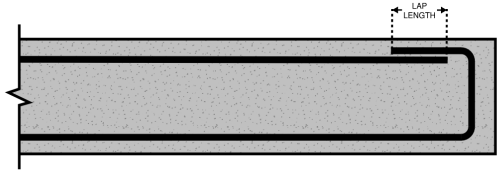
- Relatively thin slabs and subsequently low concrete volumes
- Uniform section sizes to limit form work types

- Optimising the steel reinforcement can further reduce the carbon in concrete. Low reinforcement volumes in the slab together with Cement Replacement can achieve a figure of 140kg/m^3

Embodied Carbon per Cubic Meter (kg)					
Rebar Rate					
		1% (75 kg/m^3)	2% (150 kg/m^3)	3% (230 kg/m^3)	4% (330 kg/m^3)
Strength	C28/35	467	615	772	967
	C32/40	498	645	801	996
	C35/45 *	523	670	826	1020
	C40/50	549	695	850	1045

* No Cement Replacement

- The reinforcement can be efficiently detailed to avoid laps & wastage



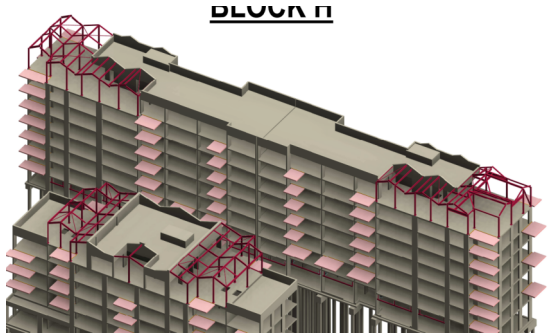
- The Cement Replacement such as GGBS or PFA will significantly reduce the embodied carbon in the concrete frame. Substitutions of up to 25-40% can be used in the superstructure and large values of up to 75% can be utilised in the foundations where curing times are generally less critical

Material Efficiency

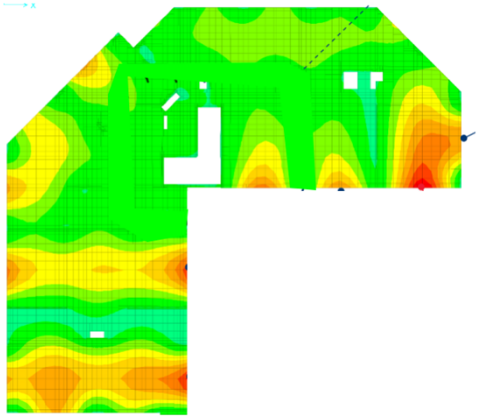
Early in the Stage 3 structural design process undertaken to support the development of the Phase A detailed planning application for Aberfeldy Village, floor slabs were modelled using finite element software.

By undertaking this early stage analysis, Meinhardt have been able to ensure that the typical proposed slab thickness (250 mm thick) is efficient in terms of steel reinforcement quantities required. Material usage has also been minimised by :-

- Avoiding transfer structures wherever possible, with transfers limited to location where the most efficient arrangement can be accommodated. On plot F concrete volumes were reduced by changing from a transfer slab to discrete transfer beam arrangement.
- Using light weight steel roof structures where possible or timber frames for low rise structures
- Doing more of the detailed analysis upfront
- Using discrete piled foundations rather than massive concrete rafts



Lightweight steel roof structures incorporated on block H



Example slab analysis (Plot F)– Long term deflection 3D contour plot (critical design criteria)

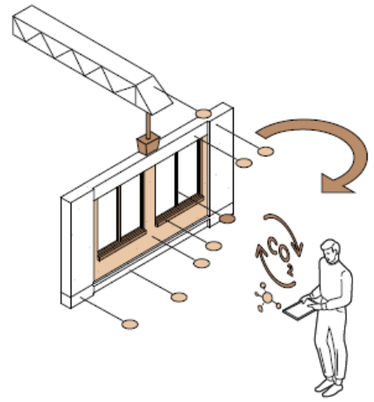
MORRIS+COMPANY

Material Assessment
Aberfeldy Village Phase A
A303-4.33-008
Date: Sep 2023

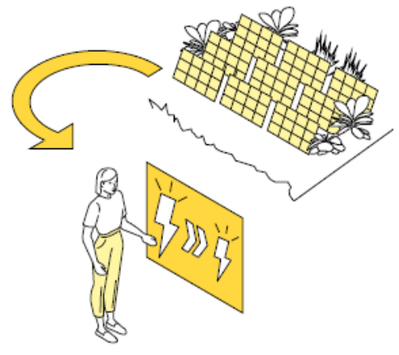
To optimise the use of materials in building design, procurement, construction, maintenance and end of life, the design team throughout the early development of Aberfeldy Village have implemented several strategies to optimise the design of the building.

This process has been developed in consideration of material efficiency, with the intent to reduce the overall material volume of the proposal whilst seeking solutions to improve the lifecycle and lifespan of the building.

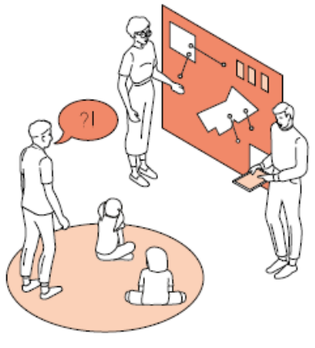
Building Element		**Objectives** Primary aspirations and targets for each respective element	**Design Strategies** Measures considered and incorporated in the proposed design
1.0	**Building Arrangement + Layout**		
1.01	General	Optimise building arrangement to mitigate unnecessary material usage	Where viable, the overall building arrangement has been articulated to seek efficiencies in circulation and area. This to optimise the practical use of the building but also to minimise waste and advocate a rigorously engineered arrangement.
1.02	Flexible Use	Suitably incorporate flexible use into the building arrangement	The ground floors of the building have been designed with inherent flexibility, allowing multiple uses across the space and elements (walls / windows etc) to be utilised in multiple ways and configurations, creating an efficient arrangement whilst reducing extra constructional demand in comparison with more onerous traditional, independent room allowance.
1.03	Cores	Consider the layout of the core to deliver material and spatial efficiencies	A single, centralised concrete core is proposed across the buildings. Whilst a practical solution for circulation, this also allows efficient structural and servicing solutions facilitated from the centre of the plan. Alongside this, a degree of ongoing flexibility has been coordinated within the service provision of the core, to future-proof the building and allow adaptability for future use and operators.
1.04	Basement and ground works	Optimise building arrangement to mitigate unnecessary sub surface accommodation and ground works	The ground floors of the building have utilised the existing site levels to minimise excavation, whilst not pursuing any basements.
2.0	**External Walls**		
2.01	General	Develop a façade design suited to the aesthetic and environmental demands of the building whilst in consideration of material use and delivery.	In principle 2 different systems of façade have been proposed; Lower Mixed-Use Floors: Precast masonry panels Upper Office Floors: Brickwork with metalwork balconies Visually, this has allowed the building to be developed as an expression of its parts; a separation between the upper levels of residential use and predominantly mixed-use



+ Low embodied carbon and rationalised design



+ Fabric first approach and low operational carbon



+ Social Value of materials to existing local character

			emphasis to the ground. Materially, efficiencies have been sought and for the design to respond rationally in context of each proposed system.
2.02	Façade – brickwork		The residential façade design has been developed as a rigorous repetition of parts, with a minimal number of elements in the aspiration for efficiency. This specifically in consideration of the balcony system, which has been designed for pre-fabricated, off site manufacture. Size / formats have been limited, with repetitive detailing for material efficiency. The façade modules and brick setting out have been regulated to allow an economy of scale whist optimising structural solutions and spans to optimise sub-structure support. The use of pre-fabricated elements will help to ensure quality in construction and finish, whilst also benefitting the installation programme.
2.03	Façade – pre-cast masonry panels to mixed use ground floors		To the lower ground floors, a more earthly, natural material palette is proposed, achieved through precast masonry panels. These will be durable and long lasting, that can suitably weather and age over time. Benefits will be brought through offsite fabrication, with further discussions on the material specification allowing strategies for sustainable methods to be explored. Setting out of joints and panels have strived to allow repetition in moulds and reduce waste.
3.0	**Masterplan**		
3.01	General reuse and repurpose of materials	Utilise the wider masterplan design and delivery to benefit material use across the site	As part of the wider masterplan of Aberfeldy, strategies are being advocated to maximise the reuse of existing structures and materials. This alongside the ambition to minimise the generation and environmental impacts of waste through maximising the opportunities for reuse and recovery. This will be crucial in the demolition and enabling works.
3.02	Shared access and servicing		Material efficiencies are being sought across the buildings through a shared strategy of design and delivery. This includes elements such as proposed lighting design, access roads, public realm etc
4.0	Construction Waste		
4.01	Contractor		Discussions with any prospective contractors will encourage and advocate targets to reduce operational waste and exceed best practice expectations. This includes consideration on site-wide waste management and transportation strategies, whilst considering methodologies for material circularity.

+ Plot F, H and i façade extracts

APPENDIX D SITE WASTE MANAGEMENT PLAN

ABERFELDY VILLAGE (PHASE A)

OUTLINE SITE WASTE MANAGEMENT PLAN

PROJECT NO. 4060/1100 DOC NO. D013

DATE: SEPTEMBER 2022

VERSION: 1.0

CLIENT: ABERFELDY VILLAGE LLP

Velocity Transport Planning Ltd

www.velocity-tp.com

VELOCITY
Transport Planning

DOCUMENT CONTROL SHEET

Document Reference

Project Title	Aberfeldy Village (Phase A)
Document Title	Outline Site Waste Management Plan
Project Number	4060/1100
Document Number	D013
Revision No.	1.0
Document Date	SEPTEMBER 2022

Document Review

	Name	Date completed
Prepared By	Peter Hambling	30/09/2022
Reviewed By	Tom Mabelson	30/09/2022
Authorised By	Tom Mabelson	30/09/2022

Notes

The document reference number, revision number and date are given on the footer of each page

TABLE OF CONTENTS

1 INTRODUCTION 1
2 DEMOLITION AND EXCAVATION WASTE 4
3 CONSTRUCTION WASTE 8
4 SUMMARY & CONCLUSION 14

FIGURES

FIGURE 1-1 SITE LOCATION 1
FIGURE 1-2 ABERFELDY VILLAGE PHASE A 2
FIGURE 1-3 PROPOSED DEVELOPMENT PHASE A 3
FIGURE 3-1 ESTIMATED CONSTRUCTION WASTE COMPOSITION (SOURCE: SMARTWASTE) 9

TABLES

TABLE 2-1 SUMMARY OF DEMOLITION WASTE GENERATED 4
TABLE 2-2 INERT DEMOLITION WASTE 5
TABLE 2-3 MIXED METALS DEMOLITION WASTE 5
TABLE 2-4 STRUCTURAL PROPOSALS 6
TABLE 2-5 EXCAVATION MATERIAL GENERATION AND VEHICLE MOVEMENTS 7
TABLE 3-1 ENVIRONMENTAL PERFORMANCE INDICATORS 9
TABLE 3-2 ESTIMATED CONSTRUCTION WASTE ARISINGS 9
TABLE 3-3 RECOVERY RATE OF CONSTRUCTION MATERIALS 10
TABLE 3-4 TYPE AND VOLUME OF WASTE TO BE GENERATED DURING CONSTRUCTION 10
TABLE 3-5 MEASURES TO REDUCE WASTE OF ON-SITE CONSTRUCTION MATERIALS 12

1 INTRODUCTION

1.1 INTRODUCTION

1.1.1 Velocity Transport Planning has been commissioned by Aberfeldy Village LLP (hereafter to referred as 'the Applicant') to prepare an Outline Site Waste Management Plan (SWMP) for the detailed application of Aberfeldy Village Phase A (hereafter referred to as the 'Proposed Development') which is part of a hybrid planning application that includes a wider masterplan area.

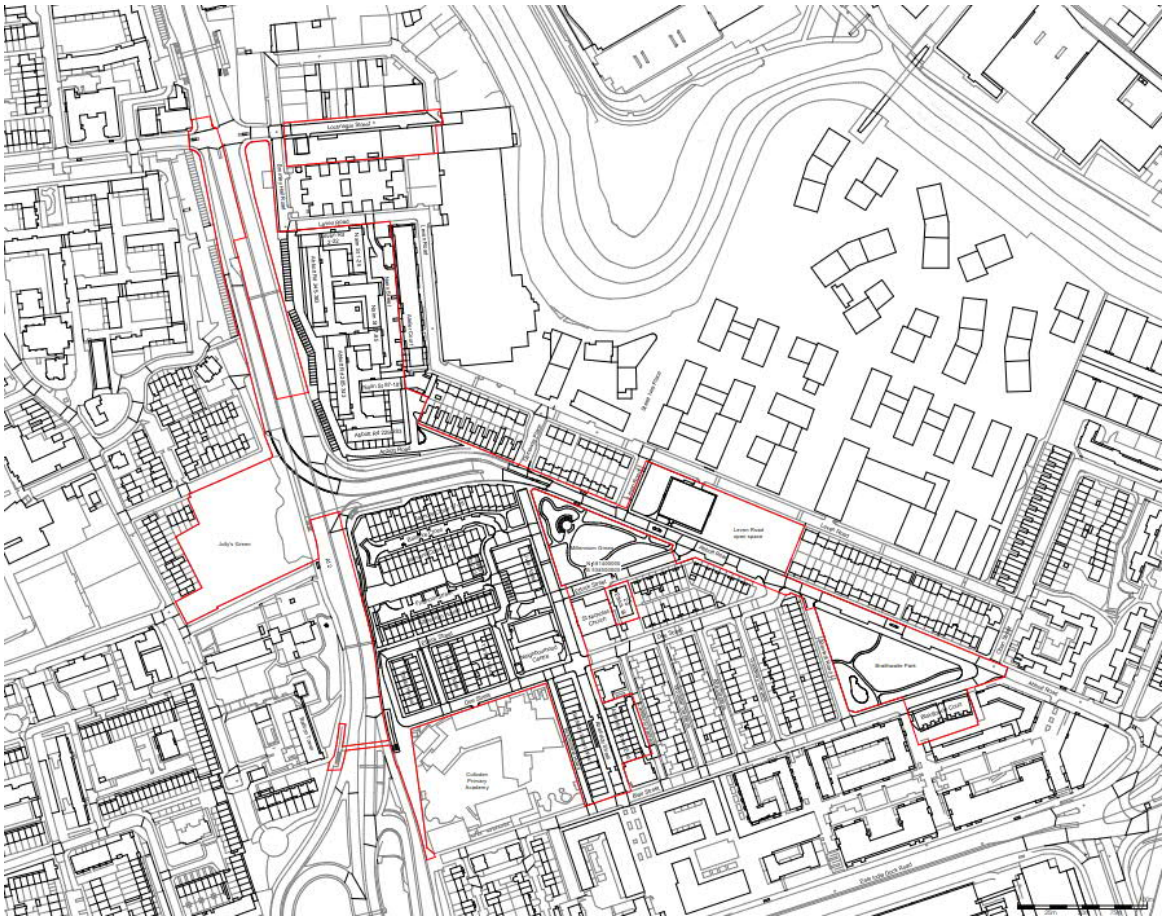
1.1.2 This Outline SWMP details how overarching waste management processes and practices will be undertaken during the demolition, site preparation, and construction phases of the Proposed Development.

1.2 SITE LOCATION

1.2.1 The Proposed Development is located in Poplar, within the administrative boundary of the London Borough of Tower Hamlets (LBTH).

1.2.2 The site location and extent of the hybrid planning application are shown in Figure 1-1 below.

Figure 1-1 Site Location



1.3 EXISTING SITES

1.3.1 The existing sites within the Proposed Development include four sites of residential, commercial and community use buildings, as well as one vacant plot.

1.3.2 Figure 1-2 below shows the extent of Phase A of the Aberfeldy Village masterplan.

Figure 1-2 Aberfeldy Village Phase A

1.3.3 The buildings and hard landscaped areas due for demolition are as follows:

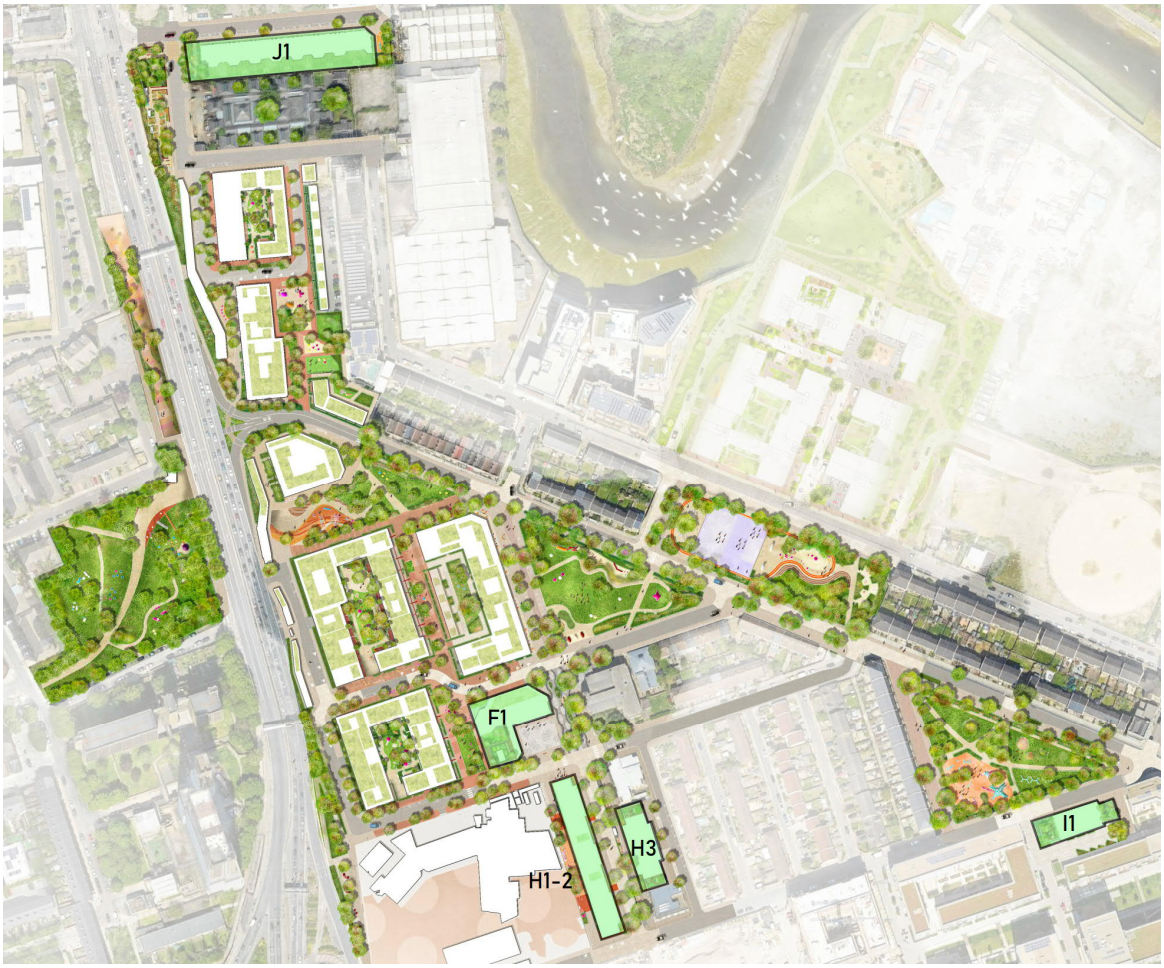
- Blairgowrie Court;
- Aberfeldy Street West;
- Aberfeldy Street East;
- Aberfeldy Neighbourhood Centre; and
- Lochnagar Street.

1.4 PROPOSED DEVELOPMENT

1.4.1 The Proposed Development includes five plots of predominantly residential buildings, with commercial and community uses at ground level.

1.4.2 Figure 1-3 below shows the locations of Phase A within the masterplan.

Figure 1-3 Proposed Development Phase A



1.5 DOCUMENT STRUCTURE

1.5.1 This report is set out in the following sections:

- Section 2: Demolition and Excavation Waste;
- Section 3: Construction Waste; and
- Section 4: Summary and Conclusion.

2 DEMOLITION AND EXCAVATION WASTE

2.1 INTRODUCTION

2.1.1 This section outlines the estimated waste anticipated to be generated by the existing structures on the site of the Proposed Development during the demolition and excavation phases.

2.1.2 All estimates should be considered indicative and will require updating by the relevant contractors upon appointment on site.

2.2 ESTIMATION OF DEMOLITION AND EXCAVATION WASTE

DEMOLITION WASTE

2.2.1 The following section has been informed by the Pre-Demolition Audit completed in September 2022 by Velocity Transport Planning.

2.2.2 Table 2-1 below shows the estimated weight of materials generated by the demolition process.

Table 2-1 Summary of Demolition Waste Generated

Material	Tonnes	% By Weight
Glass	122.40	0.29
Mixed Metals	3,017.32	7.13
Mixed Plastics	13.20	0.03
Tiles & Ceramics	16.90	0.04
Wood / Timber	23.84	0.06
Concrete / Binders	25,018.45	59.15
Bricks	12,342.52	29.18
Gypsum	681.39	1.61
Insulation	6.21	0.01
Carpets / Vinyl / Flooring	40.90	0.10
Electricals and Electronics	31.69	0.07
Asphalt	983.25	2.32
Mixed	-	0.00
Total	42,298.07	

2.2.3 Two Key Demolition Products (KDPs) were identified by the Pre-Demolition Audit, as follows:

- Inert Materials; and
- Metals.

2.2.4 The predominant KDP on site has been identified as inert materials, which are a group of materials that are handled and processed in the same manner during demolition and subsequent processing.

2.2.5 The inert materials generated by the demolition process are located within the following elements on site:

- Structural building frame;
- Internal walls;

- External walls; and
- Areas of hard landscaping.

2.2.6 Table 2-2 below summarises the details of the inert materials present on site, including tonnage and reclamation or recycling rate.

Table 2-2 Inert Demolition Waste

Material	EWC Code	Tonnage	Recommended Processing (%)	
			Reclamation	Recycling
Bricks	17 01 02	12,343	0	100
Tiles and Ceramics	17 01 03	16.9	0	100
Concrete / Hardcore	17 01 07	25,018	0	100
Asphalt	17 03 02	983	0	100
Total		38,361	0	100

2.2.7 The second KDP on site has been identified as metals, with use across all structures for a number of purposes.

2.2.8 The metal generated by the demolition process are located within the following elements on site:

- Structural building frame;
- Mechanical and Electrical Plant (MEP);
- Balconies;
- Doors and windows;
- Walls;
- Lifts and stairs;
- Roof; and
- Pipes and ducting.

2.2.9 Table 2-3 below summarises the details of the secondary KDP on site, including tonnage and reclamation or recycling rate.

Table 2-3 Mixed Metals Demolition Waste

Material	EWC Code	Tonnage	Recommended Processing (%)	
			Reclamation	Recycling
Mixed Metals	17 04 07	3,017	0	100

EXCAVATION WASTE

2.2.10 Following demolition of the existing structures, and removal of the hard landscaping, excavation will be required to facilitate the structural requirements of the Proposed Development.

2.2.11 The Proposed Developed includes no basement levels; the excavation works, and the quantity of material removed is associated only with the foundations.

CAPPING LAYER

2.2.12 It is assumed the capping layer will be removed during the demolition works.

MADE GROUND

2.2.13 Following the removal of the concrete/tarmac hardstanding areas the existing site levels will need to be levelled and further reduced preparation for the foundation works.

2.2.14 It is assumed that this depth will be approximately 100mm across the total area of the building footprints (approximately 6,170m^2) which equates to circa 617m^3 of made ground.

2.2.15 Applying an industry standard bulking factor of 1.2 to this volume equates to approximately 740m^3 of excavated material.

PILE ARISINGS AND FOUNDATIONS

2.2.16 The proposed structural plans identify that the foundations comprise a ground floor suspended slab supported on pile caps for each block.

2.2.17 Table 2-4 below summarises the volume of concrete required for the structural proposals for each plot, including the pile caps, ground beams, piles, and slabs.

