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Circular Economy Statement

ABERFELDY VILLAGE MASTERPLAN

Greengage

Brighter strategies
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Client: The Aberfeldy New Village LLP

Project: Aberfeldy Village

Report: Circular Economy Statement

QUALITY ASSURANCE

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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.

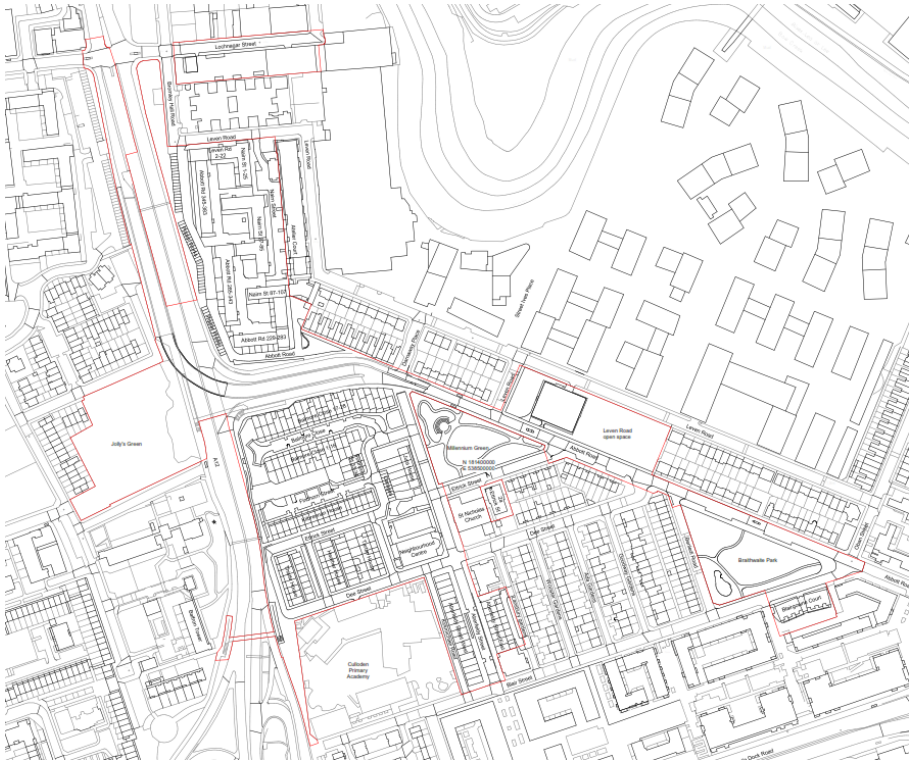
Further information is set out within the accompanying Covering Letter (as prepared by DP9 Ltd, dated September 2023) and the updated Planning Statement (as prepared by DP9 Ltd, dated September 2023).