Table 2-4 Structural Proposals

Plot	Volume (m^3)
F	3,548
H	5,749
I	2,784
J	2,851
Total	14,932

2.2.18 Applying an industry standard bulking factor of 1.2 to the total volume equates to approximately 17,918m^3 excavated material.

2.2.19 It is anticipated that this volume of material will decrease as the structural proposals are refined during the later design stages.

2.3 MANAGEMENT OF DEMOLITION AND EXCAVATION WASTE

2.3.1 Waste arising from site clearance, primary infrastructure and earthworks is expected to comprise rubble, concrete, road planings from existing hard-standings, gravel, and clay material.

2.3.2 It is proposed that the excavated concrete and tarmac from the capping layer is crushed on site for reuse as secondary aggregate. It should be noted that any potential re-use of materials should be undertaken under a Materials Management Plan in line with the CL:AIRE Code of Practice.

2.3.3 Any clean excavated material that cannot be reused on-site will be removed by licensed waste carriers and sent for reuse at another local development site, recycled into secondary aggregate or sent for disposal at appropriately licensed facilities (these are expected to be inert waste landfill sites).

2.3.4 For the purpose of this exercise, it is assumed that all made ground will be unsuitable for reuse on site and will be removed from site. This can be reviewed in more detail once sufficient on-site investigation and associated material testing has been conducted. All loads removed on site would be transferred to appropriately licenced facilities for reuse or recycling.

2.3.5 Any contaminated material found that requires removal from the site will be collected by suitable waste carriers and sent for disposal at appropriately licensed waste facilities.

2.3.6 Table 2-5 below details the estimated number of vehicles required to remove the material generated during the site clearance and excavation phases.

Table 2-5 Excavation Material Generation and Vehicle Movements

On-Site Activity	Reused On-Site	Material Removed from Site	Volume of Material (m^3)	Number of Vehicle Loads Required **
Levelling of site and removal of made ground	No *	Yes	740	74
Pile Cap / Pile Arisings	No *	Yes	17,918	1,792
		Total	18,658	1,866

** Until chemical and physical properties are established through appropriate testing methods, it is assumed all excavated material is unsuitable for reuse on site.*

*** Assumes 10m^3 volume HGVs*

3 CONSTRUCTION WASTE

3.1 CONSIDERATE CONSTRUCTORS SCHEME

3.1.1 It is expected that the Principal Contractor(s), once appointed, will register their site with the 'Considerate Constructors Scheme'. This is a national initiative, set up by the construction industry. Sites that register with the Scheme sign up and are monitored against a Code of Considerate Practice, designed to encourage best practice beyond statutory requirements.

3.1.2 The Scheme is concerned about any area of construction activity that may have a direct or indirect impact on the image of the industry as a whole. The main areas of concern fall into three categories: the environment, the workforce, and the general public. Waste management is a key area of focus and on-site considerations may include:

- How waste is avoided, reduced, reused, and/or recycled;
- Whether there is a Waste Management Plan/Strategy and how this is monitored; and
- The type of feedback received (if any) as to how much waste on-site is diverted from landfill.

3.1.3 It is expected that registered construction sites work in an environmentally conscious, sustainable manner.

3.2 SITE WASTE MANAGEMENT PLAN

3.2.1 As part of a drive to cut red tape, the Government revoked the requirement for Site Waste Management Plans (SWMPs) for construction projects costing over £300,000 as of 1 December 2013 and they are no longer statutory.

3.2.2 However, SWMPs remain good practice during construction and allow waste credits to be achieved under certification schemes such as BREEAM; one will be prepared by the Principal Contractor(s) once appointed, post planning consent.

3.3 ESTIMATED CONSTRUCTION WASTE

3.3.1 During each stage of the construction process there is the potential to generate waste from a variety of means, including the over-ordering or on-site damage of raw materials and construction process waste, such as material off-cuts, packaging, and chemical residues.

3.3.2 Opportunities for minimising construction waste are discussed in this section, considering issues such as reducing waste through selection of more sustainable raw materials and the implementation of effective on-site waste management practices.

3.3.3 The Greater London Authority (GLA) has produced data based on all Circular Economy Statements submitted up to and including January 2022 in the calculation of construction waste arisings at the design of a new development. The construction waste arisings metric measures tonnes of waste/m^2 of floor area.

3.3.4 Table 3-1 shows the relevant metric for the Proposed Development, chosen as the median value for the range.

Table 3-1 Environmental Performance Indicators

Project Type	Tonnes/m² GIA
Residential / Commercial / Community	0.093
Source: GLA London Plan Guidance: Circular Economy Statements (Issued March 2022)	

3.3.5 Table 3-2 shows the estimated construction waste arisings for all elements of the Proposed Development, based on indicative GIA and applicable GLA metric.

Table 3-2 Estimated Construction Waste Arisings

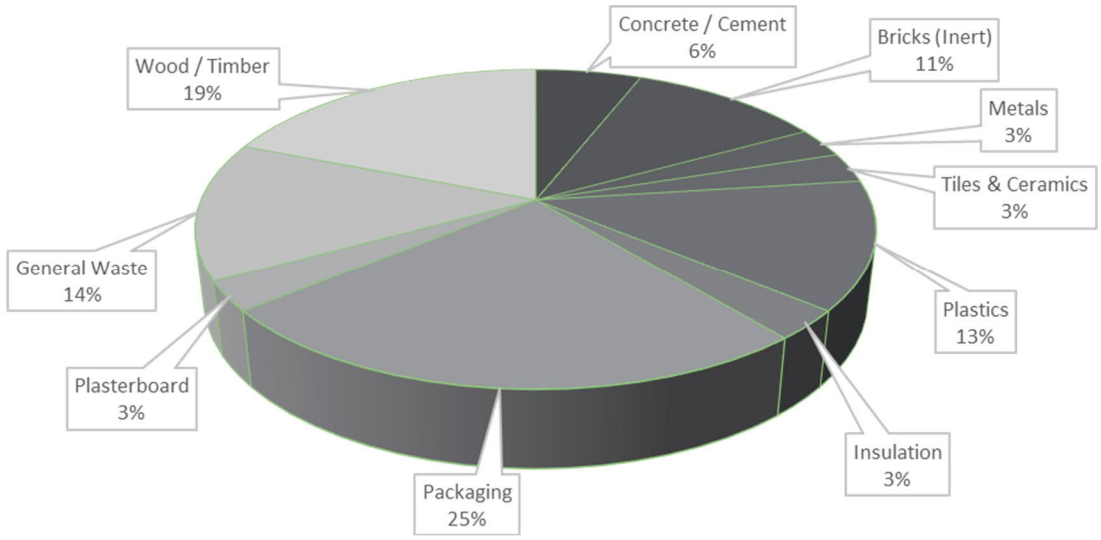
Use	GIA (m²)	Construction Waste Arisings (Tonnes per m²)	Construction Waste (Tonnes)
Residential	19,663.99	0.093	1,829
Non-Residential	1,489.7		139
Total	21,153.69	-	1,967

3.3.6 It is estimated that approximately 1,967 tonnes of waste may arise from the construction phase of the Proposed Development.

3.3.7 It should be noted that the estimated total figure also does not include waste from infrastructure development, such as utilities and pavements, which will add to the total construction waste volume. This is due to the fact that infrastructure development cannot be easily calculated using benchmarking data; and the BRE have no applicable information on this area of construction.

3.3.8 Figure 3-1 illustrates the estimated composition of construction waste arisings for the Proposed Development, based on data from UK construction projects of a similar nature.

Figure 3-1 Estimated Construction Waste Composition (Source: SmartWaste)



3.3.9 Table 3-3 shows the typical recovery rate of construction materials.

Table 3-3 Recovery Rate of Construction Materials

Material	Standard recovery * %	Good practice recovery * (quick win) %	Best practice recovery * %
Timber	57	90	95
Metals	95	100	100
Plasterboard	30	90	95
Packaging	60	85	95
Ceramics	75	85	100
Concrete	75	95	100
Inert	75	95	100
Plastics	60	80	95
Miscellaneous	12	50	95
Electrical equipment	Limited information	70 **	95
Furniture	0-15	25	50
Insulation	12	50	95
Cement	Limited information	75	95
Liquids and oils	100	100	100
Hazardous	50	Limited information ***	Limited information ***

** Proposed waste management actions 'reuse' and 'recycling' are forms of waste recovery.*

*** This is a required recovery target for the type of waste electrical and electronic equipment (WEEE) likely to be produced from construction sites, e.g. Lighting (the WEEE regulations).*

**** This cannot be 100% as most hazardous waste streams (e.g. Asbestos) must be landfilled.*

3.3.10 Table 3-4 shows the type and volume of waste generated during construction based on the percentages provided in Figure 3-1.

3.3.11 The *Best Practice Recovery* values in Table 3-3 were used to determine the percentage recovered from the construction materials.

Table 3-4 Type and Volume of Waste to be Generated During Construction

Material	Estimated Quantity (Tonnes)		
	Total	Recovered	Disposal
Concrete / Cement	118	118	-
Bricks (Inert)	216	216	-
Metals	59	59	-
Tiles & Ceramics	59	59	-
Plastics	256	243	13
Insulation	59	56	3
Packaging	492	467	25
Plasterboard	59	56	3
Miscellaneous	275	262	13
Wood/Timber	374	355	19
Total	1,967	1,891	76

3.3.12 It is assumed that where it is not possible to reuse or recycle construction waste, contractors will use disposal routes that divert material from landfill, such as Energy from Waste (EfW), Refuse Derived Fuel (RDF) or Solid Recovered Fuel (SRF).

3.3.13 It should be noted that typical hazardous materials from construction sites that fall within the Hazardous Waste Regulations include:

- Treated wood, glass, plastic (alone or in mixture) containing dangerous substances;
- Bituminous mixture containing coal tar and other dangerous substances;
- Metals containing oil, coal tar and other dangerous substances;
- Cables containing oil, coal tar and other dangerous substance;
- Rubble or hardcore containing dangerous substances;
- Soil, stones and dredging spoil containing dangerous substances;
- Gypsum materials such as plasterboard containing hazardous materials;
- Unused or unset cement;
- Paints and varnishes containing organic solvents or other dangerous substances;
- Paint or varnish remover;
- Adhesives and sealants containing organic solvent or other dangerous substances; and
- Empty packaging contaminated with residues of dangerous substances e.g. paint cans.

3.3.14 Hazardous waste materials will be stored in secure bunded compounds in appropriate containers which are clearly labelled to identify their hazardous properties and are accompanied by the appropriate assessment sheets.

3.3.15 Any fuels, oils and chemicals that are used will be stored in appropriate containers within secure bunded compounds in accordance with good site practice and regulatory guidelines and located away from sensitive receptors.

SUSTAINABLE SELECTION OF CONSTRUCTION MATERIALS

3.3.16 A sustainable materials selection strategy will be prepared prior to the construction of the Proposed Development. Measures will be taken, such as face-to-face 'toolbox talks' and provision of clear operational instructions, to ensure that contractors are committed to the operation of good practice measures on-site with emphasis on continual improvement and identifying appropriate opportunities to reduce waste, promote recycling and use recyclable materials. The ordering of appropriate, minimum amounts of building materials will be part of the materials selection strategy. Prefabricated materials will also be used wherever possible, for example CLT will be used in the construction of the three storey townhouses.

SETTING TARGETS FOR REDUCING CONSTRUCTION WASTE

3.3.17 Appropriate targets and objectives will be set in relation to the minimisation, reuse, and recycling of any waste materials during earth works and construction. This will ensure that a clear action plan is generated for the management of specified types and quantities of materials identified for each of the construction stages. These targets will be agreed at the inaugural meeting between the Principal Contractors, the contractors and LBTH.

3.3.18 To ensure that the system of waste prevention, minimisation, reuse and recycling is effective, consideration will be given to the setting of on-site waste targets and a suitable programme of monitoring at regular intervals to focus upon:

- Quantifying raw material wastage;

- Quantifying the generation of each waste stream;
- Any improvements in current working practices;
- Methods by which the waste streams are being handled and stored; and
- The available waste disposal routes used, e.g. landfills, waste transfer stations.

3.3.19 The Principal Contractors will be responsible for the setting and review of waste targets from the outset of the development process to ensure that high standards are maintained with the emphasis being on continual improvement. Specific waste quantification and monitoring will assist in determining the success of waste management initiatives employed on each construction site and progress against these targets should be relayed back to the appropriate stakeholders.

ACHIEVING REDUCTIONS IN CONSTRUCTION WASTE - PROMOTION OF BEST PRACTICE

3.3.20 As part of the encouragement of on-site best practice, there will also be a need to ensure that suppliers of raw materials to the Proposed Development are committed to reducing any surplus packaging associated with the supply of any raw materials. This includes the reduction of plastics (i.e. shrink wrap and bubble wrap), cardboard and wooden pallets. This may involve improved procurement and consultation with selected suppliers regarding commitments to waste minimisation, recycling, and the emphasis on continual improvement in environmental performance.

3.3.21 Table 3-5 below summarises the most important mitigation measures to minimise the potential waste of on-site materials during construction. It is important to note, however, that not all construction materials will be provided by local suppliers.

Table 3-5 Measures to Reduce Waste of On-Site Construction Materials

Ordering	Delivery
Avoid: • Over-ordering (order 'just in time') • Ordering standard lengths rather than lengths required • Ordering for delivery at the wrong time (update programme regularly)	Avoid: • Damage during unloading • Delivery to inappropriate areas of the site • Accepting incorrect deliveries, specification or quantity
Storage	**Handling**
Avoid: • Damage to materials from incorrect storage • Loss, theft or vandalism through secure storage and on-site security	Avoid: • Damage or spillage through incorrect or repetitive handling

3.3.22 Where practicable, waste streams that have the potential to be reused on-site or transported off-site for recycling will need to be segregated. Although every effort will be made to retain all suitable materials on-site, it is possible that some of these materials cannot be reused or recycled during the construction process. In these situations, the Site Managers will work to identify a nearby Transfer Station or suitably licensed facility in order for material to be redistributed as fill on other suitable sites. This represents the most sustainable alternative to landfill disposal.

CONSTRUCTION MATERIALS AND WASTE STORAGE

3.3.23 Emphasis will be placed on the provision of appropriate storage conditions for raw materials and key waste streams relating to each development. This will include the segregation of material for reuse or recycling on-site. Where this is not practicable, materials will be segregated for off-site recycling.

3.3.24 The location of the waste storage areas will be clearly labelled, identifying the materials that can be received. Provisions that will be made include:

- Temporary offices and work compounds on-site will retain all details relating to the waste strategy for the site, health and safety and monitoring and reporting details;
- Storage areas for raw materials and assembly areas for construction components will be located away from sensitive receptors;
- Clearly identified containers for segregated waste streams for reuse and recycling; and
- Dedicated skips will be provided for any construction waste that requires off-site disposal.

3.3.25 In addition, the provision of effective and secure storage areas for construction materials is important to ensure that potential loss of material from damage, vandalism or theft is avoided. These measures will be supported by ensuring well-timed deliveries to the site, providing on-site security, and installing temporary site security fencing.

3.3.26 Implementation of good practice measures in terms of on-site storage and security practices will assist in reducing unnecessary wastage of material and ensure that high standards are maintained throughout the development process.

MANAGING TRANSPORT AND TRAFFIC IMPACTS FROM CONSTRUCTION

3.3.27 The logistics associated with construction waste are affected by a wide range of factors. The quantity and types of waste materials generated will fluctuate during the construction phases and the resulting number of waste collections will be dictated by a range of variables, including the amount of storage space for waste, the capacity of waste containers used, the materials segregated for recycling and whether any on-site processes are used for reducing the volume of waste (compactors / balers / shredders etc.).

3.3.28 The Principal Contractors will be expected to provide construction waste logistics forecasts, which will be discussed with waste contractors and LBTH following appointment of relevant parties.

3.3.29 The impact of traffic associated with the movement of construction and waste materials on surrounding neighbourhoods and the local road network will be minimised by a combination of factors. These include reducing the need to import / export materials; and minimising off-site removal of waste to landfill. Dedicated haulage routes will be agreed with LBTH to minimise disturbance to local communities.

4 SUMMARY & CONCLUSION

4.1 SUMMARY

SITE PREPARATION AND EARTHWORKS

4.1.1 Waste arising from site clearance, primary infrastructure and earthworks is expected to comprise topsoil, rubble, concrete, and road planings from existing hard-standings, gravel, and clay material.

4.1.2 Any clean excavated material that cannot be reused on-site will be removed by licensed waste carriers and sent for reuse at another local development site, recycled into secondary aggregate or sent for disposal at appropriately licensed facilities.

4.1.3 Any contaminated material found that requires removal from the site will be collected by suitable waste carriers and sent for disposal at appropriately licensed waste facilities.

CONSTRUCTION WASTE

4.1.4 During each stage of the construction process there is the potential to generate waste from a variety of means, including the over-ordering or on-site damage of raw materials and construction process waste, such as material off-cuts, packaging, and chemical residues.

4.1.5 Construction waste has been estimated using data provided by the GLA within their Circular Economy guidance. The construction waste arisings metric measures tonnes of waste/m^2 of floor area.

4.1.6 Where it is not possible to reuse or recycle construction waste, contractors will be expected to seek disposal routes that divert material from landfill, such as Energy from Waste (EfW), as Refuse Derived Fuel (RDF) or Solid Recovered Fuel (SRF).

4.1.7 Hazardous waste materials will be stored in secure bunded compounds in appropriate containers which are clearly labelled to identify their hazardous properties and are accompanied by the appropriate assessment sheets.

4.1.8 Any fuels, oils and chemicals that are used will be stored in appropriate containers within secure bunded compounds in accordance with good site practice and regulatory guidelines and located away from sensitive receptors.

4.1.9 Appropriate targets and objectives will be set in relation to the minimisation, reuse, and recycling of any waste materials during earth works and construction. This will ensure that a clear action plan is generated for the management of specified types and quantities of materials identified for each of the construction stages. These targets will be agreed at the inaugural meeting between the Principal Contractors, the contractors and LBTH.

4.1.10 The Principal Contractors will be responsible for the setting and review of waste targets from the outset of the development process to ensure that high standards are maintained with the emphasis being on continual improvement. Specific waste quantification and monitoring will assist in determining the success of waste management initiatives employed on each construction site and progress against these targets should be relayed back to the appropriate stakeholders.

4.1.11 Emphasis will be placed on the provision of appropriate storage conditions for raw materials and key waste streams relating to each development. This will include the segregation of material for reuse or recycling on-site. Where this is not practicable, materials will be segregated for off-site recycling.

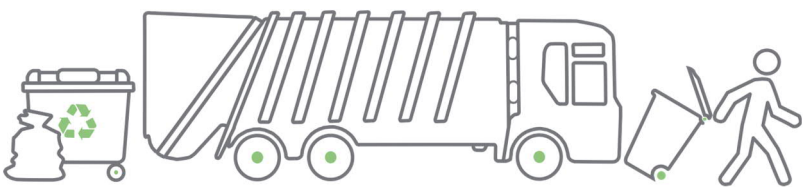
4.1.12 The Principal Contractors will be expected to provide construction waste logistics forecasts, which will be discussed with waste contractors and LBTH following appointment of relevant parties.

4.1.13 The impact of traffic associated with the movement of construction and waste materials on surrounding neighbourhoods and the local road network will be minimised by a combination of factors. These include reducing the need to import / export materials; and minimising off-site removal of waste to landfill. Dedicated haulage routes will be agreed with LBTH to minimise disturbance to local communities.

CONCLUSION

4.1.14 This Outline SWMP has considered the need to lessen the overall impact of waste generation through recycling of materials from the construction phase of the Proposed Development.

4.1.15 The proposals set out in this strategy meet the requirements of relevant waste policy and follow applicable guidance.



VELOCITY
Transport Planning

APPENDIX E OPERATIONAL WASTE MANAGEMENT PLAN

ABERFELDY VILLAGE MASTERPLAN

WASTE MANAGEMENT STRATEGY

PROJECT NO. 4060 / 1100 DOC NO. D012

DATE: OCTOBER 2021

VERSION: 0.8

CLIENT: THE ABERFELDY NEW VILLAGE LLP

Velocity Transport Planning Ltd

www.velocity-tp.com

VELOCITY Transport Planning

TABLE OF CONTENTS

1 INTRODUCTION 1
2 WASTE LEGISLATION, POLICY & GUIDANCE 10
3 PRINCIPLES OF RESIDENTIAL WASTE MANAGEMENT 12
4 DETAILED PROPOSAL: PHASE A RESIDENTIAL WASTE STRATEGY 15
5 OUTLINE PROPOSAL: PHASES B-D RESIDENTIAL WASTE STRATEGY 27
6 PRINCIPLES OF COMMERCIAL WASTE MANAGEMENT 42
7 DETAILED APPLICATION : PHASE A COMMERCIAL WASTE MANAGEMENT 43
8 OUTLINE APPLICATION : PHASES B-D COMMERCIAL WASTE MANAGEMENT 47
9 SUMMARY & CONCLUSIONS 51

FIGURES

FIGURE 1-1: SITE LOCATION 2
FIGURE 1-2 DETAILED AND OUTLINE PROPOSALS 4
FIGURE 1-3 PROPOSED DEVELOPMENT CONFIGURATION (ILLUSTRATIVE MASTERPLAN) 5
FIGURE 1-4 HYBRID PLANNING APPLICATION STRUCTURE 6
FIGURE 1-5 RELATIONSHIP BETWEEN MAXIMUM PARAMETER AND ILLUSTRATIVE SCHEME 8
FIGURE 3-1 EXAMPLE SEGREGATED KITCHEN BIN 13
FIGURE 4-1 PROPOSED DEVELOPMENT PHASE A 15
FIGURE 4-2 PLOT J INDIVIDUAL DWELLINGS 16
FIGURE 4-3 PLOT F RESIDENTIAL WASTE STORE 18
FIGURE 4-4 PLOT H RESIDENTIAL WASTE STORES 19
FIGURE 4-5 PLOT J RESIDENTIAL WASTE STORE 19
FIGURE 4-6 RCV LOADING POSITION PLOT F 20
FIGURE 4-7 RCV LOADING POSITION PLOT H 20
FIGURE 4-8 RCV LOADING POSITION PLOT H 21
FIGURE 4-9 EXAMPLE URS UNIT 21
FIGURE 4-10 PLOT I URS UNITS 22
FIGURE 4-11 PLOT I RESIDENTIAL FOOD WASTE STORE 23
FIGURE 4-12 RCV LOADING POSITION - URS UNITS 23
FIGURE 4-13 RCV LOADING POSITION - FOOD WASTE COLLECTION 24
FIGURE 4-14 PLOT F BULKY WASTE STORAGE 25
FIGURE 4-15 PLOT H BULKY WASTE STORAGE 25
FIGURE 4-16 PLOT I BULKY WASTE STORAGE 26
FIGURE 5-1 PROPOSED DEVELOPMENT PHASES B-D (ILLUSTRATIVE SCHEME) 28

FIGURE 5-2 PLOTS A3 AND B4 INDIVIDUAL DWELLINGS (ILLUSTRATIVE SCHEME) 30
FIGURE 5-3 RCV LOADING POSITION PLOT A3 ON NAIRN STREET (ILLUSTRATIVE SCHEME) 31
FIGURE 5-4 RCV LOADING POSITION PLOT B4 ON ABBOTT ROAD (ILLUSTRATIVE SCHEME) 31
FIGURE 5-5 RESIDENTIAL WASTE STORES - PLOT A1, A2, B1 & B2 (ILLUSTRATIVE SCHEME) 33
FIGURE 5-6 RESIDENTIAL WASTE STORES - PLOTS B3, C1-C4, D1-D4 & E1-E3 (ILLUSTRATIVE SCHEME) 33
FIGURE 5-7 EXAMPLE RESIDENTIAL WASTE STORE (ILLUSTRATIVE SCHEME) 34
FIGURE 5-8 CULLODEN GREEN RESIDENTIAL UNITS (ILLUSTRATIVE SCHEME) 34
FIGURE 5-9 EXAMPLE 10.7M3 PORTABLE WASTE COMPACTOR 35
FIGURE 5-10 EXAMPLE ELECTRIC TOW-TUG 37
FIGURE 5-11 EXAMPLE ELECTRIC TOW VEHICLE 37
FIGURE 5-12 EXAMPLE BIN TRAILER 37
FIGURE 5-13 PLOT A COMPACTOR COLLECTION (ILLUSTRATIVE SCHEME) 38
FIGURE 5-14 PLOT C COMPACTOR COLLECTION (ILLUSTRATIVE SCHEME) 39
FIGURE 5-15 PLOT E COMPACTOR COLLECTION (ILLUSTRATIVE SCHEME) 39
FIGURE 5-16 PORTABLE COMPACTOR LOADING DIMENSIONS 40
FIGURE 7-1 PLOT F COMMERCIAL WASTE STORE 45
FIGURE 7-2 PLOT H1 & H2 COMMERCIAL WASTE STORES 45
FIGURE 7-3 PLOT H3 COMMERCIAL WASTE STORE 45
FIGURE 7-4 RCV LOADING COMMERCIAL WASTE STORES 46
FIGURE 8-1 COMMERCIAL WASTE STORES (ILLUSTRATIVE SCHEME) 49
FIGURE 8-2 COMMERCIAL WASTE STORES (ILLUSTRATIVE SCHEME) 49

TABLES

TABLE 1-1 DEVELOPMENT PHASES 4
TABLE 3-1 CURRENT RESIDENTIAL WASTE SERVICES IN LBTH 12
TABLE 3-2 LBTH CONTAINER REQUIREMENTS - INDIVIDUAL DWELLINGS 14
TABLE 3-3 RESIDENTIAL WASTE METRICS – COMMUNAL WASTE STORAGE 14
TABLE 4-1 ACCOMMODATION SCHEDULE – DETAILED PROPOSALS 16
TABLE 4-2 CONTAINER DIMENSIONS 16
TABLE 4-3 ESTIMATED WEEKLY WASTE GENERATION – COMMUNAL WASTE STORAGE 17
TABLE 4-4 CONTAINER DIMENSIONS 17
TABLE 4-5 CONTAINER REQUIREMENTS - PLOTS F, H & J 18
TABLE 4-6 CONTAINER DIMENSIONS 22
TABLE 4-7 CONTAINER REQUIREMENTS – PLOT I 22
TABLE 5-1 ACCOMMODATION SCHEDULE – OUTLINE PROPOSALS (MAXIMUM PARAMETER SCHEME) 29
TABLE 5-2 CONTAINER DIMENSIONS 30
TABLE 5-3 ESTIMATED WEEKLY WASTE GENERATION – COMMUNAL WASTE STORAGE (MAXIMUM PARAMETER SCHEME) 32
TABLE 5-4 PORTABLE COMPACTOR DIMENSIONS 35
TABLE 5-5 COMPACTED WASTE GENERATION (MAXIMUM PARAMETER SCHEME) 36
TABLE 5-6 PORTABLE COMPACTOR PROVISION (MAXIMUM PARAMETER SCHEME) 36
TABLE 5-7 FOOD WASTE STORAGE PROVISION (MAXIMUM PARAMETER SCHEME) 40

TABLE 5-8 FOOD WASTE BIN INDICATIVE COLLECTION LOCATIONS (ILLUSTRATIVE SCHEME) 41
TABLE 7-1 COMMERCIAL AREA SCHEDULE 43
TABLE 7-2 COMMERCIAL WASTE GENERATION METRICS 43
TABLE 7-3 COMMERCIAL WASTE GENERATION PHASE A 44
TABLE 7-4 COMMERCIAL WASTE STORAGE PROVISION PHASE A 44
TABLE 8-1 COMMERCIAL AREA SCHEDULE (MAXIMUM PARAMETER SCHEME) 47
TABLE 8-2 COMMERCIAL WASTE GENERATION METRICS 48
TABLE 8-3 ESTIMATED COMMERCIAL WASTE GENERATION (MAXIMUM PARAMETER SCHEME) 48
TABLE 8-4 COMMERCIAL WASTE STORAGE (MAXIMUM PARAMATER SCHEME) 50

1 INTRODUCTION

1.1 INTRODUCTION

1.1.1 This Waste Management Strategy (WMS) has been prepared by Velocity Transport Planning and is submitted in support of a hybrid planning application for the Aberfeldy Village Masterplan. The hybrid planning application is made in relation to the north of East India Dock Road (A13), east of the Blackwall Tunnel Northern Approach Road (A12) and to the south west of Abbot Road (the "Site") on behalf of The Aberfeldy New Village LLP' ("The Applicant"). The hybrid planning application is formed of detailed development proposals in respect of Phase A for which no matters are reserved ("Detailed Proposals"), and outline development proposals for the remainder of the Site, with all matters reserved ("Outline Proposals"). The Detailed Proposals and Outline Proposals together are referred to as the "Proposed Development".

1.1.2 The Proposed Development comprises the comprehensive redevelopment of the Site. The Proposed Development will provide new retail and workspace floorspace along with residential dwellings and the pedestrianisation of the A12 Abbott Road vehicular underpass to create a new east to west route. The Development will also provide significant, high quality public realm, including a new Town Square, a new High Street and a public park.

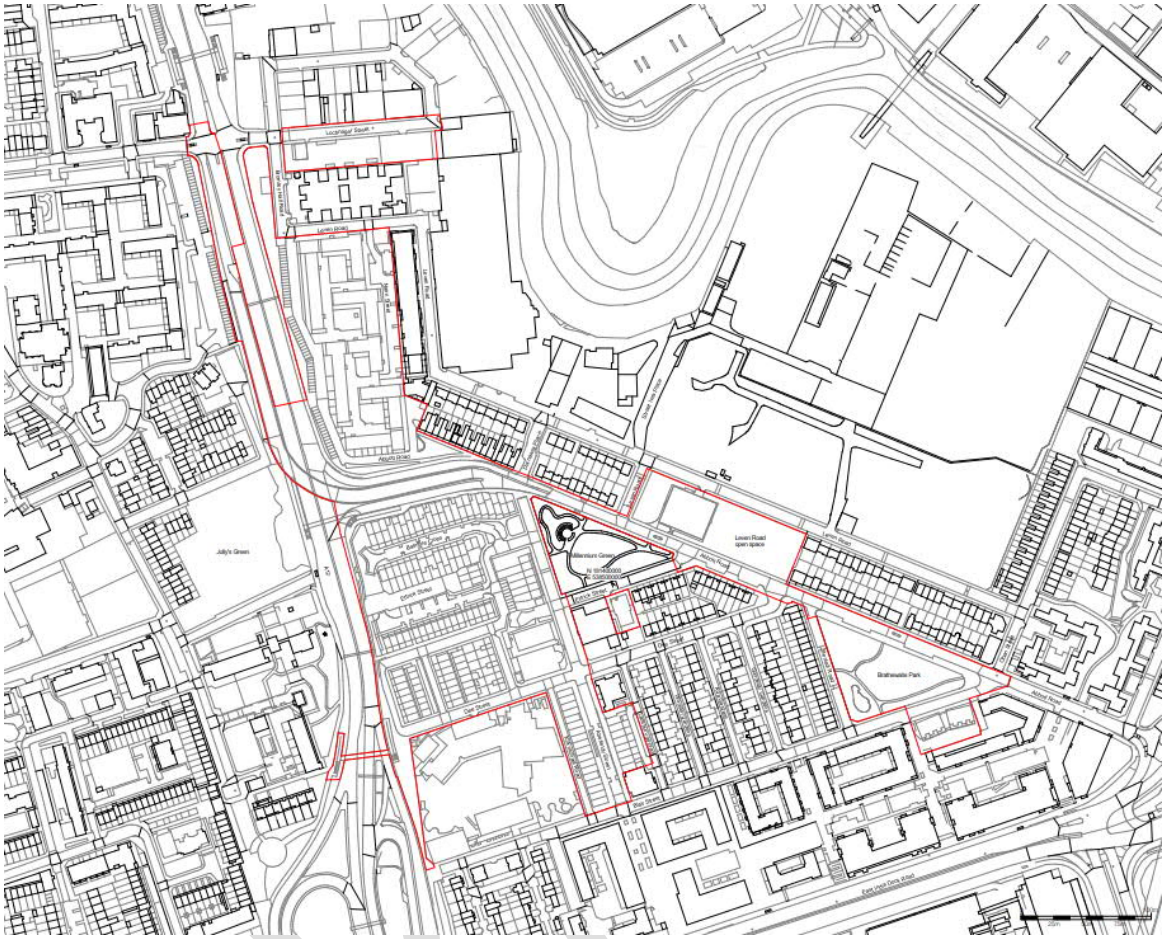
1.1.3 The purpose of the WMS is to consider the potential impacts that may arise from waste generated during the operational phase of the Proposed Development, with the overall aim of developing a strategy for legislative compliance and good practice in the separation, storage and collection of waste arising.

1.2 SITE LOCATION

1.2.1 The Proposed Development is located in Poplar, within the administrative boundary of the London Borough of Tower Hamlets (LBTH).

1.2.2 Figure 1-1 shows the location of the Proposed Development.

Figure 1-1: Site Location



1.3 SITE DESCRIPTION

1.3.1 Land to the north of East India Dock Road (A13), east of the Blackwall Tunnel Northern Approach Road (A12) and to the south west of Abbot Road, 8.14 hectares (approx. 20 acres) in total.

1.4 EXTANT OUTLINE PLANNING PERMISSION

1.4.1 There are three previous phases of development; Outline Permission rf: PA/11/02716/P0 (granted June 2012) has delivered to date:

- Phases 1 and 2 built out, with Phase 3 under construction;
- 901 new homes;
- 29% affordable homes by habitable room or 9.18% affordable homes by habitable room on the uplift;
- New larger Community Centre with improved facilities;
- Larger modern Health Centre;
- New retail floorspace;
- New energy centre;
- New and enhanced high quality open space including play-space and a linear park;

- Heights: 2 to 10 storeys; and
- Parking ratio: 0.2 spaces.

1.5 PROPOSED DEVELOPMENT

1.5.1 The Proposed Development is described as follows:

'Hybrid application seeking detailed planning permission for Phase A and outline planning permission for future phases, comprising:

Outline planning permission (all matters reserved) for the demolition of all existing structures and redevelopment to include a number of buildings (up to 100m AOD) and up to 141,014sqm (GEA) of floorspace comprising the following mix of uses:

- *Residential (Class C3);*
- *Retail, workspace, food and drink uses (Class E);*
- *Car and cycle parking;*
- *Formation of new pedestrian route through the conversion of the existing vehicular underpass;*
- *Landscaping including open spaces and public realm; and*
- *New means of access, associated infrastructure and highways works.*

In Full, for residential (Class C3), retail, food and drink uses and a temporary marketing suite (Class E and Sui Generis), together with access, car and cycle parking, associated landscaping and new public realm, and private open space.'

1.5.2 Figure 1-2 shows the extent of the Outline and Detailed Proposals.

Figure 1-2 Detailed and Outline Proposals

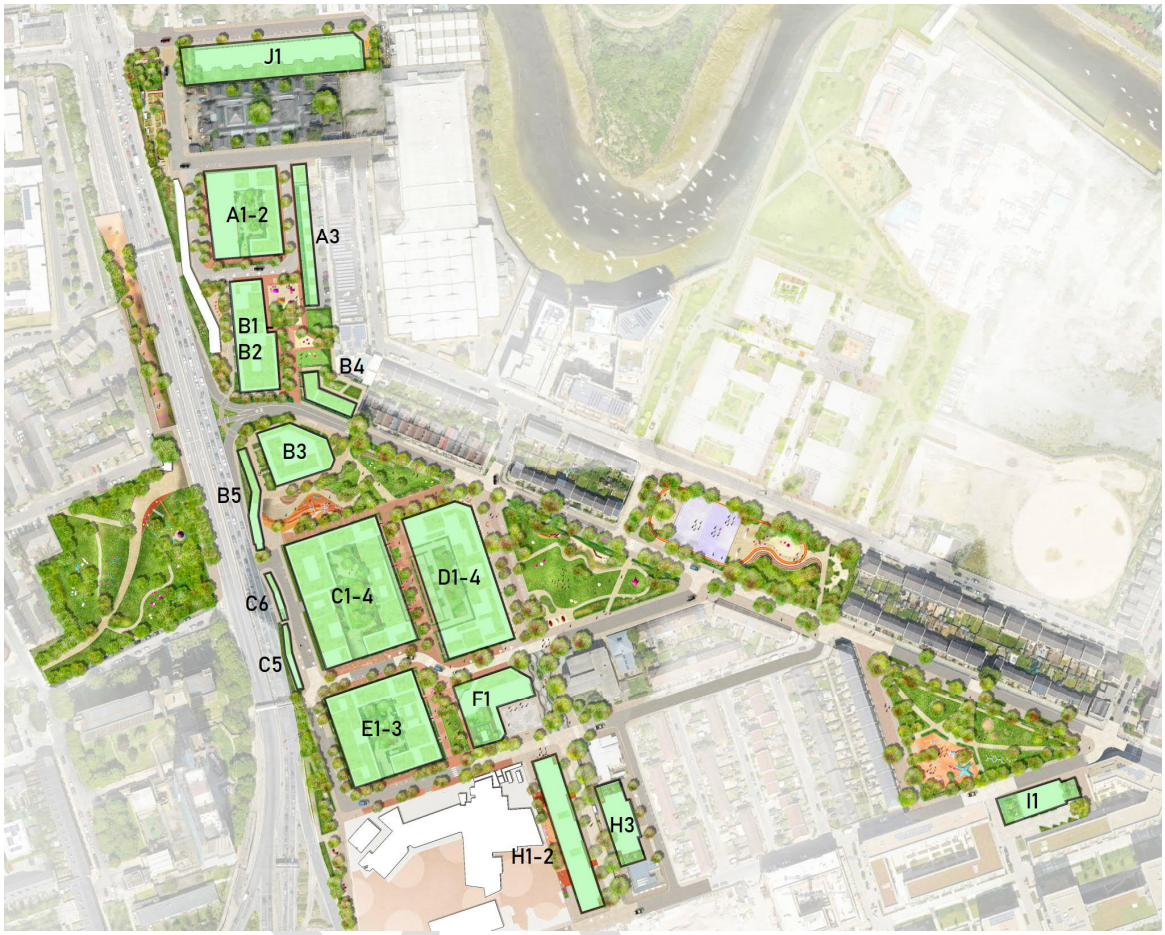
1.5.3 The Proposed Development comprises four phases of development; Table 1-1 summarises these phases.

Table 1-1 Development Phases

Phase	Application	Plot
A	Detailed	F / H / I / J
B	Outline	A1-3 / B1-5
C	Outline	C1-C6 / E1-E3
D	Outline	D1-D4

1.5.4 Figure 1-3 shows the configuration of the Proposed Development.

Figure 1-3 Proposed Development Configuration (Illustrative Masterplan)



1.6 PLANNING APPLICATION STRUCTURE

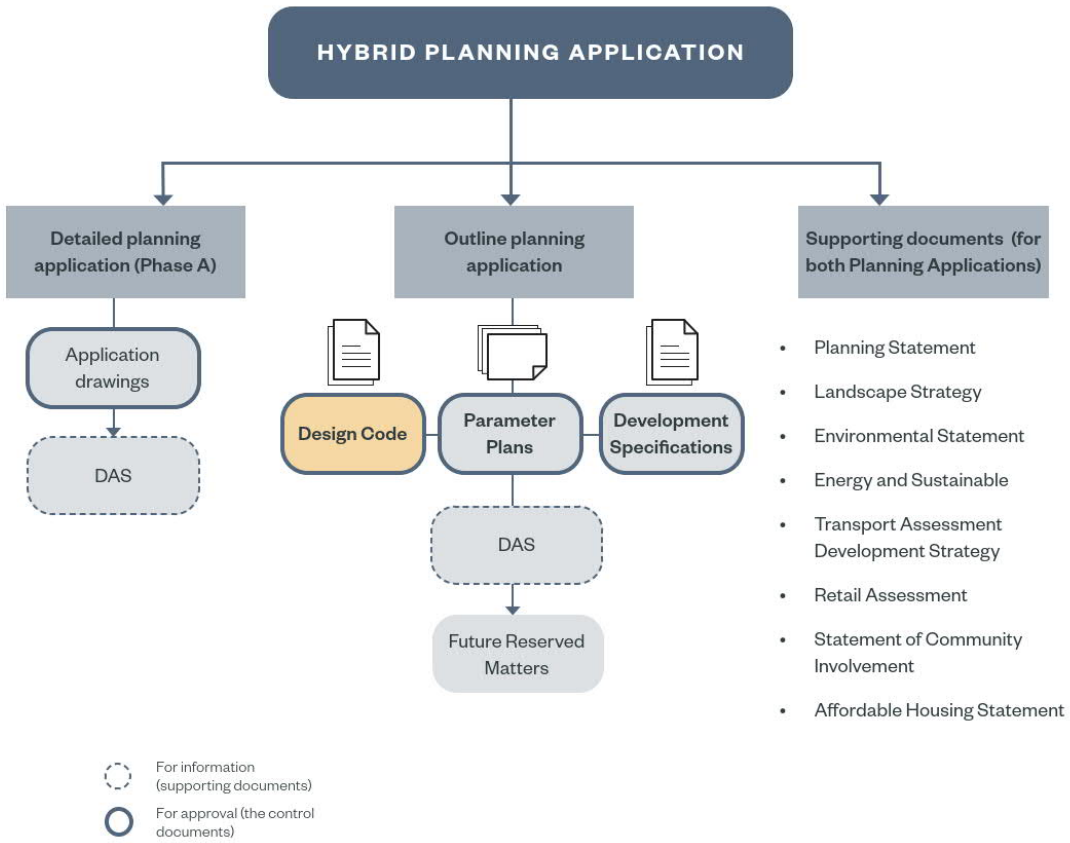
1.6.1 The Hybrid planning application seeks Full Planning Permission for Phase A and Outline Planning Permission, with all matters reserved, for the rest of the site (which includes Phases B, C and D).

1.6.2 Reserved Matters Applications (RMAs) are required to come forward in compliance with the design principles and guidelines established in the Aberfeldy Village Masterplan Design Code.

1.6.3 Future Reserved Matters submissions may cover multiple plots and public realm areas or single plots.

1.6.4 Figure 1-4 details the structure of the Hybrid Planning Application for the Proposed Development.

Figure 1-4 Hybrid Planning Application Structure



1.6.5 The development of Aberfeldy Village will be regulated by three documents that have been produced as part of the Hybrid Planning Application:

- The Parameter Plans;
- The Development Specification; and
- The Design Code.

1.6.6 The Aberfeldy Village Masterplan Design Code sets out a series of illustrated rules and standards which will guide the future phases of the development of the site.

1.6.7 The Parameter Plans need to be read in conjunction to the Design Code. They outline key parameters for the development, including elements such as plots, scale, open space and land use distribution.

1.6.8 The Development Specifications define and describe the principal components of the development, including minimum and maximum development quantum and uses.

1.7 THE ABERFELDY VILLAGE MASTERPLAN DESIGN CODE

1.7.1 The Design Code (DC) applies to the Outline Proposals and has been closely developed to Phase A, the Detailed Proposals.

1.7.2 The DC sets out the rules and requirements that any future 'reserved matters' applications for the development of any of the parcels defined in the Parameter Plans must follow.

1.7.3 The DC applies to the Outline Proposals and has been closely developed to Phase A, the Detailed Proposals.

1.7.4 The DC has been produced to:

- Ensure high quality design and the development of a sustainable community;
- Define the public realm spaces and hierarchy of the development plots for the buildings in the masterplan;
- Define the character of the physical environment and the requirements on the proposed plots and buildings to support and reflect that character;
- Provide a level of consistency so the site as a whole is developed in a coherent manner in line with the masterplan vision and design principles;
- Ensure accessible and inclusive design for all;
- Communicate masterplan requirements for future reserved matters application(s) for individual development proposals over the life of the development.

1.7.5 The DC document specifies design aspects, aspirations and design principles for the development of the individual plots, open spaces and character areas which form part of the various phases of the masterplan. Each component of the DC must be fully integrated into the masterplan to ensure that there is a cohesive and consistent approach across the site, whilst also creating flexibility and variety in the design, and aiming to create a series of unique but harmonious buildings and spaces.

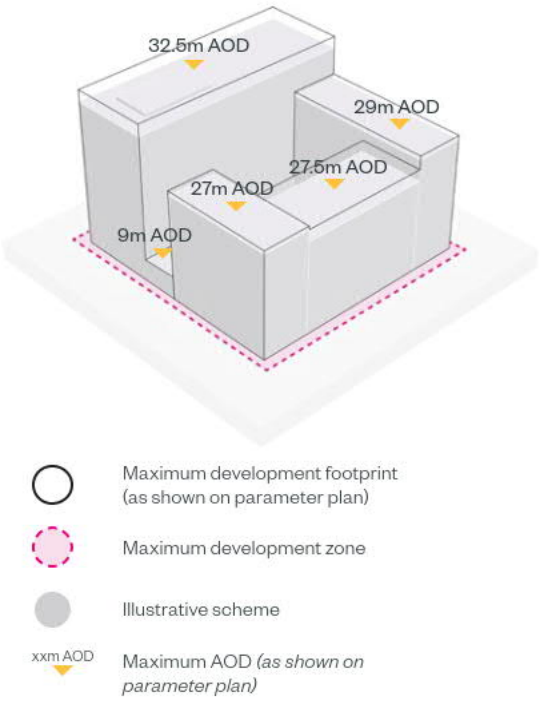
1.8 MAXIMUM PARAMETER AND ILLUSTRATIVE SCHEME

1.8.1 The Outline Proposals have been developed as follows:

- Maximum parameter - includes the maximum development footprint that any Reserved Matters Submission must not exceed;
- Maximum development zone - includes a 2m zone allowing for potential building projections such as balconies;
- Illustrative scheme - represents a scheme which demonstrates a possible proposal of the development within the maximum parameters; and
- The maximum AOD - represents the maximum spot height ("Above Ordnance Datum") that any Reserved Matters Submission must not exceed.

1.8.2 Figure 1-5 shows the relationship between the maximum parameter and illustrative schemes.

Figure 1-5 Relationship between Maximum Parameter and Illustrative Scheme



1.9 DOCUMENT STRUCTURE

1.9.1 This report is set out in the following format:

- Section 2: Waste Legislation, Policy and Guidance – details of the national legislation and local waste policy that have relevance to the Proposed Development.
- Section 3: Principles of Residential Waste Management – outlines the overarching waste management principles, design standards and estimated waste generation for the residential elements of the Proposed Development.
- Section 4: Detailed Proposals: Phase A Residential Waste Management Strategy – provides details of residential waste storage, presentation and collection for Phase A of the Proposed Development once operational.
- Section 5: Outline Proposals: Phases B-D Residential Waste Management Strategy – provides details of residential waste storage, presentation and collection for Phases B-D of the Proposed Development once operational.
- Section 6: Principles of Commercial Waste Management – outlines the overarching waste management principles, design standards and estimated waste generation for the commercial elements of the Proposed Development.
- Section 7: Detailed Proposals: Phases A Commercial Waste Management Strategy – provides details of commercial waste storage, presentation and collection for Phase A of the Proposed Development once operational.

- Section 8: Outline Proposals: Phases B-D Commercial Waste Management Strategy – provides details of commercial waste storage, presentation and collection for Phases B-D of the Proposed Development once operational.
- Section 9: Summary & Conclusions

2 WASTE LEGISLATION, POLICY & GUIDANCE

2.1 INTRODUCTION

2.1.1 The UK is no longer a member of the European Union. EU legislation as it applied to the UK on 31 December 2020 is now a part of UK domestic legislation, under the control of the UK's Parliaments and Assemblies.

2.1.2 This section focuses on the details of the national legislation that are relevant to the Proposed Development, in addition to waste policy and guidance at a local level, reviewed as part of the preparation of this Waste Management Strategy.