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

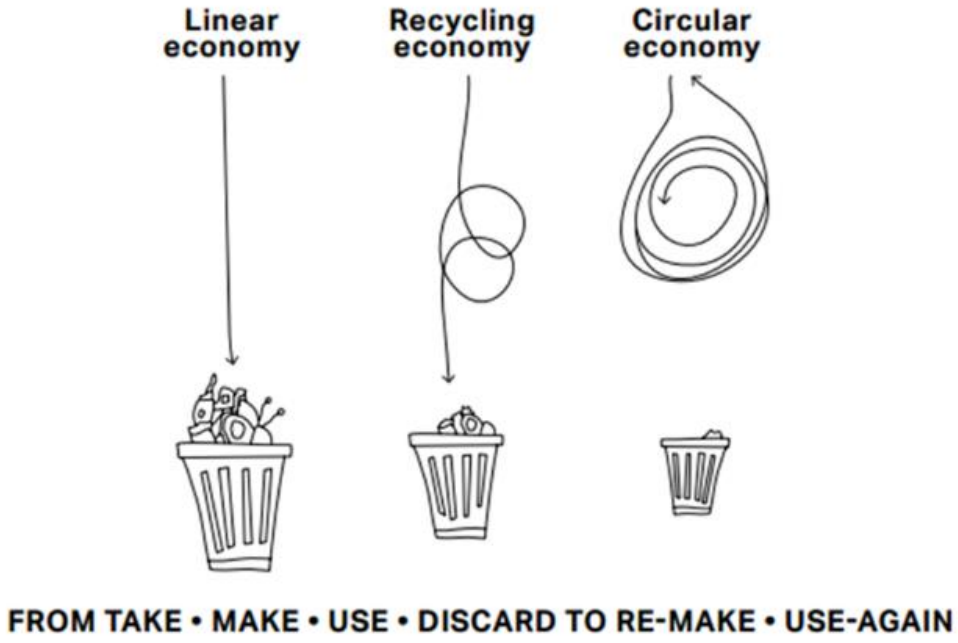
3.0 CIRCULAR ECONOMY PRINCIPLES

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

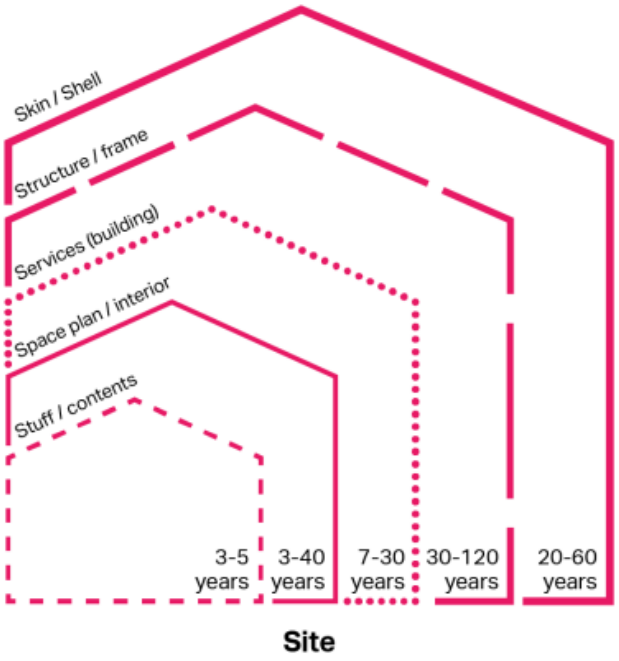
The Proposed Development has set targets in line with policy requirements and industry best practice.

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

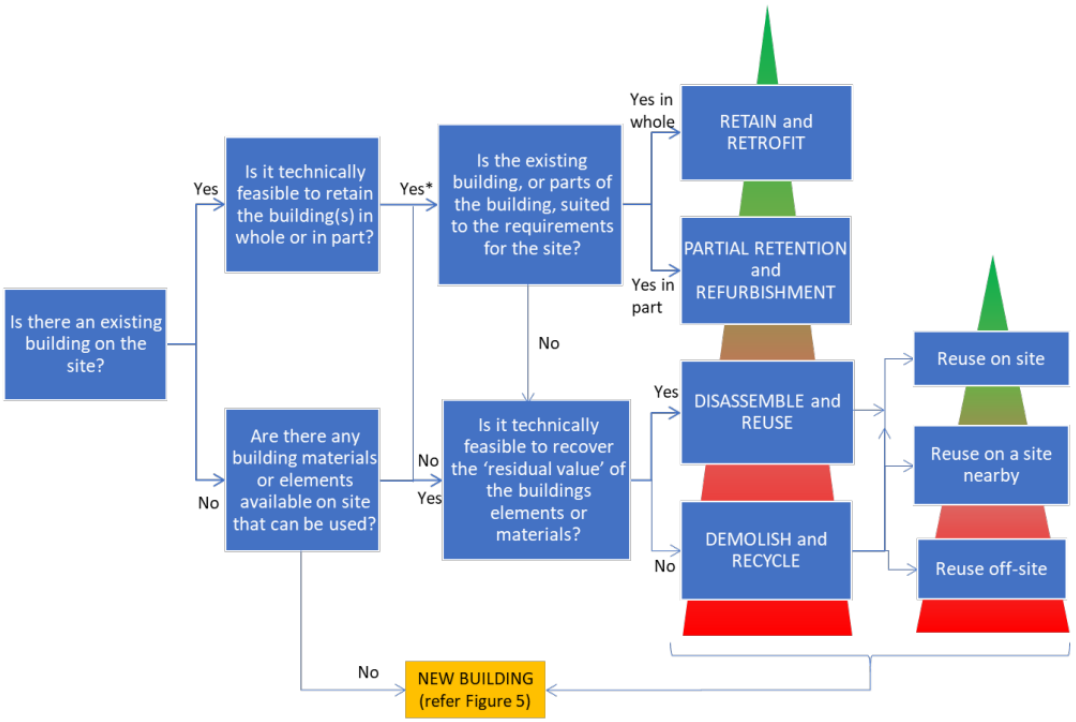
Approach	Response
Retain and retrofit	As confirmed within Appendix A, the existing buildings are of small scale and are not sufficient for the scale of the proposed development. The material quality is deemed to be poor and will require significant repair works. Poor quality brickwork would need repointing,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