2.2 NATIONAL LEGISLATION

2.2.1 A list of relevant items of national waste legislation is outlines below in reverse chronological order:

2.2.2 The Waste (Circular Economy) (Amendment) Regulations (2020) – these regulations came into force on 1 October 2020 and amended a raft of primary and secondary legislation on waste, to introduce a revised legislative framework to support the EU's Circular Economy Package (CEP) identifying steps for the reduction of waste and establishing an ambitious and credible long-term path for waste management and recycling.

2.2.3 Waste Management, The Duty of Care Code of Practice (2018 update) - This code of practices replaces the 1996 Code and is pursuant to Section 34(9) of the Environmental Protection Act 1990. It sets out practical guidance on how to meet waste duty of care requirements and is admissible as evidence in legal proceedings i.e. its rules will be taken into account where relevant in any case based on breach of the duty of care.

2.2.4 The Waste (England and Wales) Regulations 2011 (as amended) - Waste collection authorities must collect waste paper, metal, plastic, and glass separately. This legislation also imposes a duty on waste collection authorities, from the date, when making arrangements for the collection of such waste, to ensure that those arrangements are by way of separate collection.

2.2.5 Environment Protection Act 1990 - Part II of the act was originally implemented by the Duty of Care Regulations 1991. The Duty of Care is a legal requirement for those dealing with certain kinds of waste to take all reasonable steps to keep it safe and is set out in Section 34 of the Act. The Waste (England and Wales) Regulations 2011 repealed the Environmental Protection (Duty of Care) Regulations 1991 and apply the Duty of Care requirements included within the Environmental Protection Act 1990.

2.3 NATIONAL, LONDON & LOCAL WASTE POLICY

2.3.1 The relevant national, London and local waste policy reviewed during the preparation of this Waste Management Strategy is outlined below and further detail provided in APPENDIX A.

- Department for Levellng Up, Housing and Communities (DLUHC), National Planning Policy Framework (2021);
- DLUHC, National Planning Policy for Waste (2014);

- Department for Environment, Food and Rural Affairs (DEFRA), Our Waste, Our Resources: A Strategy for England (2018);
- HM Government, A Green Future: Our 25 Year Plan to Improve the Environment (2018);
- Greater London Authority (GLA), The London Plan 2021 (March 2021);
- GLA, London Environment Strategy (2018);
- LBTH, Tower Hamlets Local Plan 2031 (2020);
- LBTH, Reuse, Recycling and Waste SPD (July 2021);
- LBTH, Waste Management Strategy 2018-2030 (2018); and
- LBTH, Waste Storage and Collection Systems Supplementary Information (2017).

3 PRINCIPLES OF RESIDENTIAL WASTE MANAGEMENT

3.1 INTRODUCTION

3.1.1 This section outlines the principles for residential waste management within both Outline and Detailed Proposals of the Proposed Development, which will comprise multiple phases of residential plots as part of the regeneration of the estate.

3.1.2 Residential waste will be managed in accordance with LBTH's *'Waste storage and collection systems supplementary information'* and '*Local Plan 2031: Adopted January 2020'* (hereafter collectively referred to as 'the Guidance').

3.2 PRE-APPLICATION

3.2.1 A pre-application meeting was held with representatives from LBTH Highways and Waste on 17th December 2020, during which the principles of waste storage, presentation and collection for the Proposed Development were agreed.

3.2.2 Following the pre-application meeting, overall strategies and principles for the management of waste continued to be refined through correspondence with the LBTH Environmental Services Improvement Team Leader via email.

3.3 CURRENT WASTE MANAGEMENT SERVICES

3.3.1 Table 3-1 summarises the waste services available to residents in LBTH.

Table 3-1 Current Residential Waste Services in LBTH

Service	Details
Residual Waste Collection	Collected fortnightly in black bins
Dry-Mixed Recycling (DMR) Collection	Collected fortnightly in green bins
Food Waste Collection	Collected weekly in green food caddy
Garden Waste Collection	Chargeable service collected fortnightly in brown bins
Textiles / WEEE / Small Batteries	Collected fortnightly in clear plastic bags.
Bulky Waste Collection	Chargeable collection service
Local Recycling Points	A number are located across the borough
Reuse and Recycling Centres	A reuse and recycling centre is available for residents to use at: Tower Hamlets Reuse and Recycling Centre Yabsley Street London E14 9RG

3.4 PRINCIPLES OF DESIGN

3.4.1 This section summarises the design principles applied to the management of residential waste within the Proposed Development.

WASTE STORAGE FACILITIES

3.4.2 Within the Proposed Development, all waste facilities will be designed to British Standard BS5906:2005 *Waste Management in Plots – Code of Practice* standards. In summary, the waste facilities will include the following:

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

WASTE COLLECTION ACCESS

3.4.3 In accordance with the Guidance, within the Proposed Development, the route between any waste storage facilties and the Refuse Collection Vehicle (RCV) will:

- be free from steps or kerbs;
- have a solid foundation;
- have a smooth solid surface; and
- be level and have a gradient of no more than 1:12, with a minimum width of 2 metres.

INTERNAL RESIDENTIAL WASTE STORAGE

3.4.4 Each residential property will be provided with a segregated waste bin, which will be fixed in to an appropriate kitchen unit.

3.4.5 Figure 3-1 shows an example of a commercially available segregated kitchen bin.

Figure 3-1 Example Segregated Kitchen Bin[1]

[1] Example Kitchen Bin https://www.hafele.co.uk/en/product/pull-out-waste-bin-for-hinged-door-cabinets-2x-10-1x-20-litres/0000008e000185f900040023/#SearchParameter=&Category=DMPAqBtGW4gAAAFP5sY4Inbm&checkbox_fs_waste_bin_in

3.4.6 The segregated waste bin shown in Figure 3-1 includes the following bin capacities:

- Residual Waste: 10 litres;
- Recyclables: 20 litres; and
- Food Waste: 10 litres.

3.4.7 The proposed segregated waste bin will be fitted in to a single kitchen unit with a minimum width of 500mm.

3.5 RESIDENTIAL WASTE STORAGE REQUIREMENTS

3.5.1 This section outlines the residential waste storage requirements as per the Guidance.

INDIVIDUAL DWELLINGS

3.5.2 Individual residential dwellings are required to provide storage for bins within the curtilage of the property.

3.5.3 Table 3-2 below details the container requirements for individual dwellings, extracted from the Guidance.

Table 3-2 LBTH Container Requirements - Individual Dwellings

	Waste Stream			
	Residual Waste	DMR	Food Waste	Garden Waste
Container Type	240-Litre Wheeled Bin	240-Litre Wheeled Bin	23-Litre Food Caddy	Garden Waste Sack

COMMUNAL WASTE STORAGE – WASTE METRICS

3.5.4 Estimated volumes of residential waste generated at the Proposed Development for properties with communal waste storage once operational have been quantified using waste generation metrics extracted from the Guidance and agreed with the LBTH Environmental Services Improvement Team Leader.

3.5.5 Table 3-3 below details the residential waste metrics applied to the plots with communal waste storage within the Proposed Development.

Table 3-3 Residential Waste Metrics – Communal Waste Storage

Unit Type	Storage Provision (Litres)		
	Residual Waste	DMR	Food Waste
1-Bed	70	60	12
2-Bed	120	90	
3-Bed	165	120	
4-Bed (+)	215	150	

stallation=Bottom+Mounted&FF.followSearch=9950&@P.FF.followSearch=9997&PageNumber=1&OriginalPageSize=12&PageSize=12&Position=7&OrigPos=287&ProductListSize=18

4 DETAILED PROPOSAL: PHASE A RESIDENTIAL WASTE STRATEGY

4.1.1 The following section summarises the residential waste strategy for properties within Phase A of the Proposed Development, forming the Detailed Proposals.

4.1.2 Phase A includes both individual dwellings and properties with communal waste storage.

4.1.3 Figure 4-1 shows the locations of Phase A within the Proposed Development.

Figure 4-1 Proposed Development Phase A

4.2 ACCOMMODATION SCHEDULE

4.2.1 Table 4-1 below summarises the accommodation schedule for the Detailed Proposals including whether waste will be stored individually per dwelling, or communally by core.

Table 4-1 Accommodation Schedule – Detailed Proposals

Plot	Storage Type	Number of Residential Units							
		Studio	1-Bed	2-Bed	3-Bed	4-Bed	5-Bed	6-Bed	Total
F1	Communal	6	41	50	5	0	0	0	102
H1	Communal	0	5	12	12	4	0	0	33
H2	Communal	0	5	12	12	4	0	0	33
H3	Communal	6	10	18	4	0	0	0	38
I1	Communal	0	20	32	0	0	0	0	52
J1	Communal	0	0	0	6	0	0	0	6
	Individual	0	0	0	0	9	0	4	13
	Total	12	81	124	39	17	0	4	277

4.3 RESIDENTIAL WASTE STRATEGY – INDIVIDUAL DWELLINGS (PLOT J)

4.3.1 The following section details the principles of residential waste management within Phase A for individual dwellings.

4.3.2 This section of the waste management strategy relates to the individual dwellings within Plot J.

4.3.3 The individual dwellings receiving kerbside collections are shown in Figure 4-2 below.

Figure 4-2 Plot J Individual Dwellings

4.3.4 Each kerbside property will be provided with a dedicated waste storage facility sufficient in size to store the containers summarised in Table 3-2.

4.3.5 The dimensions of the bins are summarised in Table 4-2.

Table 4-2 Container Dimensions

Container	Dimensions (mm)		
	Height	Width	Depth
240-Litre Wheeled Bin	1,085	570	730
23-Litre Food Caddy	430	320	390

4.3.6 The waste storage facility will be within the curtilage of each property and allow the bins to be stored on a solid base which can be accessed via a pathway.

4.3.7 The bins should not be presented for collection on the public footway or highway.

4.3.8 The LBTH collection operatives will collect the bins directly from the boundary of each property and drag them to the adjacent Refuse Collection Vehicle (RCV) on Lochnagar Street.

4.3.9 Once the bins have been emptied, the LBTH collection operatives will return the bins to the collection point.

4.4 RESIDENTIAL WASTE STRATEGY – COMMUNAL WASTE STORAGE (PLOTS F, H, I & J)

4.4.1 The following section details the principles of residential waste management within Phase A for units with communal waste storage.

WASTE GENERATION MODELLING

4.4.2 Applying the waste metrics summarised in Table 3-3 to the accommodation schedule in Table 4-1, Table 4-3 summarises the estimated weekly waste generation for the Detailed Proposals with communal waste storage.

Table 4-3 Estimated Weekly Waste Generation – Communal Waste Storage

Plot	Weekly Waste Generation (Litres)			
	Residual Waste	DMR	Food Waste	Total
F1	10,115	7,920	1,224	19,259
H1	4,630	3,420	396	8,446
H2	4,630	3,420	396	8,446
H3	3,940	3,060	456	7,456
I1	5,240	4,080	624	9,944
J1	990	720	72	1,782
Total	29,545	22,620	3,168	55,333

RESIDENTIAL WASTE STRATEGY - PLOTS F, H & J

4.4.3 Each plot will be provided with a residential waste store at ground floor level. The residential waste stores will accommodate all residual waste, DMR and food waste generated within these plots prior to collection.

4.4.4 Residual waste will be stored in 1,100-litre Eurobins and DMR will be stored in 1,280-litre Eurobins. Food waste will be stored in 240-litre wheeled bins.

4.4.5 Table 4-4 summarises the dimensions of the containers within Plots F, H and J.

Table 4-4 Container Dimensions

Container	Dimensions (mm)		
	Height	Width	Depth
1,100-Litre Eurobin	1,370	1,250	980
1,280-Litre Eurobin	1,470	1,260	985
240-Litre Wheeled Bin	1,085	570	730

4.4.6 Based on the estimated residual waste, DMR and food waste generation in Table 4-3, Table 4-5 details the container requirements for Plots F, H and J once operational.

Table 4-5 Container Requirements - Plots F, H & J

Plot	Number of 1,100-Litre Eurobins Residual Waste	Number of 1,280-Litre Eurobins DMR	Number of 240-Litre Wheeled Bins Food Waste	Total
F1	10	7	6	23
H1	5	3	2	10
H2	5	3	2	10
H3	4	3	2	9
J1	1	1	1	3
	25	17	13	55

4.4.7 Residents will be required to transport their own waste from their property directly to their nearest waste store, using the passenger lifts (where necessary), where they will segregate their waste into appropriately labelled bins.

4.4.8 Figure 4-3 and Figure 4-4 show the locations and configurations of the residential waste stores.

Figure 4-3 Plot F Residential Waste Store

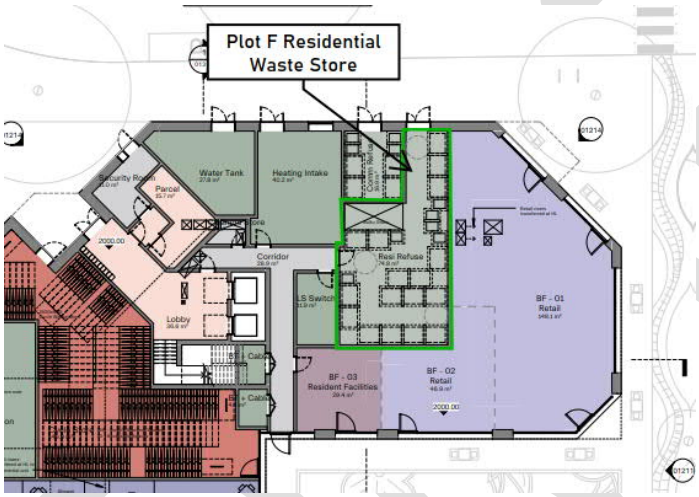


Figure 4-4 Plot H Residential Waste Stores

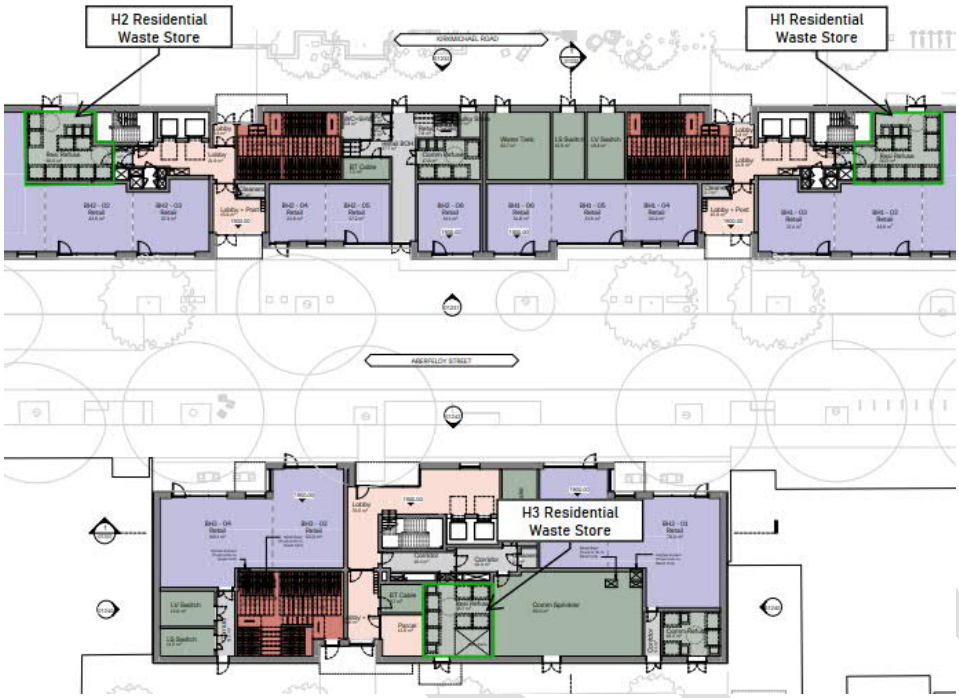
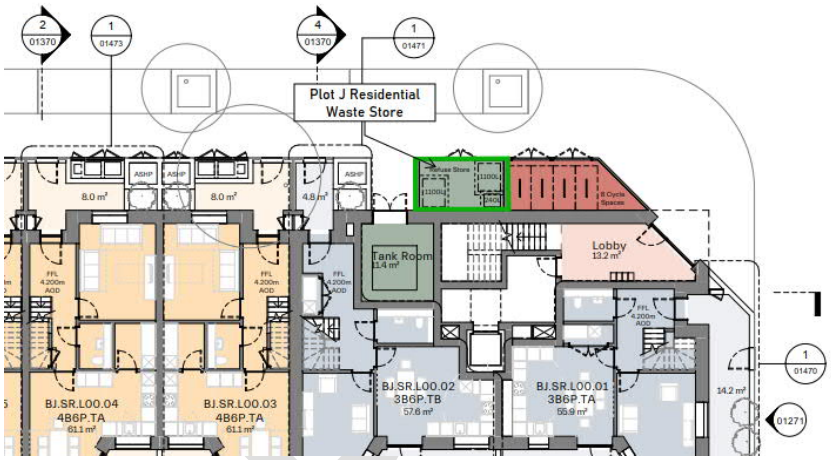


Figure 4-5 Plot J Residential Waste Store



4.4.9 On nominated collection days, the LBTH waste collection operatives will access the bins from the residential waste stores in Plots F1, H3 and J1 directly and wheel them out to the parked RCV. Once the bins have been emptied, the operatives will return them to the waste stores.

4.4.10 The bins within the residential waste stores in Plots H1 and H2 will be presented in the external landscaping within 10m of the RCV, as per the Guidance.

4.4.11 Figure 4-6 and Figure 4-7 indicate the loading positions of the RCV for Plots F and H.

Figure 4-6 RCV Loading Position Plot F

Figure 4-7 RCV Loading Position Plot H

Figure 4-8 RCV Loading Position Plot H

4.4.12 APPENDIX B includes full swept path analysis for the RCV.

RESIDENTIAL WASTE STRATEGY - PLOT I

4.4.13 Plot I is located adjacent to three earlier phases of the Aberfeldy Village development that store residual waste and DMR within Underground Refuse Storage (URS) units.

4.4.14 An example URS unit is shown in Figure 4-9

Figure 4-9 Example URS Unit

4.4.15 Residual waste and DMR will be stored in 5,000-litre URS units within the external landscaping and food waste will be stored in 240-litre wheeled bins within a residential waste store.

4.4.16 Table 4-6 summarises the nominal dimensions of the containers within Plot I. Exact dimensions of the URS units would be confirmed by the contracted supplier prior to installation.

Table 4-6 Container Dimensions

Container	Dimensions (mm)		
	Height	Width	Depth
5,000-Litre URS	1,665	1,665	2,955
240-Litre Wheeled Bin	1,085	570	730

4.4.17 Based on the estimated residual waste, DMR and food waste generation in Table 4-3, Table 4-7 details the container requirements for Plot I once operational.

Table 4-7 Container Requirements – Plot I

Plot	Number of 5,000-Litre URS Units		Number of 240-Litre Wheeled Bins
	Residual Waste	DMR	Food Waste
I1	1	1	3
Total			

4.4.18 It should be noted that there are currently two URS units located at the rear of the block, for the use of all residents within the surrounding earlier phases of the Aberfeldy Village development. The URS units for Plot I are provided in addition to the existing units, to ensure sufficient capacity is available.

4.4.19 Residents will be required to transport their own waste from their property directly to their nearest URS unit, or the residential food waste store using the passenger lifts (where necessary), where they will segregate their waste accordingly.

4.4.20 To prevent mis-use the residential food waste stores and URS units will be secured by fob or coded access.

4.4.21 Figure 4-10 shows the location of the URS units.

Figure 4-10 Plot I URS Units

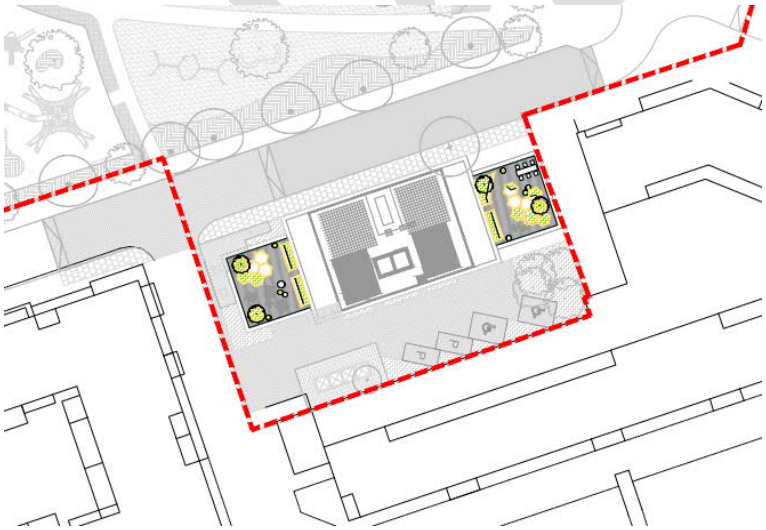
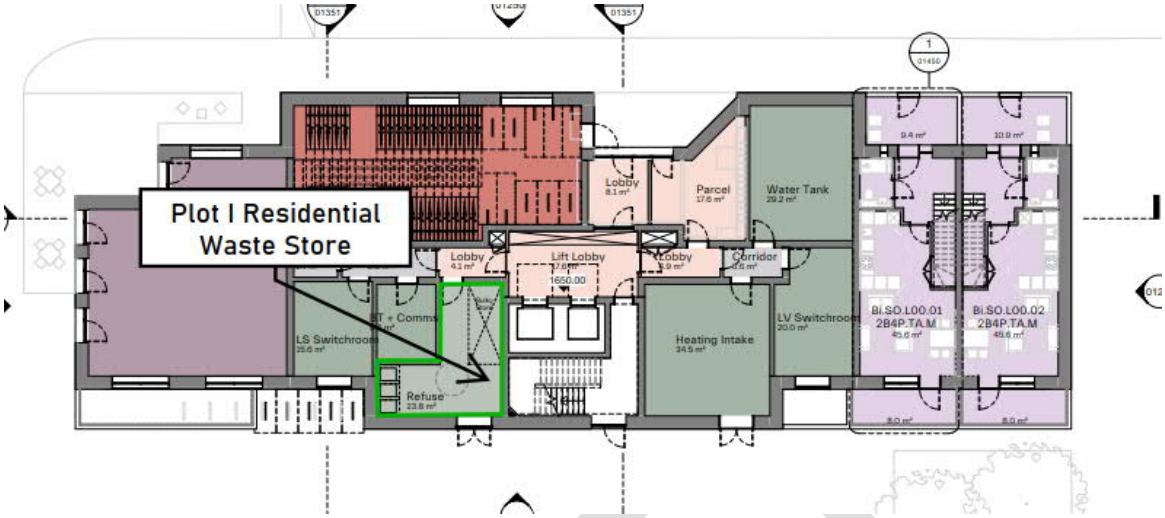


Figure 4-11 Plot I Residential Food Waste Store



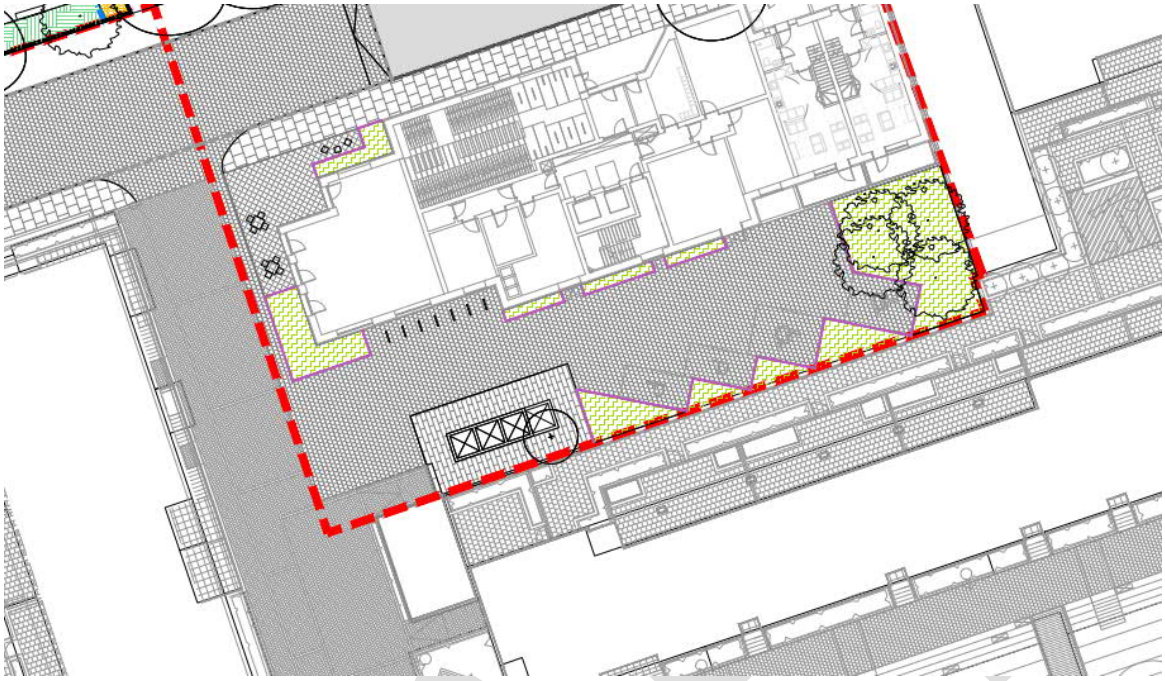
4.4.22 On nominated collection days the LBTH URS collection vehicle will continue to access the URS units at the rear of Plot I to collect the residual waste and DMR.

4.4.23 For residential food waste collections, the LBTH waste collection operatives will access the bins from the residential food waste store directly and wheel them out to the parked RCV. Once the bins have been emptied, the operatives will return them to the waste store.

4.4.24 Figure 4-12 and Figure 4-13 indicate the loading positions for residential waste collections from Plot I.

Figure 4-12 RCV Loading Position - URS Units

Figure 4-13 RCV Loading Position - Food Waste Collection



4.4.25 APPENDIX B includes full swept path analysis for the RCV.

4.5 BULKY WASTE STORAGE (PLOTS F, H & I)

4.5.1 As per the Guidance, residents will be provided with access to a bulky waste storage area for large redundant items such as furniture or appliances.

4.5.2 Bulky waste items will be stored within dedicated caged areas within the residential waste stores. Residents in Plots H1 and H2 will be provided access to the bulky waste storage area in Plot H3.

4.5.3 If not located in reasonable proximity to the bulky waste storage area, the on-site FM team will assist residents to transfer their items.

4.5.4 The locations of the bulky waste storage areas shown in Figure 4-14, Figure 4-15 and Figure 4-16.

Figure 4-14 Plot F Bulky Waste Storage

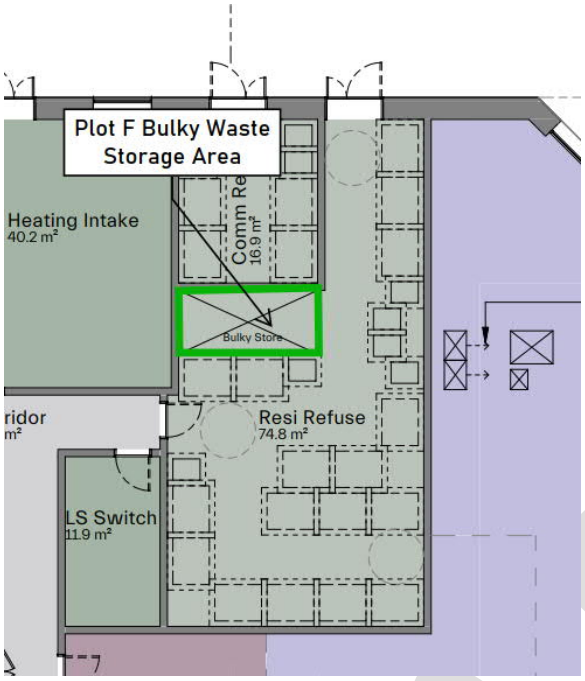


Figure 4-15 Plot H Bulky Waste Storage

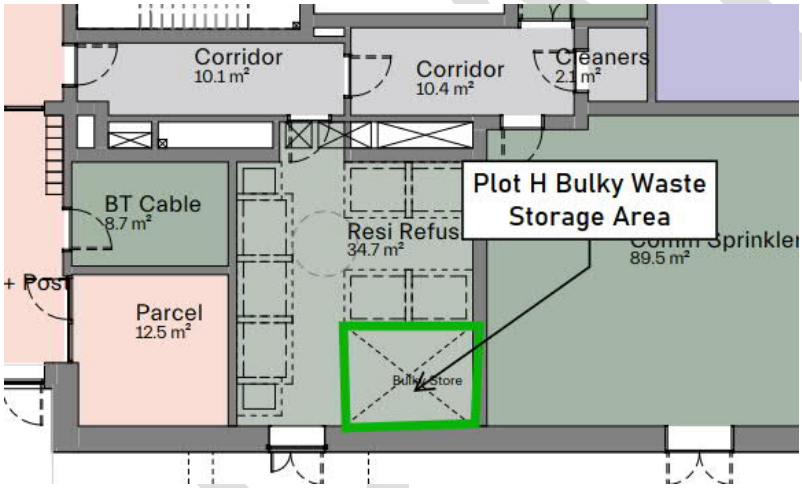
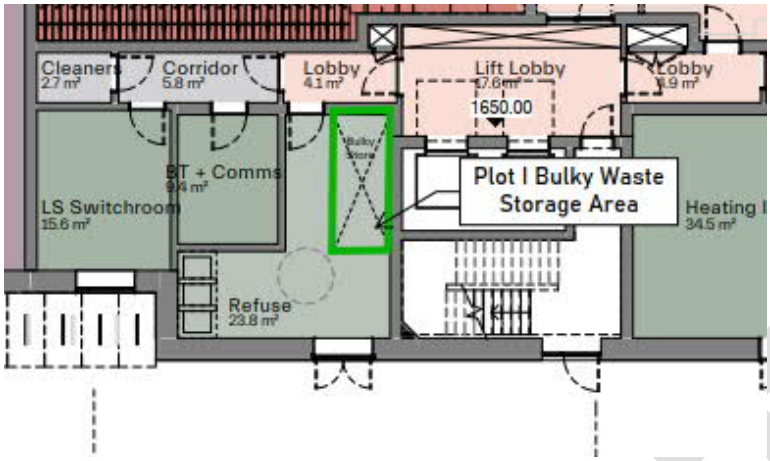


Figure 4-16 Plot I Bulky Waste Storage



4.5.5 The on-site FM team will be responsible for managing the storage of bulky waste at the Proposed Development.

4.5.6 Residents will contact LBTH to pay for collection of their bulky items and provide evidence to the on-site FM team, who will provide access to the bulky waste storage area.

4.5.7 On the nominated day, the LBTH collection crew will attend the bulky waste storage area and collect the presented items.

.

5 OUTLINE PROPOSAL: PHASES B-D RESIDENTIAL WASTE STRATEGY

5.1 INTRODUCTION

5.1.1 The following section summarises the residential waste strategy for properties within Phases B, C and D of the Proposed Development, forming the Outline Proposals.

5.1.2 Waste management facilities within the Outline Proposals have been designed to align with the maximum parameter scheme, to confirm functionality from a technical perspective.

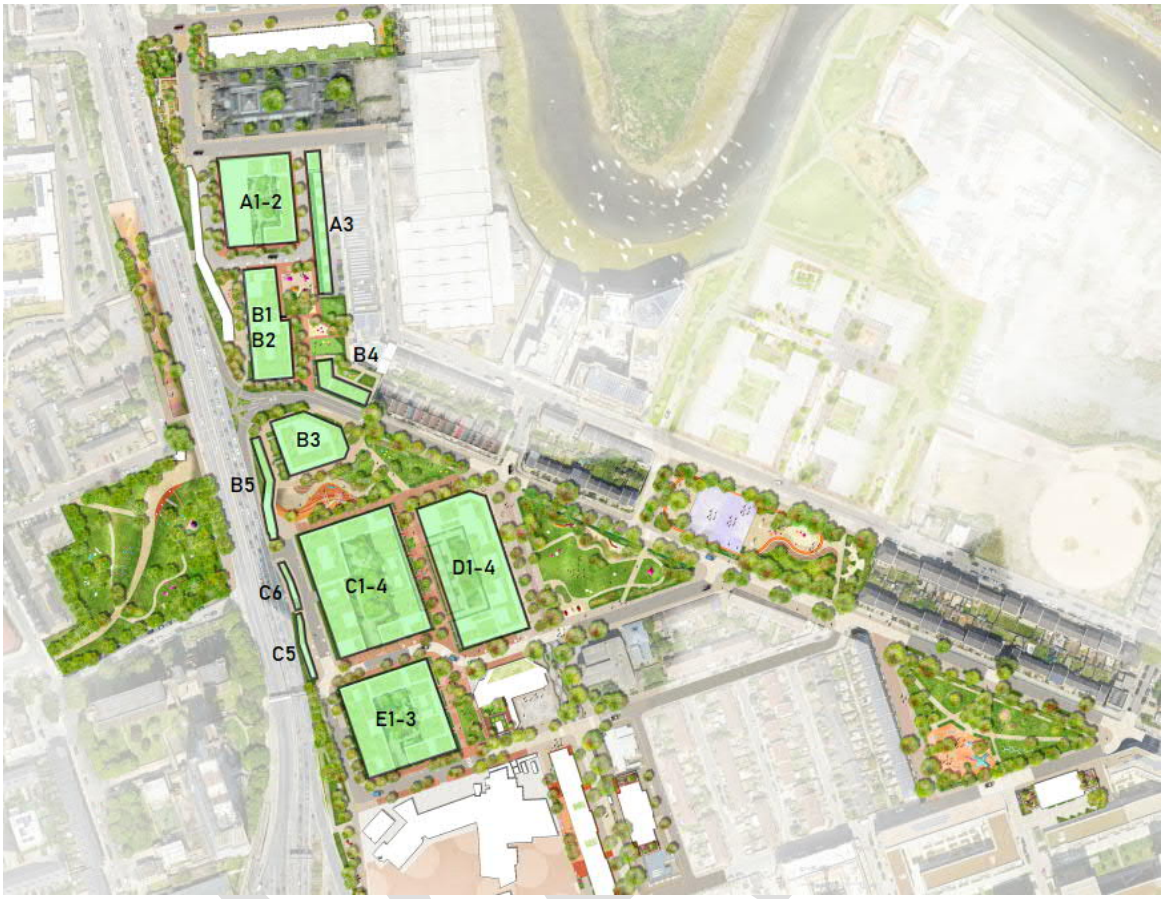
5.1.3 The Outline Proposals respond to the DC referenced in Section 1.7, confirming the maximum parameter scheme adheres to all applicable technical and legislative requirements relating to waste management.

5.1.4 Within this section, the illustrative scheme has been used to demonstrate acceptability of the Outline Proposals and this will be clearly indicated.

5.1.5 Phases B-D will include both individual dwellings and properties with differing communal waste storage arrangements.

5.1.6 Figure 5-1 shows the configuration of Phases B-D of the Proposed Development.

Figure 5-1 Proposed Development Phases B-D (Illustrative Scheme)



5.2 ACCOMMODATION SCHEDULE

5.2.1 Table 5-1 below summarises the maximum parameter scheme accommodation schedule for the Outline Proposals, including whether waste will be stored individually per dwelling, or communally by core.

Table 5-1 Accommodation Schedule – Outline Proposals (Maximum Parameter Scheme)

Plot	Storage Type	Number of Residential Units							
		Studio	1-Bed	2-Bed	3-Bed	4-Bed	5-Bed	6-Bed	Total
A1	Communal	0	31	22	33	0	0	0	86
A2	Communal	0	15	9	18	2	0	0	44
A3	Individual	0	0	0	10	0	0	0	10
B1	Communal	0	25	18	0	0	0	0	43
B2	Communal	0	108	75	0	0	0	0	183
B3	Communal	0	26	156	0	0	0	0	182
B4	Individual	0	0	0	8	0	0	0	8
C1	Communal	9	106	69	0	0	0	0	184
C2	Communal	0	41	21	6	0	0	0	68
C3	Communal	0	17	19	9	1	0	0	46
C4	Communal	33	22	44	0	0	0	0	99
D1	Communal	13	20	38	1	0	0	0	72
D2	Communal	0	28	28	4	0	0	0	60
D3	Communal	21	22	26	1	1	0	1	72
D4	Communal	0	0	0	4	0	0	0	4
E1	Communal	26	43	38	0	0	0	0	107
E2	Communal	0	15	15	10	3	0	0	43
E3	Communal	0	12	8	15	5	0	0	40
	Total	102	531	586	119	12	0	1	1,351

5.3 RESIDENTIAL WASTE STRATEGY – INDIVIDUAL DWELLINGS (PLOTS A3 & B4)

5.3.1 This section of the waste management strategy relates to the individual dwellings within Plots A3 & B4.

5.3.2 The individual dwellings receiving kerbside collections are shown in Figure 5-2 below.

Figure 5-2 Plots A3 and B4 Individual Dwellings (Illustrative Scheme)

5.3.3 Each kerbside property will be provided with a dedicated waste storage facility sufficient in size to store the containers summarised in Table 3-2.

5.3.4 The dimensions of the bins are summarised in Figure 4-13.

Table 5-2 Container Dimensions

Container	Dimensions (mm)		
	Height	Width	Depth
240-Litre Wheeled Bin	1,085	570	730
23-Litre Food Caddy	430	320	390

5.3.5 The waste storage facility will be within the curtilage of each property and allow the bins to be stored on a solid base which can be accessed via a pathway.

5.3.6 The bins should not be presented for collection on the public footway or highway.

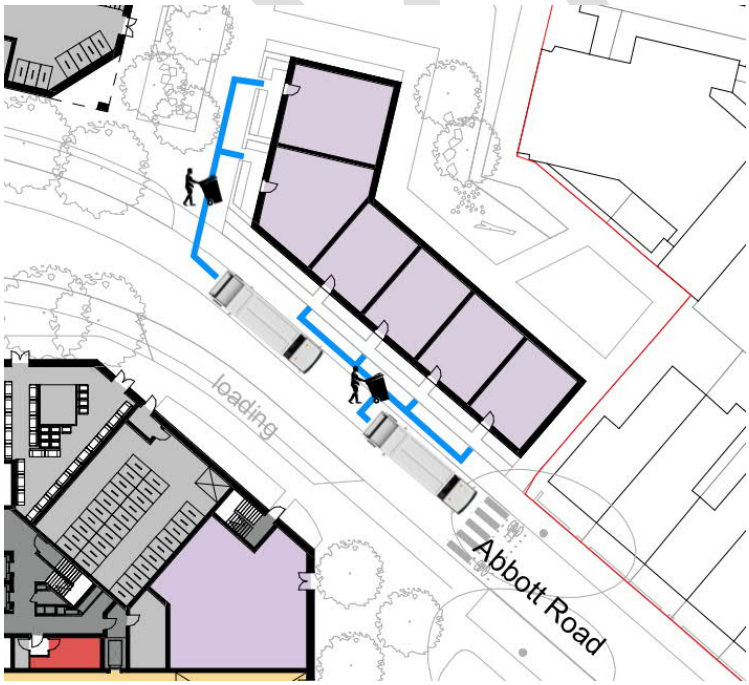
5.3.7 The LBTH collection operatives will collect the bins directly from the boundary of each property and drag them to the adjacent RCV.

5.3.8 It was agreed with the LBTH Environmental Services Improvement Team Leader that each residential unit in Plot B4 would receive a direct collection from the property boundary. For any residential units in Plot A3 that exceed the bin drag distance stated in the Guidance, it was agreed that on collection days residents would present these bins within the external landscaping (off-highway) within 10m of the RCV loading position.

5.3.9 The indicative loading positions of the RCV are shown in Figure 5-3 and Figure 5-4 below.

Figure 5-3 RCV Loading Position Plot A3 on Nairn Street (Illustrative Scheme)

Figure 5-4 RCV Loading Position Plot B4 on Abbott Road (Illustrative Scheme)



5.3.10 APPENDIX B includes full swept path analysis for the RCV.

5.3.11 Once the bins have been emptied, the LBTH collection operatives will return the bins to their respective collection points.

5.4 RESIDENTIAL WASTE STRATEGY – COMMUNAL WASTE STORAGE (PLOTS A, B, C, D & E)

5.4.1 This section of the waste management strategy relates to the Plots A1, A2, B1, B2, B3, C1, C2, C3, C4, D1, D2, D3, D4, E1, E2 and E3.

WASTE GENERATION MODELLING

5.4.2 Applying the waste metrics summarised in Table 3-3 to the accommodation schedule in Table 5-1, Table 5-3 summarises the estimated weekly waste generation for the plots within the Outline Proposals with communal waste storage.

Table 5-3 Estimated Weekly Waste Generation – Communal Waste Storage (Maximum Parameter Scheme)

Plot	Weekly Waste Generation (Litres)			
	Residual Waste	DMR	Food Waste	Total
A1	10,255	7,800	1,032	19,087
A2	5,530	4,170	528	10,228
B1	3,910	3,120	516	7,546
B2	16,560	13,230	2,196	31,986
B3	20,540	15,600	2,184	38,324
C1	16,330	13,110	2,208	31,648
C2	6,380	5,070	816	12,266
C3	5,170	3,960	552	9,682
C4	9,130	7,260	1,188	17,578
D1	7,035	5,520	864	13,419
D2	5,980	4,680	720	11,380
D3	6,725	5,340	864	12,929
D4	660	480	48	1,188
E1	9,390	7,560	1,284	18,234
E2	5,145	3,900	516	9,561
E3	5,350	3,990	480	9,820
Total	134,090	104,790	15,996	254,876

RESIDENT ACCESS FACILITIES

RESIDENTIAL WASTE STORES

5.4.3 Each building will be provided with a residential waste store at ground floor level in close proximity to the lift and stair core.

5.4.4 Residual waste and DMR will be stored in 660-litre Eurobins, food waste will be stored in 240-litre wheeled bins.

5.4.5 Residents will be required to transport their own waste from their property directly to their nearest waste store, using the passenger lifts (where necessary), where they will segregate their waste into appropriately labelled bins.

5.4.6 The locations of the residential waste stores are shown in Figure 5-5 and Figure 5-6 below.

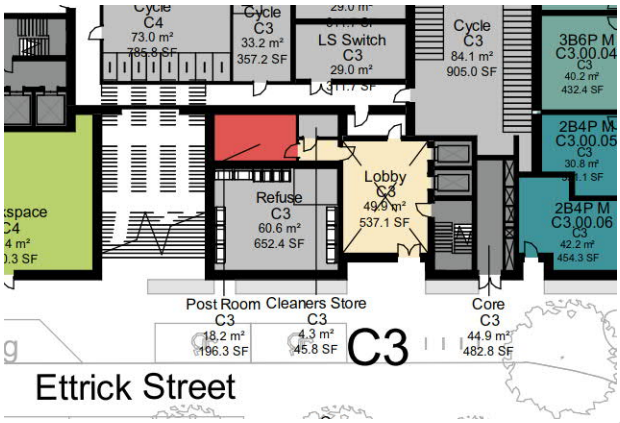
Figure 5-5 Residential Waste Stores - Plot A1, A2, B1 & B2 (Illustrative Scheme)

Figure 5-6 Residential Waste Stores - Plots B3, C1-C4, D1-D4 & E1-E3 (Illustrative Scheme)

5.4.7 The on-site Facilities Management (FM) team will be responsible for overseeing the residential waste stores to ensure residents have access to empty containers for each waste stream at all times.

5.4.8 An example residential waste store configuration is shown in Figure 5-7 below.

Figure 5-7 Example Residential Waste Store (Illustrative Scheme)



RESIDENTIAL UNITS FRONTING ON TO CULLODEN GREEN

5.4.9 Some of the units in Plots C3, D4 and E3 that are fronted by Culloden Green are beyond what would be considered a 'reasonable distance' from the nearest residential waste store. These units are indicated in Figure 5-8 below.

Figure 5-8 Culloden Green Residential Units (Illustrative Scheme)

5.4.10 Residents from these units will be provided access to the residential waste stores to both the north and south of their units, to use as they exit the Proposed Development in either direction.

5.4.11 Additionally, these residents will have the option for the storage of segregated waste within the defensible space at the front of their unit (in suitable containers) to deposit their residual waste, DMR and food waste. On an agreed schedule, the on-site FM team would remove the bagged waste and consolidate it in the nearest residential waste store, for collection by LBTH.

RESIDUAL WASTE AND DMR STORAGE

5.4.12 Residual waste and DMR will be stored in the residential waste stores in 660-litre Eurobins. These bins will not be collected by LBTH.

5.4.13 Residual waste and DMR will be consolidated and stored within the podium plots in 10.7m^3 portable waste compactors at ground floor level.

5.4.14 The on-site FM team will transfer the 660-litre Eurobins from the residential waste stores to the centralised compactor storage as necessary, and empty them in to the compactors using a bin lift.

5.4.15 An example portable waste compactor with bin lift is shown in Figure 5-9 below.

Figure 5-9 Example 10.7m^3 Portable Waste Compactor[2]

5.4.16 The dimensions of the example portable waste compactor are summarised in Table 5-4

Table 5-4 Portable Compactor Dimensions

Container	Dimensions (mm)		
	Height	Width	Depth
PDE PD729 10.7m^3 Skip-Loaded Portable Compactor	2,910	1,890	4,425

5.4.17 As agreed with the LBTH Environmental Services Improvement Team Leader, residual waste and DMR will be compacted at ratios of 3:1 and 2:1 respectively.

5.4.18 Based on the estimated weekly waste generation in Table 5-3, Table 5-5 details the volume of compacted waste.

[2] PDE PD729 https://pde.uk.com/our-products/pd729-waste-compactor-bin-hoist/

Table 5-5 Compacted Waste Generation (Maximum Parameter Scheme)

Plot	Weekly Waste Generation (Litres)	
	Residual Waste Compacted (3:1)	DMR Compacted (2:1)
A1	3,418	3,900
A2	1,843	2,085
B1	1,303	1,560
B2	5,520	6,615
B3	6,847	7,800
C1	5,443	6,555
C2	2,127	2,535
C3	1,723	1,980
C4	3,043	3,630
D1	2,345	2,760
D2	1,993	2,340
D3	2,242	2,670
D4	220	240
E1	3,130	3,780
E2	1,715	1,950
E3	1,783	1,995
Total	44,697	52,395

5.4.19 Storage of residual waste and DMR will be consolidated between podium plots. Table 5-6 summarises the consolidated provision of portable waste compactors for the Proposed Development once fully occupied.

5.4.20 To ensure a robust waste management strategy is maintained throughout the design stages, it has been assumed that each of the portable waste compactors do not fill beyond 80% total capacity.

Table 5-6 Portable Compactor Provision (Maximum Parameter Scheme)

Plot	Location	Volume of Waste (Litres)		Number of 10.7m³ Portable Waste Compactors	
		Residual Waste	DMR	Residual Waste	DMR
A1	Plot A	12,085	14,160	2	2
A2					
B1					
B2					
B3	Plot C	19,183	22,500	3	3
C1					
C2					
C3					
C4					
D1	Plot E	13,428	15,735	2	2
D2					
D3					
D4					
E1					
E2					
E3					
	Total	44,697	52,395	8	8

5.4.21 It should be noted that due to the construction phasing of the Proposed Development, Plot A has space to accommodate one additional portable waste compactor for waste generated by Plots B3, should it be required.

5.4.22 As bins within the residential waste stores become full, the on-site FM team will be responsible for emptying the bins in to the portable waste compactors, returning them once complete.

5.4.23 Where these routes remain off the public highway, the on-site FM team will be provided with an electric tow-tug to transfer bins between plots. An example electric tow-tug is shown below in Figure 5-10 below.

Figure 5-10 Example Electric Tow-Tug

5.4.24 Where necessary to transfer bins using public highway, it is anticipated that a road legal vehicle and trailer will be used. An example vehicle and trailer are shown in Figure 5-11 and Figure 5-12 below.