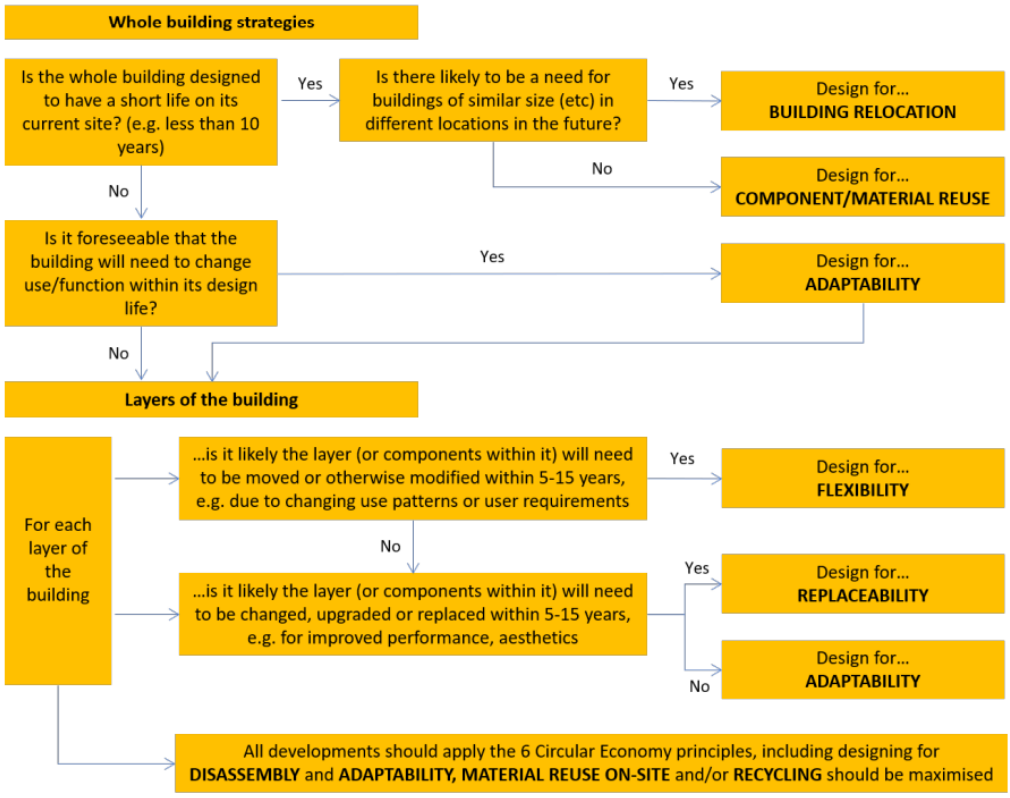
Is it technically feasible to recover the 'residual value' of the buildings, elements or materials?