Figure 5-11 Example Electric Tow Vehicle

5.4.25

Figure 5-12 Example Bin Trailer

RESIDUAL WASTE AND DMR COLLECTION

5.4.26 LBTH will collect the residual waste and DMR portable waste compactors on a weekly basis using a skip collection vehicle; the dimensions of the collection vehicle were provided by the LBTH Environmental Services Improvement Team Leader during pre-app discussions.

5.4.27 The LBTH skip vehicle will enter each podium block via the access gates to collect the compactors.

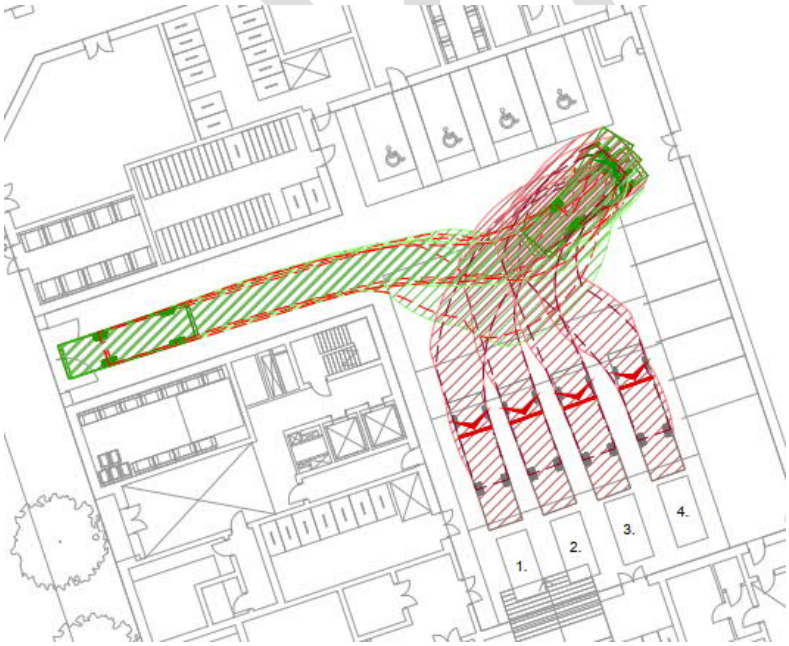
5.4.28 The access gates will be secured by concierge, Automatic Number Plate Recognition (ANPR), code, or access fob provided to LBTH.

5.4.29 As per the Guidance, the skip collection vehicle will be able to enter and exit the podium plots in a forward gear. Extracts from the full swept path analysis provided in APPENDIX B are shown in Figure 5-13, Figure 5-14 and Figure 5-15 below.

Figure 5-13 Plot A Compactor Collection (Illustrative Scheme)

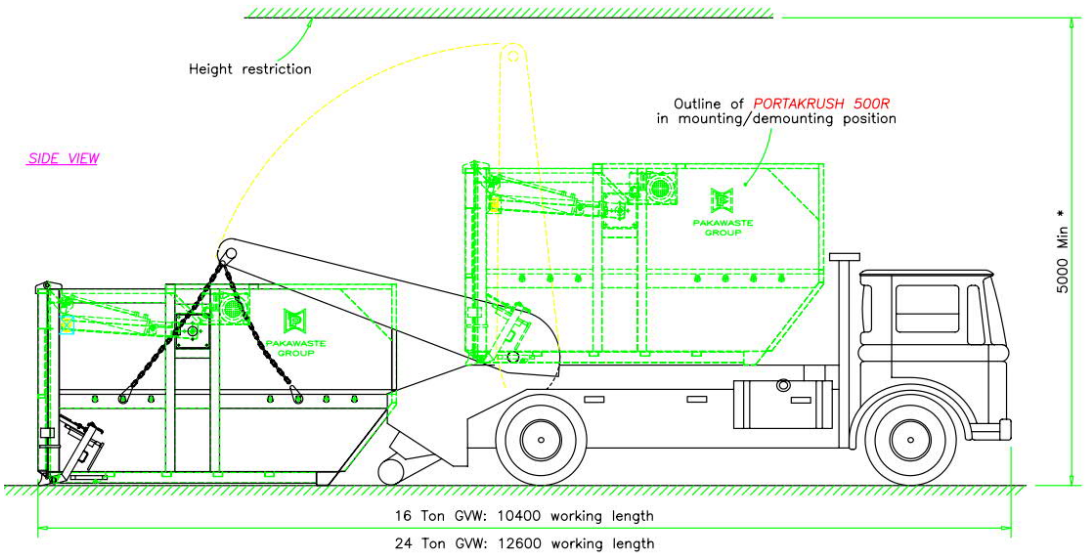
Figure 5-14 Plot C Compactor Collection (Illustrative Scheme)

Figure 5-15 Plot E Compactor Collection (Illustrative Scheme)



5.4.30 The LBTH skip collection vehicles will reverse up to each compactor to load them; dimensions for loading have been designed to allow for five metres height clearance as per the extract in Figure 5-16 below.

Figure 5-16 Portable Compactor Loading Dimensions



5.4.31 Once loaded, the LBTH skip vehicle will transfer the portable waste compactor to the nominated point of disposal for emptying, returning the unit once complete.

FOOD WASTE STORAGE AND COLLECTION

5.4.32 Food waste will be stored in 240-litre wheeled bins within the residential waste stores.

5.4.33 Based on the estimated food waste generation in Table 5-3, Table 5-7 details the food waste storage requirements once operational, as per the Guidance.

Table 5-7 Food Waste Storage Provision (Maximum Parameter Scheme)

Plot	Number of 240-Litre Food Waste Bins
A1	5
A2	3
B1	3
B2	10
B3	10
C1	10
C2	4
C3	3
C4	5
D1	4
D2	3
D3	4
D4	1
E1	6
E2	3
E3	2
Total	76

5.4.34 The residential waste stores are the location that all food waste bins will be stored prior to collection.

5.4.35 Where accessible within 10m of the RCV, food waste bins will be collected directly from the residential waste stores.

5.4.36 Not all of the residential waste stores are accessible for direct collection by LBTH; prior to collection, the on-site FM team will transfer the food waste bins to a position off-highway within 10m of the RCV. As agreed with the LBTH Environmental Services Improvement Team Leader (and where possible) the food waste bins will be presented within the bulky waste storage areas in the residential waste stores receiving direct collections.

5.4.37 Table 5-8 summarises the collection locations for the food waste bins, including indicative presentation points for the residential waste stores not receiving direct collections. Sufficient space has been provided for the presentation of food waste bins across the stores receiving direct collections.

Table 5-8 Food Waste Bin Indicative Collection Locations (Illustrative Scheme)

Plot	Collection Location
A1	Direct collection
A2	Direct collection
B1	Public realm adjacent to Enterprise Yard / Nairn Street
B2	
B3	Direct collection
C1	C3 Residential Waste Store
C2	C3 Residential Waste Store
C3	Direct collection
C4	C3 Residential Waste Store
D1	D3 Residential Waste Store
D2	Direct collection
D3	Direct collection
D4	D3 Residential Waste Store
E1	Direct collection
E2	Direct collection
E3	Direct collection

5.4.38 On nominated collection days, the LBTH waste collection operatives will access the bins from the residential waste stores or collections points and wheel them out to the parked RCV. Once the bins have been emptied, the operatives will return them to the respective collection points.

5.5 BULKY WASTE STORAGE (PHASES B-D)

5.5.1 As per the Guidance, residents will be provided with access to a bulky waste storage area for large redundant items such as furniture or appliances

5.5.2 Bulky waste items will be stored within dedicated caged areas within the residential waste stores.

5.5.3 The on-site FM team will be responsible for managing the storage of bulky waste at the Proposed Development.

5.5.4 Residents will contact LBTH to pay for collection of their bulky items and provide evidence to the on-site FM team, who will provide access to the bulky waste storage area.

5.5.5 On the nominated day, the LBTH collection crew will attend the bulky waste storage areas and collect the presented items.

6 PRINCIPLES OF COMMERCIAL WASTE MANAGEMENT

6.1 INTRODUCTION

6.1.1 This section outlines the principles for commercial waste management within both outline and detailed elements of the Proposed Development, which will comprise multiple phases of development, with a number of commercial areas distributed throughout.

6.1.2 Commercial waste will be managed in accordance with the Guidance and British Standard BS5906:2005 *Waste Management in Plots – Code of Practice*.

6.2 PRINCIPLES OF DESIGN

WASTE STORAGE FACILITIES

6.2.1 Within the Proposed Development, all commercial waste facilities will be designed to BS5906:2005 standards. In summary, the waste facilities will include the following:

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

WASTE COLLECTION ACCESS

6.2.2 Within the Proposed Development, the route between any waste storage facilties and the RCV will:

- be free from steps or kerbs;
- have a solid foundation;
- have a smooth solid surface; and
- be level and have a gradient of no more than 1:12, with a minimum width of 2 metres.

7 DETAILED APPLICATION : PHASE A COMMERCIAL WASTE MANAGEMENT

7.1.1 The following section summarises the commercial waste strategy for properties within Phase A of the Proposed Development, forming the detailed part of the planning application.

7.1.2 Phase A includes commercial areas in Plots F and H.

7.1.3 The commercial area schedule for Phase A is summarised in Table 7-1 below.

Table 7-1 Commercial Area Schedule

Plot	Use Class	GIA (m^2)
F1	Class E	512
H1		267
H2		332
H3		379
	Total	1,490

7.2 WASTE GENERATION MODELLING

7.2.1 LBTH does not provide metrics for commercial waste generation. Waste generation metrics for the proposed commercial space has been sourced from British Standard BS5906:2005 *Waste Management in Plots – Code of Practice*.

7.2.2 Table 7-2 summarises the commercial waste generation metrics for the Proposed Development.

Table 7-2 Commercial Waste Generation Metrics

Description	Weekly Waste Metric	Waste Composition	Assumptions
Restaurant	Volume per number of covers [75 litres] x number of covers	• 35% Residual Waste • 45% DMR • 20% Food Waste	One cover per $3m^2$
Retail	Volume per m^2 of sales area [10 litres] x floor area	• 35% Residual Waste • 55% DMR • 10% Food Waste	-

7.2.3 To account for the flexible use class of the proposed commercial areas, for the purpose of estimating waste generation, it is assumed 75% of the total commercial area is restaurant and the remaining 25% retail.

7.2.4 Applying the waste metrics detailed in Table 7-2 to the commercial areas detailed Table 7-1, Table 7-3 summarises the estimated weekly commercial waste arisings for Proposed Development.

Table 7-3 Commercial Waste Generation Phase A

Plot	Weekly Waste Generation (Litres)			
	Residual Waste	DMR	Food Waste	Total
F1	3,808	5,024	2,048	10,880
H1 / H2	4,455	5,878	2,396	12,729
H3	2,819	3,719	1,516	8,054
Total	11,082	14,621	5,960	31,663

7.2.5 Using the commercial waste generation in Table 7-3, Table 7-4 summarises the commercial waste storage provision and assumed collection frequency. To account for unexpected operational issues, contingency waste storage capacity has been provided.

Table 7-4 Commercial Waste Storage Provision Phase A

Plot	Storage Provision (No. of Days)	Assumed Collections per Week	Number of 1,100-Litre Eurobins		Number of 240-Litre Wheeled Bins	Total
			Residual Waste	DMR	Food Waste	
F1	3	3	2	2	4	8
H1 / H2	2	7	2	2	3	7
H3	3	3	2	2	3	7
		Total	6	6	10	22

7.3 PROPOSED WASTE MANAGEMENT STRATEGY

7.3.1 The proposed strategy to manage commercial waste has been devised to provide a high-quality service to commercial tenants whilst also being compliant with the Guidance.

WASTE STORAGE

7.3.2 Commercial tenants will provide temporary internal waste storage within their commercial area that allows for the segregation of waste at source.

7.3.3 The commercial tenants in each building will be provided with access to shared commercial waste stores at ground level. The commercial waste stores are the locations that all commercial residual waste, DMR and food waste generated within the Proposed Development will be stored prior to collection.

7.3.4 As necessary, the commercial tenants will transfer the segregated waste from their temporary internal waste storage to the nearest commercial waste store.

7.3.5 The locations and configurations of the commercial waste store are shown in Figure 7-1, Figure 7-2 and Figure 7-3 below.

Figure 7-1 Plot F Commercial Waste Store

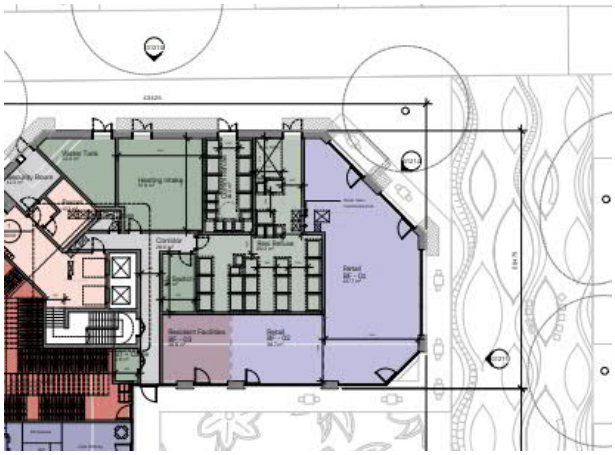


Figure 7-2 Plot H1 & H2 Commercial Waste Stores

Figure 7-3 Plot H3 Commercial Waste Store

7.3.6 The commercial waste stores will be sufficiently sized to accommodate the number and types of bins detailed in Table 7-4.

7.3.7 Residents will not be permitted access to the commercial waste stores.

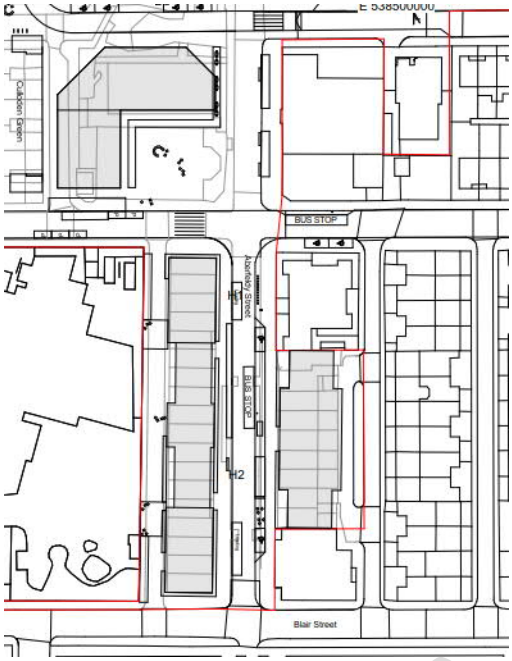
COMMERCIAL WASTE COLLECTION

7.3.8 A commercial waste contractor will be appointed to service the Proposed Development once operational.

7.3.9 The commercial waste contractor will collect the bins directly from each of the commercial waste stores on an agreed schedule.

7.3.10 The anticipated loading positions for the commercial waste stores are shown in Figure 7-4 below.

Figure 7-4 RCV Loading Commercial Waste Stores



7.3.11 Once the bins have been emptied, the collection operatives will return the bins to the commercial waste store.

8 OUTLINE APPLICATION : PHASES B-D COMMERCIAL WASTE MANAGEMENT

8.1.1 The following section summarises the commercial waste strategy for Phases B, C and D of the Proposed Development, forming the Outline Proposals.

8.1.2 Waste management facilities within the Outline Proposals have been designed to align with the maximum parameter scheme, to confirm functionality from a technical perspective.

8.1.3 The Outline Proposals respond to the DC referenced in Section 1.7, confirming the maximum parameter scheme adheres to all applicable technical and legislative requirements relating to waste management.

8.1.4 Within this section, the illustrative scheme has been used to demonstrate acceptability of the Outline Proposals and this will be clearly indicated.

8.1.5 The commercial area schedule for the outline application is summarised in Table 8-1 below.

Table 8-1 Commercial Area Schedule (Maximum Parameter Scheme)

Plot	GIA (m^2)			
	Estate Management	Retail	Workspace	Total
A1	0	0	206	206
B1	0	0	96	96
B2	0	0	42	42
B3	1,377	367	0	1,744
B5	0	0	512	512
C1	0	0	406	406
C4	0	0	453	453
C5	0	0	232	232
C6	0	0	121	121
D1	0	454	0	454
D3	0	350	0	350
E1	0	0	636	636
Total	1,377	1,171	2,704	5,252

8.2 WASTE GENERATION MODELLING

8.2.1 LBTH does not provide metrics for commercial waste generation. Waste generation metrics for the proposed commercial space has been sourced from British Standard BS5906:2005 *Waste Management in Plots – Code of Practice*.

8.2.2 Table 8-2 summarises the commercial waste generation metrics for the Proposed Development.

Table 8-2 Commercial Waste Generation Metrics

Use	Metric	Weekly Waste Metric	Waste Composition	Assumptions
Retail	Restaurant	Volume per number of covers [75 litres] x number of covers	• 35% Residual Waste • 45% DMR • 20% Food Waste	One cover per 3m²
Workspace	Office	Volume per number of employees [50 litres] x number of employees	• 35% Residual Waste • 55% DMR • 10% Food Waste	One employee per 8m²
Estate Management				

8.2.3 For the purposes of estimating waste generation, the restaurant metric has been applied to all retail areas. As the most onerous metric for waste generation, this ensures a robust waste management strategy is maintained throughout each design stage.

8.2.4 Applying the waste metrics detailed in Table 8-2 to the commercial areas detailed Table 8-1, Table 8-3 summarises the estimated weekly commercial waste arisings for Proposed Development.

Table 8-3 Estimated Commercial Waste Generation (Maximum Parameter Scheme)

Plot	Weekly Waste Generation (Litres)			
	Residual Waste	DMR	Food Waste	Total
A1	1,288	451	708	129
B1	600	210	330	60
B2	263	92	144	26
B3	9,175	3,211	4,129	1,835
B5	3,200	1,120	1,760	320
C1	2,538	888	1,396	254
C4	2,831	991	1,557	283
C5	1,450	508	798	145
C6	756	265	416	76
D1	11,350	3,973	5,108	2,270
D3	8,750	3,063	3,938	1,750
E1	3,975	1,391	2,186	398
Total	46,175	16,161	22,469	7,545

8.3 PROPOSED WASTE MANAGEMENT STRATEGY

8.3.1 The proposed strategy to manage commercial waste has been devised to provide a high-quality service to commercial tenants whilst also being compliant with the Guidance.

8.3.2 Commercial tenants will provide temporary internal waste storage within their commercial area that allows for the segregation of waste at source.

8.3.3 The commercial tenants in each building will be provided with access to shared commercial waste stores at ground level. The commercial waste stores are the locations that all commercial residual waste, DMR and food waste generated within the Proposed Development will be stored prior to collection.

8.3.4 As necessary, the commercial tenants will transfer the segregated waste from their temporary internal waste storage to the nearest commercial waste store.

8.3.5 The locations of the commercial waste store are shown in Figure 8-1 and Figure 8-2 below.

Figure 8-1 Commercial Waste Stores (Illustrative Scheme)

Figure 8-2 Commercial Waste Stores (Illustrative Scheme)

8.3.6 At this stage it is not possible to determine the precise waste storage requirements of the eventual tenants due to the range of potential commercial uses.

8.3.7 Using the estimated weekly waste generation in Table 8-3, Table 8-4 summarises the commercial waste storage requirements based on different collection frequencies.

Table 8-4 Commercial Waste Storage (Maximum Paramater Scheme)

Plot	Weekly Collection			3-Collections Per Week			Daily Collections		
	No. of 1,100-Litre Eurobins		No. of 240-Litre Bins	No. of 1,100-Litre Eurobins		No. of 240-Litre Bins	No. of 1,100-Litre Eurobins		No. of 240-Litre Bins
	Residual Waste	DMR	Food Waste	Residual Waste	DMR	Food Waste	Residual Waste	DMR	Food Waste
A1	1	1	1	1	1	1	1	1	1
B1	1	1	1	1	1	1	1	1	1
B2	1	1	1	1	1	1	1	1	1
B3	3	4	8	2	2	4	1	2	3
B5	2	2	2	1	1	1	1	1	1
C1	1	2	2	1	1	1	1	1	1
C4	1	2	2	1	1	1	1	1	1
C5	1	1	1	1	1	1	1	1	1
C6	1	1	1	1	1	1	1	1	1
D1	4	5	10	2	2	5	2	2	3
D3	3	4	8	2	2	4	1	2	3
E1	2	2	2	1	1	1	1	1	1

8.3.8 As a minimum, the commercial waste stores will be sized to accommodate a minimum of two days' waste storage.

8.4 COMMERCIAL WASTE COLLECTION

8.4.1 A commercial waste contractor will be appointed to service the Proposed Development once operational.

8.4.2 The commercial waste contractor will collect the bins directly from each of the commercial waste stores on an agreed schedule.

9 SUMMARY & CONCLUSIONS

9.1 SUMMARY

9.1.1 The Hybrid planning application seeks Full Planning Permission for Phase A and Outline Planning Permission, with all matters reserved, for the rest of the site (which includes Phases B, C and D).

9.1.2 Reserved Matters Applications (RMAs) are required to come forward in compliance with the design principles and guidelines established in the Aberfeldy Village Masterplan Design Code.

9.1.3 Waste management facilities within the Outline Proposals have been designed to align with the maximum parameter scheme, to confirm functionality from a technical perspective.

9.1.4 The Outline Proposals respond to the DC referenced in Section 1.7, confirming the maximum parameter scheme adheres to all applicable technical and legislative requirements relating to waste management.

RESIDENTIAL WASTE

9.1.5 Residential waste will be managed in accordance with the Guidance and waste facilities designed to BS5906:2005 standards.

9.1.6 Estimated volumes of residential waste generated at the Proposed Development once operational have been quantified using waste generation metrics extracted from the Guidance and agreed with the LBTH Environmental Services Improvement Team Leader.

9.1.7 Each residential property will be provided with a segregated waste bin, which will be fixed in to an appropriate kitchen unit.

PHASE A INDIVIDUAL DWELLINGS

9.1.8 Residents in Plot J will be provided with a dedicated area within the curtilage of their property for the storage of bins as per the Guidance.

9.1.9 On collection days, LBTH will collect these bins directly from the property boundaries.

PHASE A COMMUNAL WASTE STORAGE (PLOTS F, H & J)

9.1.10 Residents in Plots F,H and J will be provided with a residential waste store at ground floor level. The residential waste stores will accommodate all residual waste, DMR and food waste generated within these plots prior to collection.

9.1.11 Residual waste will be stored in 1,100-litre Eurobins and DMR will be stored in 1,280-litre Eurobins, with food waste stored in 240-litre wheeled bins.

9.1.12 Residents will be required to transport their own waste from their property directly to their nearest waste store, using the passenger lifts (where necessary), where they will segregate their waste into appropriately labelled bins.

9.1.13 On nominated collection days, the LBTH waste collection operatives will access the bins from the residential waste stores in Plots F1, H3 and J1 directly and wheel them out to the parked RCV.

9.1.14 Once the bins have been emptied, the operatives will return them to the waste stores.

9.1.15 The bins within the residential waste stores in Plots H1 and H2 will be presented in the external landscaping within 10m of the RCV, as per the Guidance.

PHASE A COMMUNAL WASTE STORAGE (PLOT I)

9.1.16 Residual waste and DMR will be stored in 5,000-litre URS units within the external landscaping and food waste will be stored in 240-litre wheeled bins within a residential waste store.

9.1.17 Residents will be required to transport their own waste from their property directly to their nearest URS unit, or the residential food waste store using the passenger lifts (where necessary), where they will segregate their waste accordingly.

9.1.18 To prevent mis-use the residential food waste stores and URS units will be secured by fob or coded access.

9.1.19 On nominated collection days the LBTH URS collection vehicle will continue to access the URS units at the rear of Plot I to collect the residual waste and DMR.

9.1.20 For residential food waste collections, the LBTH waste collection operatives will access the bins from the residential food waste store directly and wheel them out to the parked RCV. Once the bins have been emptied, the operatives will return them to the waste store.