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.

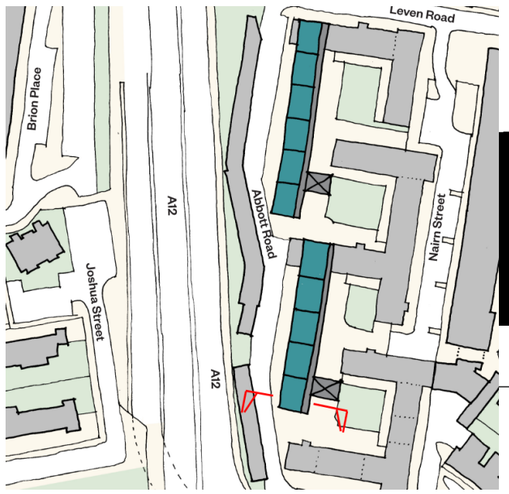
However, it would be impractical to achieve these new build parameters in a retrofit scheme, where the existing materials and construction limit the opportunity for improvement. This is recognised in the LETI Climate Emergency Retrofit Guide where the Best Practice targets are significantly lower, as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

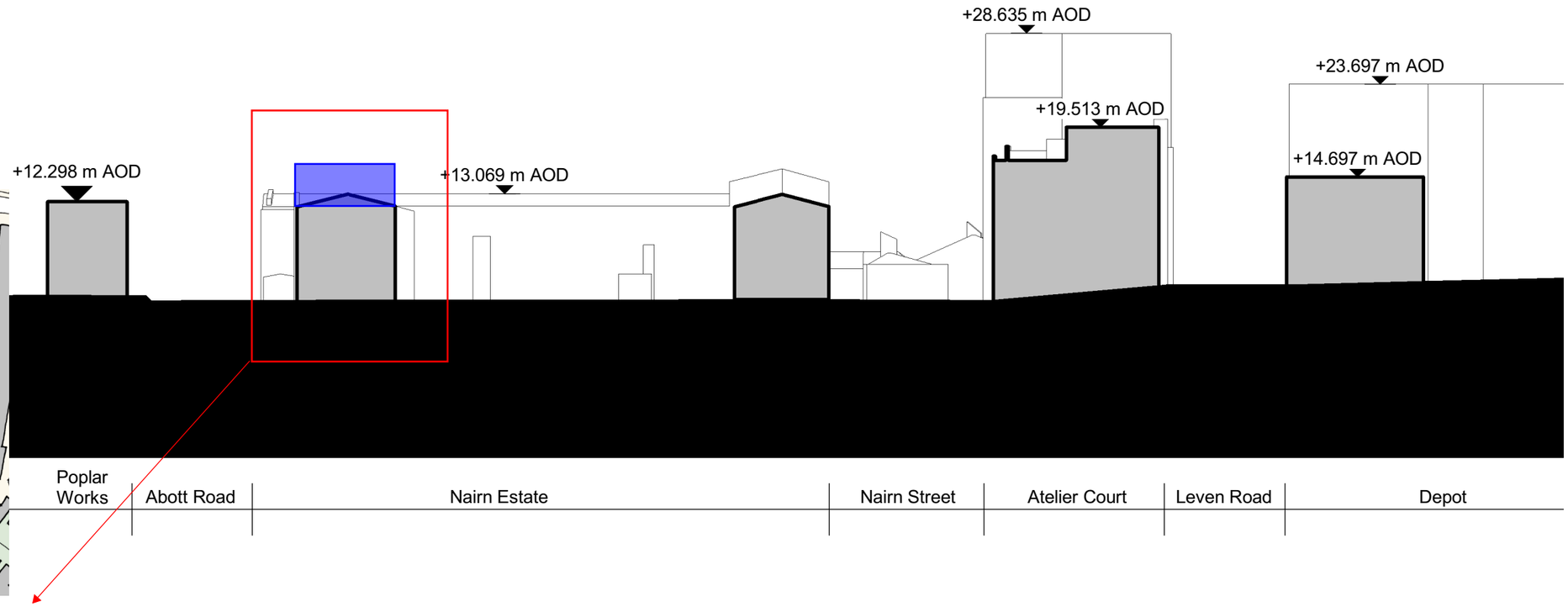
	Best Practice target	Notes
Roof U value	0.12	Cold roof