PHASES B-D INDIVIDUAL DWELLINGS (PLOTS A3 & B4)

9.1.21 Residents in Plots A3 and B4 will be provided with a dedicated area within the curtilage of their property for the storage of bins.

9.1.22 On collection days, LBTH will collect these bins directly from the property boundaries. Residents in units that exceed 10m distance from the RCV will be expected to present their bins within 10m of the RCV access for collection and return them once emptied.

PHASE B-D COMMUNAL WASTE STORAGE

9.1.23 Each plot will be provided with a residential waste store at ground floor level in close proximity to the lift and stair core.

9.1.24 Residual waste and DMR will be stored in 660-litre Eurobins, food waste will be stored in 240-litre wheeled bins.

9.1.25 Residents will be required to transport their own waste from their property directly to their nearest waste store, using the passenger lifts (where necessary), where they will segregate their waste into appropriately labelled bins.

9.1.26 Some residents in Plots C3, D4 and E3 residents will have the option for the storage of segregated waste within the defensible space at the front of their unit (in suitable containers) to deposit their residual waste, DMR and food waste in to the containers. On an agreed schedule, the on-site FM team would remove the bagged waste and transfer it to the nearest residential waste store for collection by LBTH.

9.1.27 The on-site FM team will be responsible for overseeing the residential waste stores to ensure residents have access to empty containers for each waste stream at all times.

RESIDUAL WASTE AND DMR

9.1.28 Residual waste and DMR will be consolidated within the podium plots in 10.7m^3 portable waste compactors.

9.1.29 The on-site FM team will transfer the 660-litre Eurobins from the residential waste stores to the centralised compactor storage as necessary, and empty them in to the compactors using a bin lift.

9.1.30 Residual waste and DMR will be compacted at ratios of 3:1 and 2:1 respectively.

9.1.31 As bins within the residential waste stores become full, the on-site FM team will be responsible for emptying the bins in to the portable waste compactors, returning them once complete.

9.1.32 Where these routes remain off the public highway, the on-site FM team will be provided with an electric tow-tug to transfer bins between plots.

9.1.33 Where necessary to transfer bins using public highway, it is anticipated that a road legal vehicle and trailer will be used.

9.1.34 LBTH will collect the residual waste and DMR portable waste compactors on a weekly basis using a skip collection vehicle.

9.1.35 The LBTH skip vehicle will enter each podium block via the access gates to collect the compactors.

9.1.36 The LBTH skip collection vehicles will reverse up to each compactor to load them; dimensions for loading have been designed to allow for five metres height clearance.

9.1.37 Once loaded, the LBTH skip vehicle will transfer the portable waste compactor to the nominated point of disposal for emptying, returning the unit once complete.

FOOD WASTE

9.1.38 Food waste will be stored in 240-litre wheeled bins within the residential waste stores.

9.1.39 The residential waste stores are the location that all food waste bins will be stored prior to collection.

9.1.40 Where accessible within 10m of the RCV, food waste bins will be collected directly from the residential waste stores.

9.1.41 Where not within 10m of the RCV, the on-site FM team will transfer the food waste bins from the residential waste stores to a position off-highway within 10m of the RCV. Where possible, the food waste bins will be presented within the bulky waste storage areas in the residential waste stores receiving direct collections

9.1.42 On nominated collection days, the LBTH waste collection operatives will access the bins from the residential waste stores or collections points and wheel them out to the parked RCV.

9.1.43 Once the bins have been emptied, the operatives will return them to the respective collection points.

BULKY WASTE

9.1.44 Residents will be provided with access to a bulky waste storage area for large redundant items such as furniture or appliances

9.1.45 Bulky waste items will be stored within dedicated caged areas within the residential waste stores.

9.1.46 The on-site FM team will be responsible for managing the storage of bulky waste at the Proposed Development.

9.1.47 Residents will contact LBTH to pay for collection of their bulky items and provide evidence to the on-site FM team, who will provide access to the bulky waste storage area.

9.1.48 On the nominated day, the LBTH collection crew will attend the bulky waste storage area and collect the presented items.

COMMERCIAL WASTE

9.1.49 Commercial waste will be managed in accordance with the Guidance and British Standard BS5906:2005.

PHASE A

9.1.50 Waste generation metrics for the proposed commercial space has been sourced from British Standard BS5906:2005.

9.1.51 To account for the flexible use class of the proposed commercial areas, for the purpose of estimating waste generation, it is assumed 75% of the total commercial area is restaurant and the remaining 25% retail.

9.1.52 Commercial tenants will provide temporary internal waste storage within their commercial area that allows for the segregation of waste at source.

9.1.53 The commercial tenants in each building will be provided with access to shared commercial waste stores at ground level.

9.1.54 As necessary, the commercial tenants will transfer the segregated waste from their temporary internal waste storage to the nearest commercial waste store.

9.1.55 A commercial waste contractor will be appointed to service the Proposed Development once operational.

9.1.56 The commercial waste contractor will collect the bins directly from each of the commercial waste stores on an agreed schedule.

PHASES B-D

9.1.57 Waste generation metrics for the proposed commercial space has been sourced from British Standard BS5906:2005.

9.1.58 Commercial tenants will provide temporary internal waste storage within their commercial area that allows for the segregation of waste at source.

9.1.59 The commercial tenants in each building will be provided with access to shared commercial waste stores at ground level.

9.1.60 As necessary, the commercial tenants will transfer the segregated waste from their temporary internal waste storage to the nearest commercial waste store.

9.1.61 As a minimum, the commercial waste stores will be sized to accommodate a minimum of two days' waste storage.

9.1.62 A commercial waste contractor will be appointed to service the Proposed Development once operational.

9.1.63 The commercial waste contractor will collect the bins directly from each of the commercial waste stores on an agreed schedule.

9.2 CONCLUSION

9.2.1 The Waste Management Strategy has taken into account the need to lessen the overall impact of waste generation through the recycling of materials from the operational phase of the Proposed Development.

9.2.2 The proposals set out in this strategy meet the requirements of relevant waste policy and follow applicable guidance.

APPENDIX A

NATIONAL, LONDON AND LOCAL WASTE POLICY & GUIDANCE

VELOCITY
Transport Planning

NATIONAL WASTE POLICY

DLUHC, NATIONAL PLANNING POLICY FRAMEWORK (2021)

The revised National Planning Policy Framework was updated on 20 July 2021 and sets out the government's planning policies for England and how these are expected to be applied. It does not include anything of relevance to waste management that would be applicable to the Proposed Development.

DLUHC, NATIONAL PLANNING POLICY FOR WASTE (2014)

The National Planning Policy for Waste replaces 'Planning Policy Statement 10: Planning for Sustainable Waste Management' (PPS 10) and is to be considered alongside other national planning policy for England - such as in the NPPF and the Waste Management Plan for England. As the primary focus is on planning for waste management facilities, it is not considered relevant to the Proposed Development.

DEFRA, OUR WASTE, OUR RESOURCES: A STRATEGY FOR ENGLAND (2018)

The strategy sets out how England will preserve the stock of material resources by minimising waste, promoting resource efficiency and moving towards a circular economy. At the same time, the country will minimise the damage caused to the natural environment by reducing and managing waste safely and carefully, and by tackling waste crime.

It combines actions the country will take now, with firm commitments for the coming years and gives a clear longer-term policy direction in line with the 25 Year Environment Plan. This is the blueprint for eliminating avoidable plastic waste over the lifetime of the 25 Year Plan, doubling resource productivity, and eliminating avoidable waste of all kinds by 2050.

HM GOVERNMENT, A GREEN FUTURE: OUR 25 YEAR PLAN TO IMPROVE THE ENVIRONMENT (2018)

The 25 Year Environment Plan sets out government action to help the natural world regain and retain good health. Its aim is to deliver cleaner air and water in cities and rural landscapes, protect threatened species and provide richer wildlife habitats. It calls for an approach to agriculture, forestry, land use and fishing that puts the environment first.

With regard to waste management, the plan details aims which include:

- Zero avoidable plastic waste by 2042;
- Reduce food waste; and
- Improving the management of residual waste.

WASTE HIERARCHY

The Waste Hierarchy requires avoidance of waste in the first instance followed by reducing the volume that requires disposal after it has been generated.

It gives an order of preference for waste management options to minimise the volume for disposal, as shown in Figure A1.1.

Figure A1.1: The Waste Hierarchy

The main principles of the Waste Hierarchy are:

- Waste should be prevented or reduced at source as far as possible;
- Where waste cannot be prevented, waste materials or products should be reused directly or refurbished and then reused;
- Waste materials should be recycled or reprocessed into a form that allows them to be reclaimed as a secondary raw material;
- Where useful secondary materials cannot be reclaimed, the energy content of the waste should be recovered and used as a substitute for non-renewable energy resources; and
- Only if waste cannot be prevented, reclaimed or recovered, should it be disposed of into the environment and this should only be undertaken in a controlled manner.

The Waste Hierarchy has been implemented in England and Wales by the Waste (England and Wales) Regulations 2011. These regulations require that an establishment or undertaking that imports, produces, collects, transports, recovers or disposes of waste must take reasonable steps to apply the Waste Hierarchy when waste is transferred or disposed of.

LONDON WASTE POLICY & GUIDANCE

GLA, THE LONDON PLAN 2021 (MARCH 2021)

The London Plan is the overall strategic plan for London, it sets out an integrated economic, environmental, transport and social framework for the development of London over the next 20-25 years.

The strategy includes the following waste management policy that has influenced the development of more specific business waste guidance:

> *'Policy D3 Optimising site capacity through the design-led approach*
> *3.1B.18 Shared and easily accessible storage space supporting separate collection of dry recyclables, food waste and other waste should be considered in the early design stages to help improve recycling rates, reduce smell, odour and vehicle movements, and improve street scene and community safety.'*
> *'Policy SI7 Reducing waste and supporting the circular economy*
> *Resource conservation, waste reduction, increases in material re-use and recycling, and reduction in waste going for disposal will be achieved by the Mayor, waste planning authorities and industry working in collaboration to:*
> *5) 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.'*

GLA, LONDON ENVIRONMENT STRATEGY (2018)

The Mayor, with the new London Environment Strategy, aims to make London a zero-waste city. By 2026, no biodegradable or recyclable waste will be sent to landfill and by 2030, 65% of London's municipal waste will be recycled.

With regards to waste management within the Proposed Development, the following extracts are of relevance:

> *'To help them achieve the recycling targets, waste authorities should deliver the following minimum level of service for household recycling:*
>
> - *all properties with kerbside recycling collections to receive a separate weekly food waste collection*
> - *all properties to receive a collection of, at a minimum, the six main dry recycling materials, i.e. glass, cans, paper, card, plastic bottles and mixed rigid plastics (tubs, pots and trays)*
>
> *Proposal 7.2.1.c The Mayor will support efforts to increase recycling rates in flats.*
> *The Mayor will encourage Resource London to provide more support and funding to those waste authorities that are working towards achieving higher recycling performance in flats. Through LWARB, the Mayor will seek additional funding to tackle recycling performance in flats. The London Plan requires that all new developments referred to the Mayor include adequate recycling storage for at least the six main dry recyclable materials and food.*

Waste authorities, through the planning application process, should apply the waste management planning advice for flats, including the domestic rented sector, developed by LWARB in partnership with the London Environment Directors Network (LEDNET).'

LOCAL WASTE POLICY & GUIDANCE

LBTH LOCAL PLAN 2031 (2020)

The Local Plan also sets out policies about infrastructure provision, employment opportunities and protection of the environment, including air quality. Along with the policies, developments will be required to fit within the ambitions of the Local Plan. The following extract is of relevance to the Proposed Development:

'Policy D.MW3
Waste collection facilities in new development
1) *All new development must include sufficient accessible space to separate and store dry recyclables, organics and residual waste for collection, both within individual units and for the building as a whole.*
2) New major residential developments must incorporate high quality on-site waste collection systems that do not include traditional methods of storage and collection and are compatible with our waste collection methods outlined in Appendix 4. In instances where this is not practicable, supporting evidence must be submitted with the application to demonstrate this.'

LBTH WASTE MANAGEMENT STRATEGY 2018-2030 (2018)

The LBTH waste management strategy presents the ideas about how to improve services and respond to the challenges associated with population growth and management of waste It sets out six priorities to guide the way LBTH develop and improve over the 12 year period the strat

LBTH REUSE, RECYCLING AND WASTE SPD (JULY 2021)

The Reuse, Recycle and Waste SPD he SPD sets out information for developers on how waste management should be addressed in proposals for new residential (including mixed use) development.

LBTH WASTE STORAGE AND COLLECTION SYSTEMS SUPPLEMENTARY INFORMATION (2017)

This evidence based document supports the policy approach and provides background and reasoned justification for requiring mass waste collection systems for residential developments within LBTH..

APPENDIX B

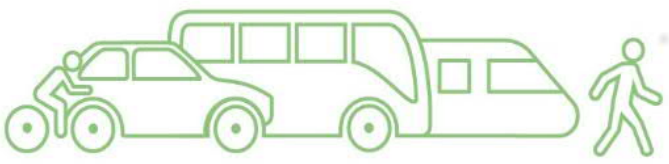
SWEPT PATH ANALYSIS

VELOCITY
Transport Planning

APPENDIX C

ANNOTATED PLANS

VELOCITY
Transport Planning



VELOCITY
Transport Planning

APPENDIX F CIRCULAR ECONOMY WORKSHOP MINUTES

Aberfeldy Village – Circular Economy and Whole Life Carbon Workshop Meeting Minutes

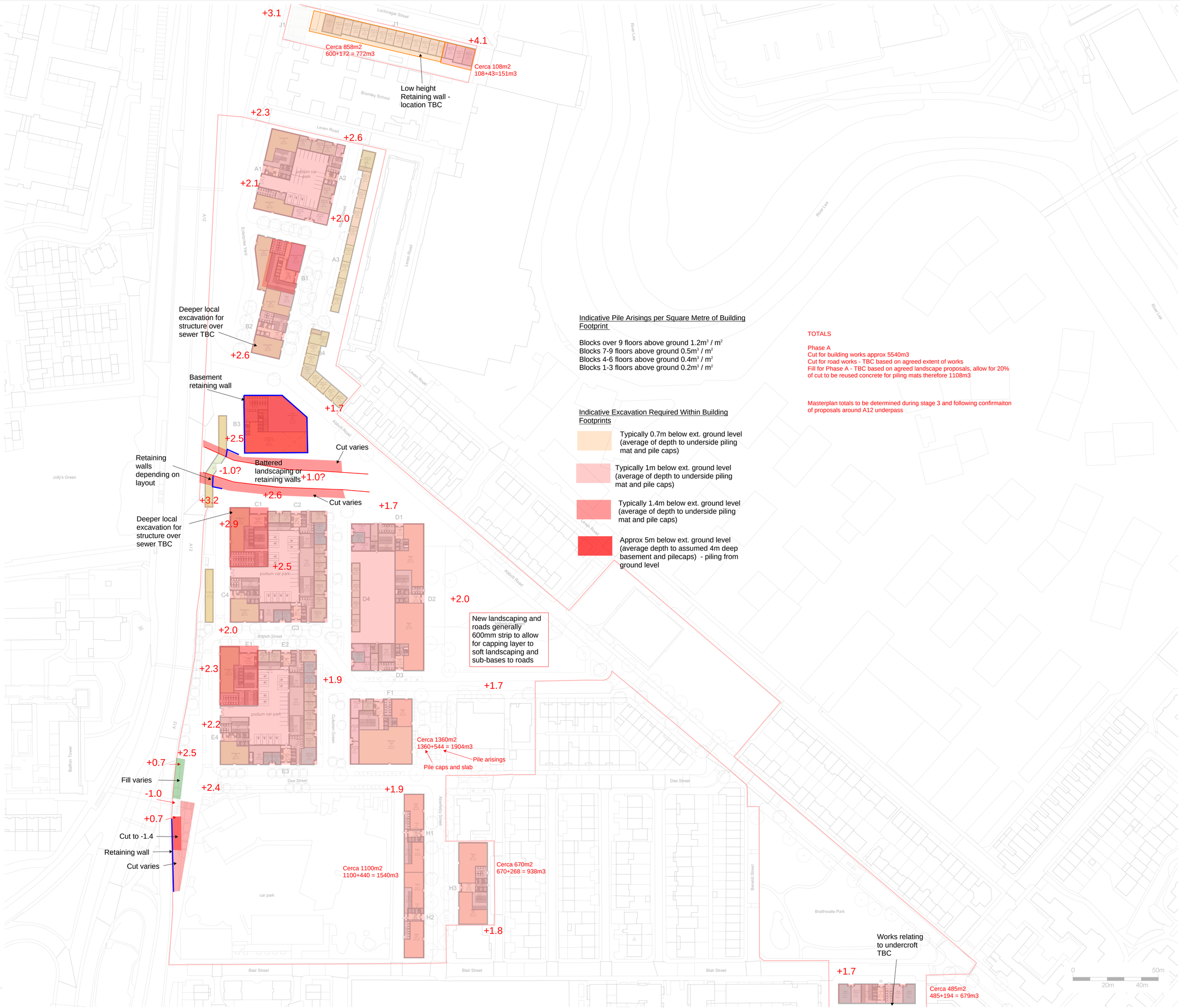
Attending	Attendee	Representing
	Andrea Carvajal	Greengage Environmental (GG)
	Ajjay Dhesi	Greengage Environmental (GG)
	Liz Grove	Greengage Environmental (GG)
	Gurpreet Bhuie	Meinhardt (Mt)
	Vincent Allot	Meinhardt (Mt)
	Andrew Harland	LDA-design (LDA)
	Liam Ashton	Levitt Bernstein (LB)
	Jonathan Marfleet	Morris and Company (M&C)
	Peter Hambling	Velocity Transport Planning (VT)
Venue	**Microsoft Teams Meeting**	
Date	**24th August 2021**	
Circulation	**Those within the meeting**	
Subject	**Circular Economy/ Whole Life Carbon Workshop**	

Item	Owner Action
This workshop was organised with the aim to discuss circular economy initiatives included into the design. The GLA Circular Economy categories were used to structure the discussion. Below are the main points summarised.	
A1 Minimising the quantities of materials used The form factor will impact the area of façade within the houses, the architect has completed the GG Circular Economy questionnaire which details this and will be circulated following this meeting. The design of the buildings contain a high amount of repetition and efficiency, through stacking of the floor designs and removing the need for transfer slabs The design of the buildings allow for off site manufacturing of elements such as bathroom pods, this will be explored in more detail as the design progresses. Brick slip cladding could be used for balconies as opposed to whole bricks to reduce material usage.	Note
A2 Minimising the quantities of other resources used (energy, water, land)	

For energy, the development is aiming for a 60% improvement over part C for the residential elements and 50% below for the non-residential properties as per the GLA guidance. This will explored further as the design develops.	Note
A3 Specifying and sourcing materials responsibly and sustainably There are aspirations to source materials locally where possible. Lime mortar could be used for the brickwork to facilitate easier deconstruction at the end of life stage.	Note
B1 Designing for longevity, adaptability or flexibility and reusability or recoverability These aspects have been accounted with the following: • The services are easy to access within a dedicated room, where pipework is also simple and accessible. • Roof access will be possible in future to allow maintenance to take place within the plant room on the roof. Risers are accessible at all levels for replacement of pipework and electricals without difficulty. • No internal partitions will be load bearing, therefore can be removed and adapted as per the future needs without the need for major works. • There is opportunity for systems which lend themselves to reuse such as reusable CLT or timber stud panels.	Note
B2 Design out construction, demolition, excavation and municipal waste arising Methods covered previously such as off site manufacturing aid in reducing construction waste	Note
C1 Managing demolition waste There has been no pre-demolition audit at this stage, though this will be carried out at the beginning of Stage 3. Concrete on site will likely be able to be crushed and reused as sub base or the piling. GG points out the GLA requirement for 95% demolition waste to be diverted from landfill. These will be considered by the design moving forward. GG notes there is a requirement within the statement to provide detail on existing materials (before demolition) on site and the end destination after demolition occurs.	Note Note
C2 Managing excavation waste	

GG highlight GLA's requirement for 95% uncontaminated excavation waste to be diverted from landfill. VA may be able to provide excavation waste volumes, PH has also allowed for a volume within the costings which will be circulated. Excavation of material will be minimalised where possible	Note
C3 Managing construction waste GG points out the GLA requirement of 95% construction waste to be diverted from landfill, through reusing, recycling or backfilling. Waste generation target is based on BREEAM targets: ≤7.5m3 (≤6.5 tonnes) per 100 sqm of non-hazardous construction waste generated, which will be required of the contractor once they are appointed.	Note
C4 Managing operational waste GG points out the GLA requirement of 65% operational waste reduction by 2030. There will be a segregated waste store for the commercial space, where 65% of waste will be recycled. The destination of waste is to be confirmed.	Note
Whole Life carbon Water and energy figures are to be circulated by MT Options for the use of GGBS within concrete mixtures are suitable for the development as well as precast concrete elements such as the plinth. Stonecycling bricks were being considered, however due to the large increase in price compared to normal bricks they are unlikely to be used.	Note

APPENDIX G CUT & FILL DIAGRAM



Indicative Pile Arisings per Square Metre of Building Footprint

Blocks over 9 floors above ground 1.2m³ / m²
Blocks 7-9 floors above ground 0.5m³ / m²
Blocks 4-6 floors above ground 0.4m³ / m²
Blocks 1-3 floors above ground 0.2m³ / m²

Indicative Excavation Required Within Building Footprints

Typically 0.7m below ext. ground level (average of depth to underside piling mat and pile caps)

Typically 1m below ext. ground level (average of depth to underside piling mat and pile caps)

Typically 1.4m below ext. ground level (average of depth to underside piling mat and pile caps)

Approx 5m below ext. ground level (average depth to assumed 4m deep basement and pilecaps) - piling from ground level

TOTALS

Phase A
Cut for building works approx 5540m3
Cut for road works - TBC based on agreed extent of works
Fill for Phase A - TBC based on agreed landscape proposals, allow for 20% of cut to be reused concrete for piling mats therefore 1108m3

Masterplan totals to be determined during stage 3 and following confirmaiton of proposals around A12 underpass

Notes

1. Do not scale this drawing.
2. All dimensions must be checked on site and any discrepancies verified with the architect.
3. Unless shown otherwise, all dimensions are to structural surfaces.
4. Drawing to be read with all other issued information. Any discrepancies to be brought to the attention of the architect.
5. This drawing is the copyright of Levitt Bernstein and may not be copied, altered or reproduced in any form, or passed to a third party without license or written consent.

This is not a construction drawing, it is unsuitable for the purpose of construction and must on no account be used as such.