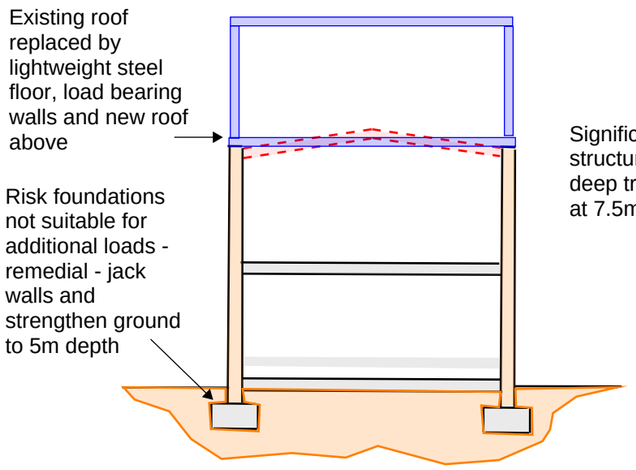
	Best Practice target	Notes
Wall U value	0.32	Solid wall
Floor U value	0.8	Solid floor
Window U value	1.3	Replace
Air permeability	3	Air changes per hour (equates to around 15m^3/h m^2 @ 50Pa)

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.

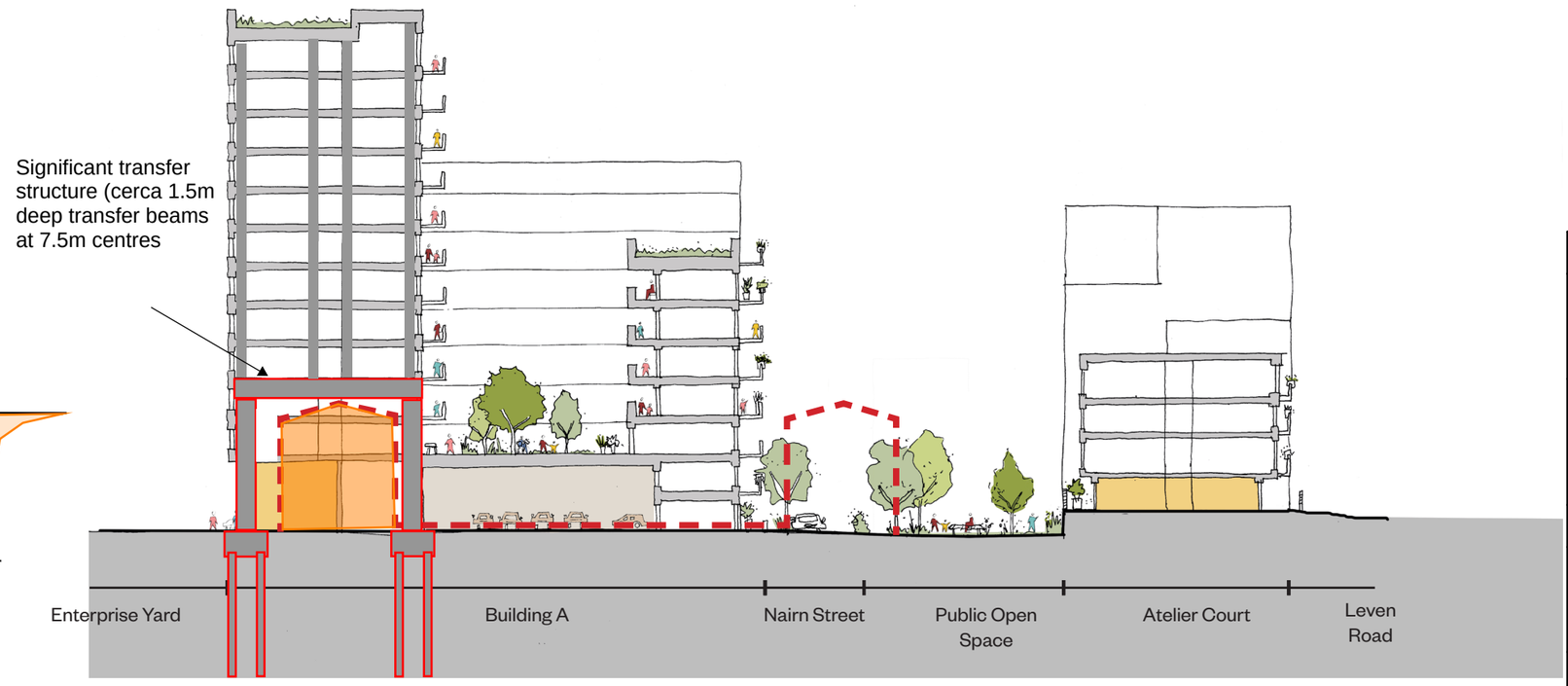
Community Lane North 1:500







Retain existing OPTION 1
Single storey lightweight buildover



Retain existing OPTION 2
Transfer new structure over existing

FOR INFORMATION

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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	