Accommodation Key

1B2P	4B6P M	Lobby
1B2P W	4B7P H	Marketing Suite
2B3P W	4B7P M	Neighbourhood Cafe
2B4P	5B7P H	Plant
2B4P M	6B8P H	Refuse
3B5P H	Core	Residents Amenity Hub
3B5P M	Cycle	Retail
3B6P H	Estate Management Hub	Workspace

FOR INFORMATION

MEINHARDT
10 Aldersgate Street, London EC1A 4HJ.
Telephone: +44 (0)20 7831 7969
www.meinhardt.co.uk

PROJECT
Aberfeldy Village Masterplan
Phases 4-6

CLIENT
Ecoworld

TITLE
SITE LEVELS CUT AND FILL PRINCIPLES

DISCIPLINE	DATE	SCALE @ A3
STRUCTURAL	13/09/23	NTS

DRAWN	DESIGNED	CHECKED	APPROVED
VA	VA	TFP	

2812-MHT-S-SK005 — ISSUE P02

C:\Revit Local\3663-Building-R20-Central_chris.gray.rvt

APPENDIX H ADAPTABILITY SCENARIO MODELLING

Adaptability Modelling
September 2023
AVA-MCO-XX-XX-RP-A-05023

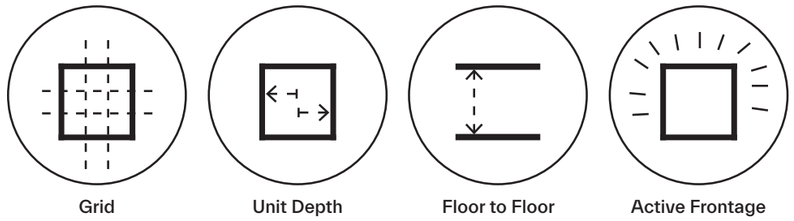
Morris + Company Ltd.
Unit 7, 16 – 24 Underwood Street
London N1 7JQ
+44 (0)20 7566 7440
info@morrisand.company
www.morrisand.company

ABERFELDY VILLAGE
PHASE A

1.0 Adaptability Modelling
1.1 Phase A Summary

Summary

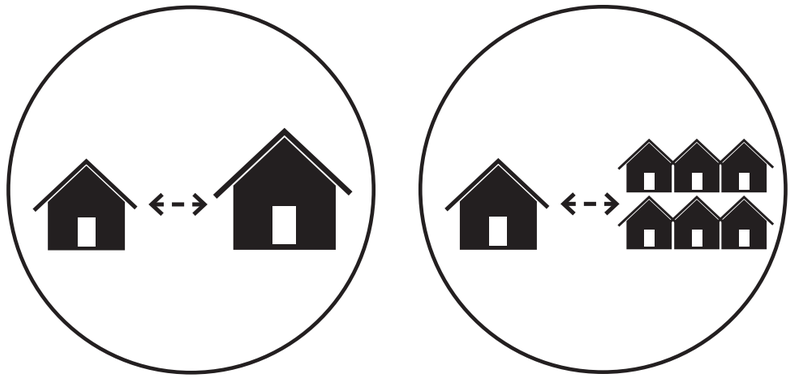
To ensure the future adaptability of the buildings within Phase A, consideration has been given to the structural grid and setting out, typical unit depth both at ground floor and upper floors, floor to floor heights and active frontages.



Grid | Unit Depth | Floor to Floor | Active Frontage

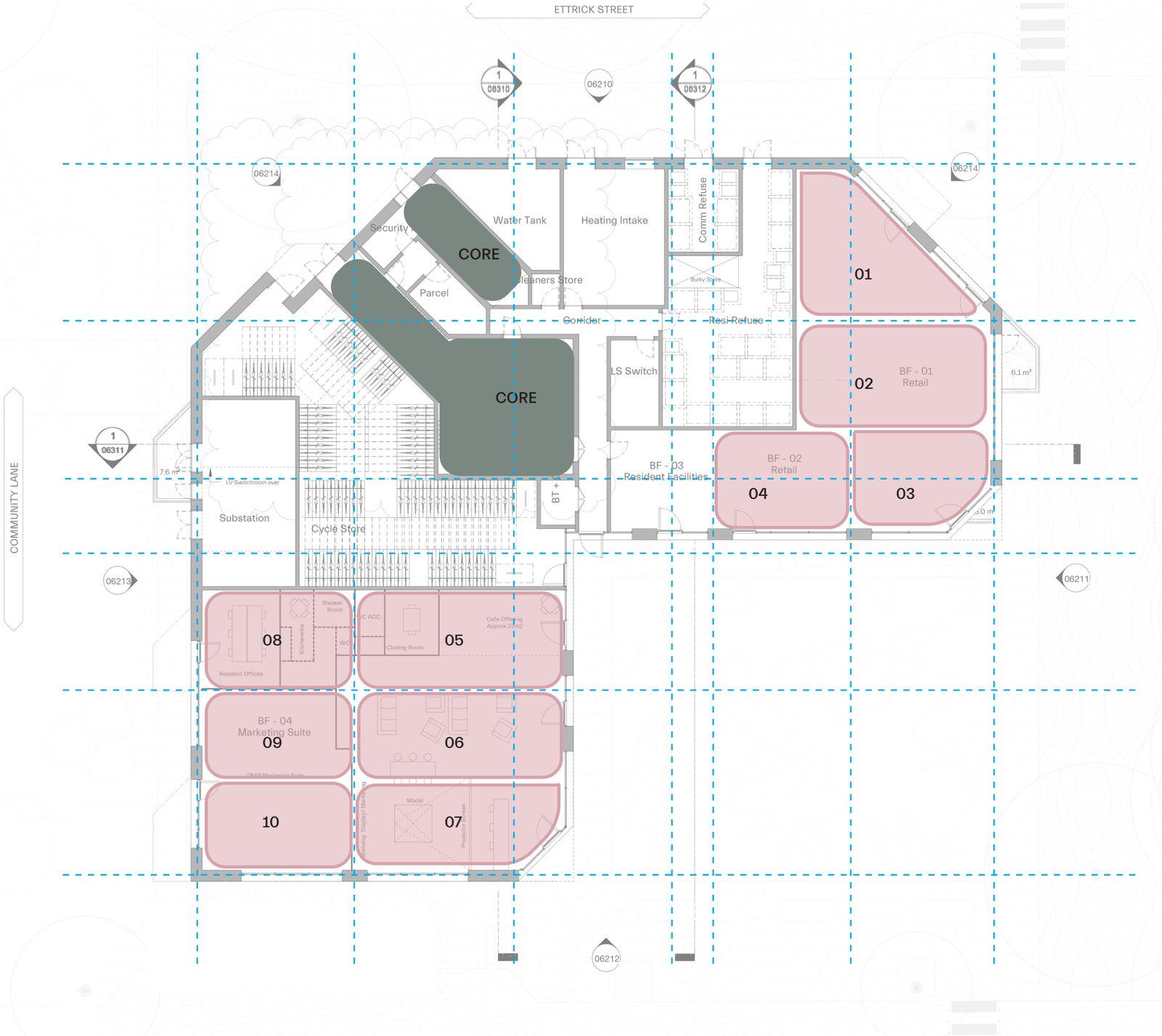
Plot H and Plot F, with retail at ground floor and residential above, are able to adapt in similar ways. Plot i, while it does not currently have retail at ground floor, could also adopt similar principals whereas Plot J is purpose built social rent houses and maisonette and is therefore less flexible.

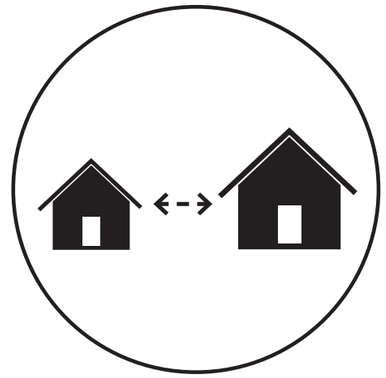
For the purpose of this document, Plot F has been used to demonstrate the principals of adaptability that could be applied to other buildings within Phase A. Scenarios for both a change in retail/residential mix and change typology have been played through at ground floor and on a typical floor plate.



Change in Mix | Change in Typology

1.0 Adaptability Modelling
1.2 Ground Floor

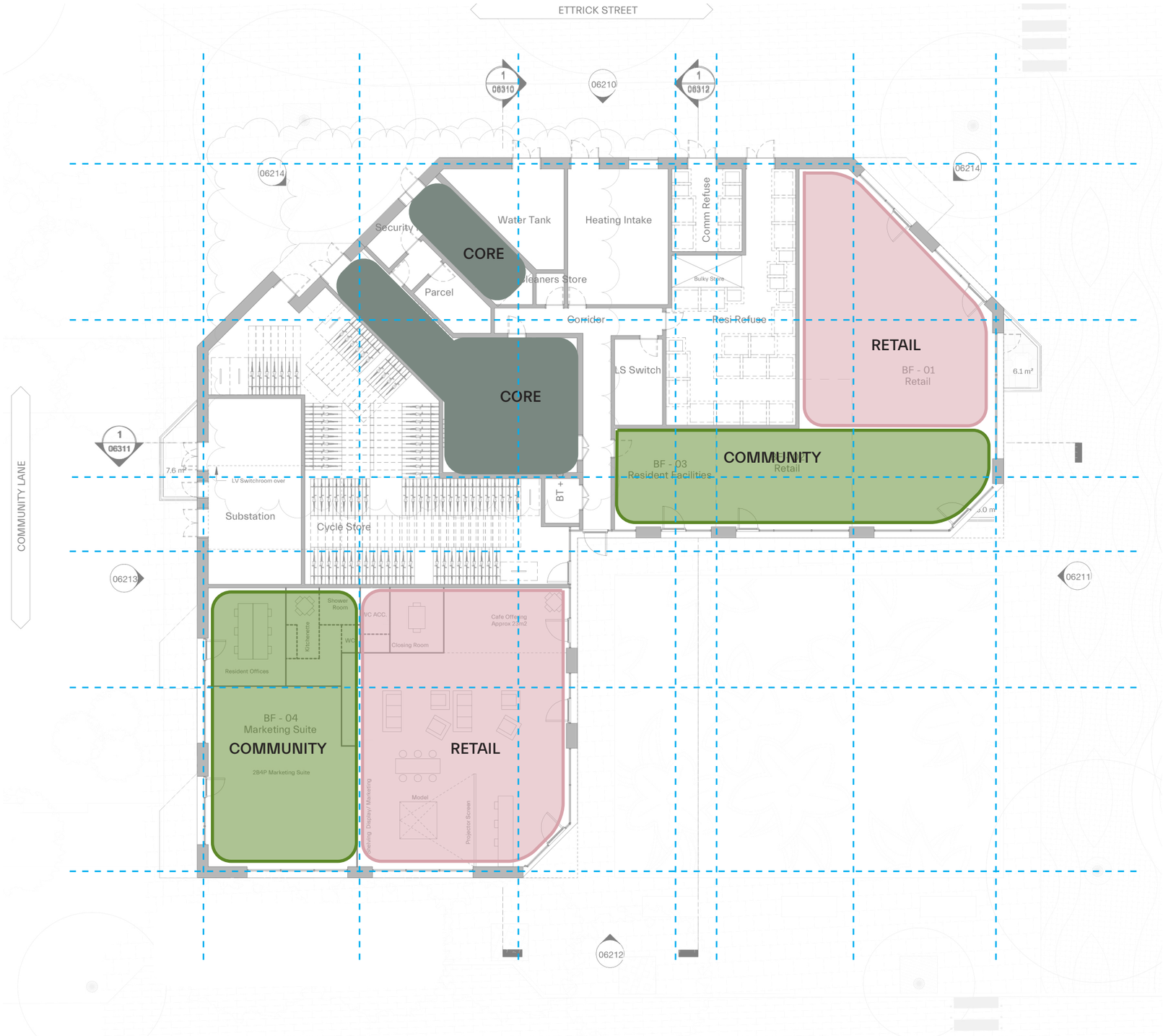


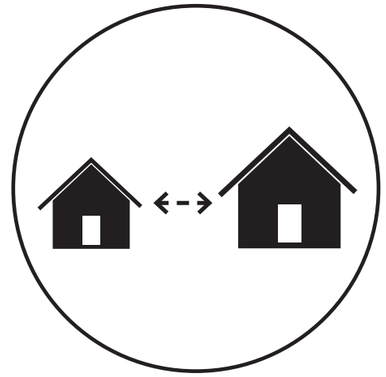


Change of Retail Mix

The column arrangement at ground floor allows for movement of partition walls, enabling flexibility of retail sizes. The scenario shown breaks down the large Marketing Suite to the South into 6 smaller units sized between 40–50m^2. Similarly to the North, the larger retail unit of 150m^2 could be divided into 3 smaller units if the local demand shifts.

1.0 Adaptability Modelling
1.3 Ground Floor





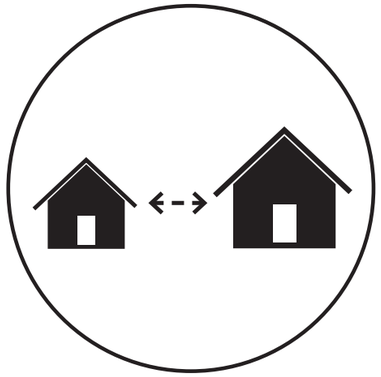
Change of Retail Mix

The potential change of residential mix, as demonstrated on the following page, could result in change in retail use at ground floor. For example, an increase of family size homes in the building could increase the demand for community spaces in the immediate area, for such as:

- Nursery
- Community Cafe/Workspace
- Bookable Events space
- School Club Space

Consideration of unit depth, active frontage and structural grids enables the flexibility and future use of these spaces.

1.0 Adaptability Modelling
1.4 Typical Floor



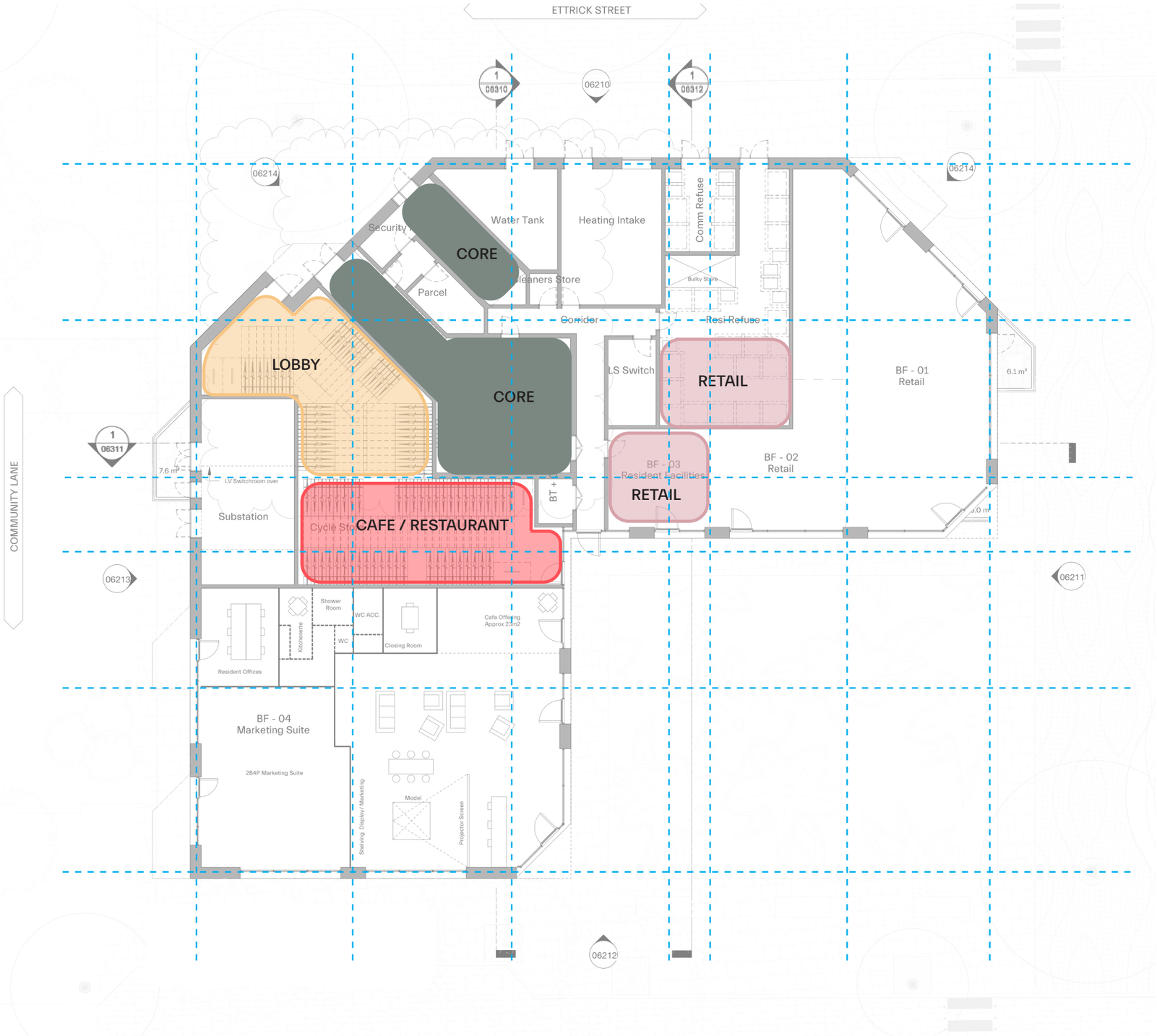
Change of Residential Mix

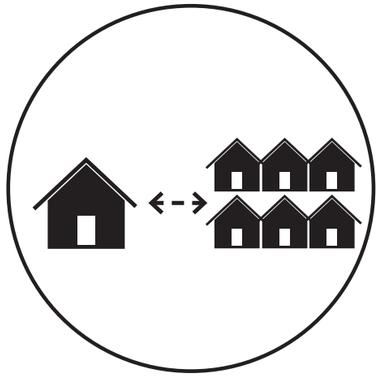
The structural grids have been set up in such a way that allows for unit mix adaptability. This is demonstrated on the typical floor of Plot F, taking predominantly smaller units and combining into larger units, as noted below:

1B x 7 2B x 5	<---->	3B x 3 4B x 3 6B x 1

To achieve this change in mix, no structural changes would be required and all facade apertures would remain unchanged.

1.0 Adaptability Modelling
1.5 Ground Floor



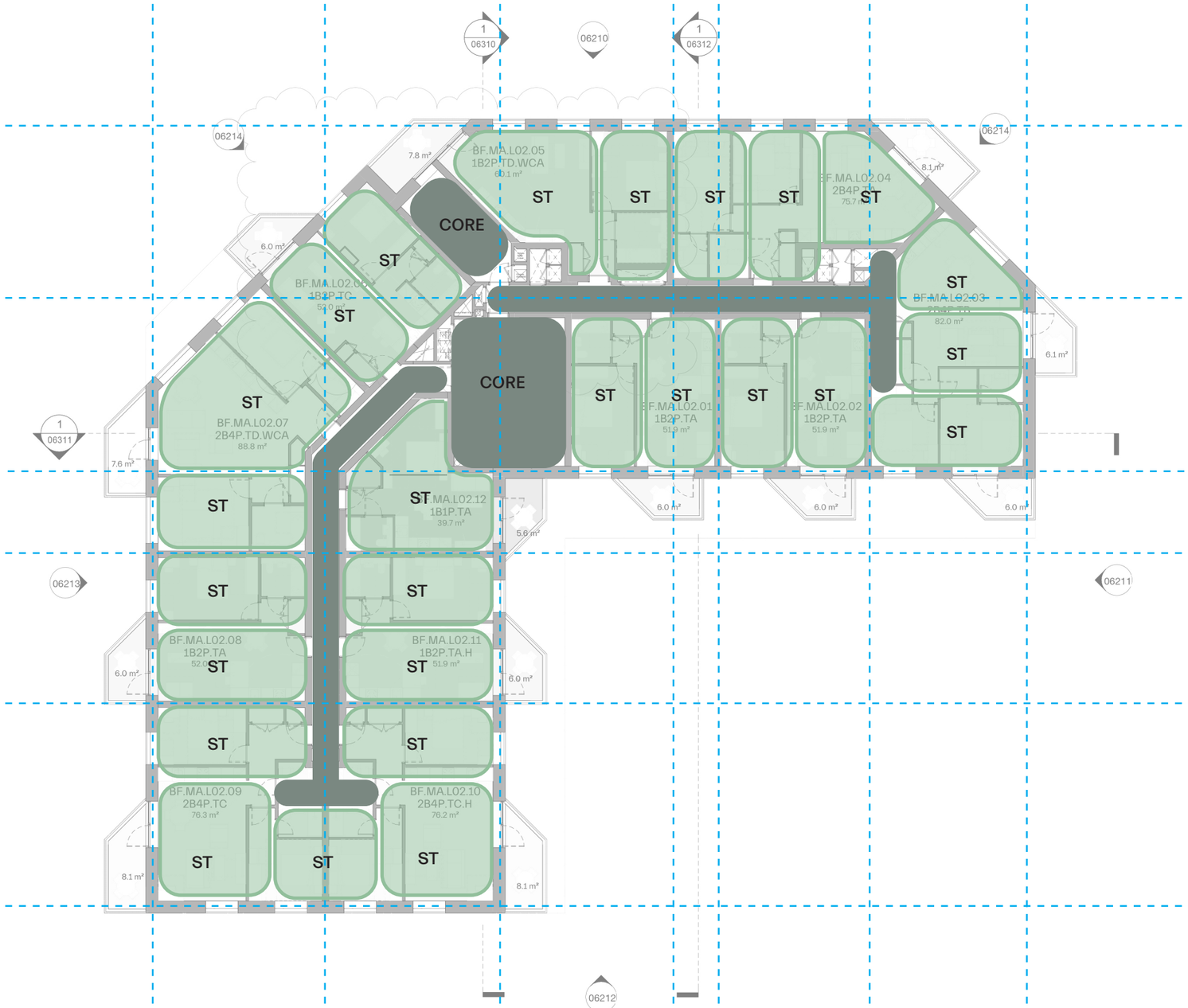


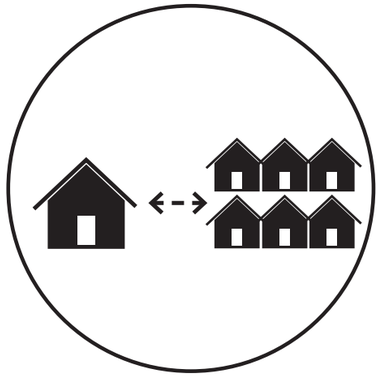
Change of Residential Typology

In a scenario whereby the building changes residential typology there may be a need to completely change the function of certain spaces. For example, if the building were to be adapted into a Hotel, there would be a significant reduction in cycles and refuse.

The diagrams highlights the introduction of a lobby space adjacent to the core with an adjoining cafe/restaurant that could connect through to the public square. The Residential Facilities could change back to Retail and expand into a portion of the Refuse, as shown.

1.0 Adaptability Modelling
1.6 Typical Floor





Change of Residential Typology

The typical setting out is able to be adapted into a residential typology with smaller unit types such as Student Accommodation, Hotel or CoLive. The plan diagram demonstrates how the typical floor could flex to a CoLive typology with 26 units ranging between 20m2 - 40m2:

1B x 7
2B x 5

<----->

ST X 26

The typical room unit depth of approximately 6.8m allows for self contained units to be repeated across the facade with an approximate width of 3.5m, each room with its own window as per the existing setting out.

APPENDIX I RECYCLED CONTENT BY VALUE CALCULATIONS

Material/ Product name for concrete	Product name/ grade for concrete	% GGBS for concrete	Quantity of material (kg)	Value of package or material (£)	Target Recycled Content (%)	Value of RC component
Concrete substructure	C32/40	20%	42,097,011.13	£3,582,615.00	2.5%	£89,565.38
Concrete frame	C50/60	20%	690,136.36	£17,756.63	3%	£532.70
Concrete slab	C32/40	20%	1,930.755.37	£41,993.93	2.5%	£1,049.85
Concrete roof	C32/40	20%	1,878,480.00	£40,856.94	2.5%	£1,021.42
Concrete stairs	C32/40	20%	128,246.59	£26,000.00	2.5%	£650.00
Rebar			2,976,144	£4,977,600.35	97%	£4,828,272.34
Plasterboard			408,770.17	£2,498,039.93	80%	£1,998,431.94
Steel stud			1,194,167.13	£6,713,073.60	90%	£6,041,766.24
Vinyl flooring			149,495.51	£1,044,080.00	50%	£522,040.00
Insulation			1,364,452.12	£9,746,086.57	40%	£3,898,434.63
Total				£81,357,780.00		£17,381,764.50
					Total recycled content by value	21.36%

REFERENCES

[1] *Greater London Authority, "London Plan Guidance. Circular Economy Statements", March 2022. (Online). Available: https://www.london.gov.uk/sites/default/files/circular_economy_statements_lpg_0.pdf [Accessed April 2022]*
[2] Great Britain. Climate Change Act 2008: Elizabeth II. (2008) London, The Stationery Office
[3] *Ministry of Housing Communities & Local Government, (2021), National Planning Policy Framework. (online). Available: https://www.gov.uk/government/publications/national-planning-policy-framework--2 [Accessed April 2022]*
[4] *Greater London Authority. "The London Plan", March 2021. (Online). Available: https://www.london.gov.uk/sites/default/files/the_london_plan_2021.pdf [Accessed April 2022]*

ECOWORLD
LONDON
CREATING TOMORROW & BEYOND

POPLAR HARCA

ABERFELDY VILLAGE MASTERPLAN