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TWO ADDITIONAL FLOORS

ONE ADDITIONAL FLOOR

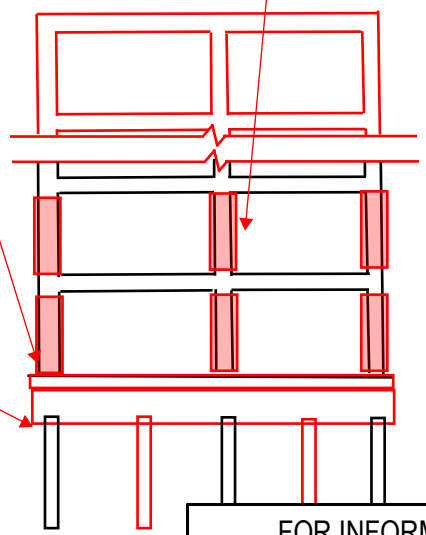
ONE ADDITIONAL FLOOR

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

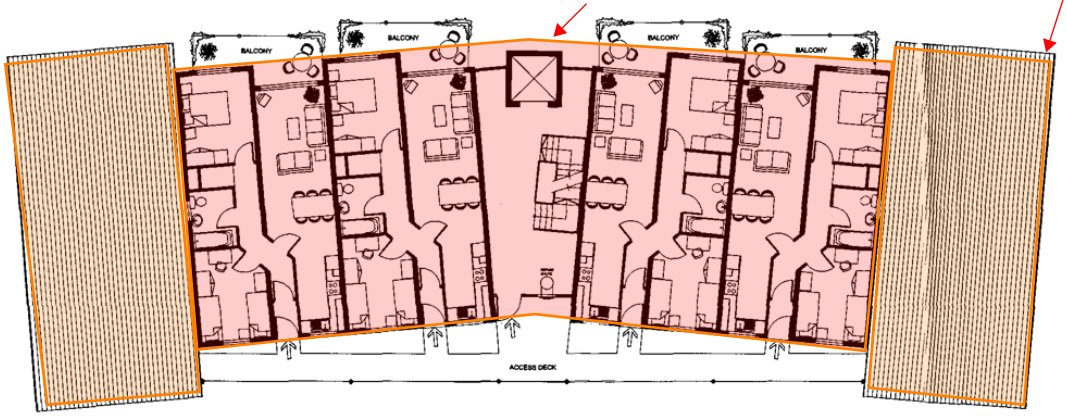
3) EXISTING COLUMNS RESUPPORTED ON NEW FOUNDATION

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

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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	

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