Hydrock

Land at the Former Sipson Garden Centre

Circular Economy Statement

For *Lewdown Holdings Ltd*

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Contents

Executive Summary

This Circular Economy Statement has been prepared by Hydrock and the wider project team. The purpose of the statement is to consider how the circular economy policy requirements of the London Plan 2021 can be met.

The project consists of the demolition of the former Sipson Garden Centre, including the hardstanding and dilapidate structures associated with the previous use. The site will be redeveloped to provide a vehicle service building, a two-storey office building and use of site for maintenance of airside support vehicles.

With the existing building being demolished and new development built from scratch, the design team looks to maximise re-using resources from the demolition. Through a workshop and a series of meetings, the design team has created a robust strategy that:

- Re-uses or recycles the existing building
- Uses circular economy principles to create an adaptable, flexible space
- Designs the building in layers to prevent the demolition of other layers through replacement

The project targets:

- Minimum of 95% of demolition, excavation and construction waste diverted from landfill for reuse, recycling or recovery
- Minimum 65% recycling rate of municipal waste by 2030
- Minimum 20% of the building material elements to be comprised of recycled or reused content

This document should be read in conjunction with related information submitted with the planning application.

The Former Sipson Garden Centre

1. Introduction

Hydrock has been appointed by Lewdown Holdings Ltd. to produce a Circular Economy Statement to demonstrate that the proposed development at The Former Sipson Garden Centre in the London Borough of Hillingdon has considered the circular economy principles. These principles include minimising embodied carbon and operating within a circular economy, maximising the value extracted from materials and prioritising their reuse and recycling.

2. Site and Proposed Development

The proposed development on-site on Sipson Road UB7 0HW, will see the demolition of the former Sipson Garden Centre, including the hardstanding and dilapidate structures associated with the previous use. The site will be redeveloped to provide a vehicle service building, a two-storey office building and use of site for maintenance of airside support vehicles.

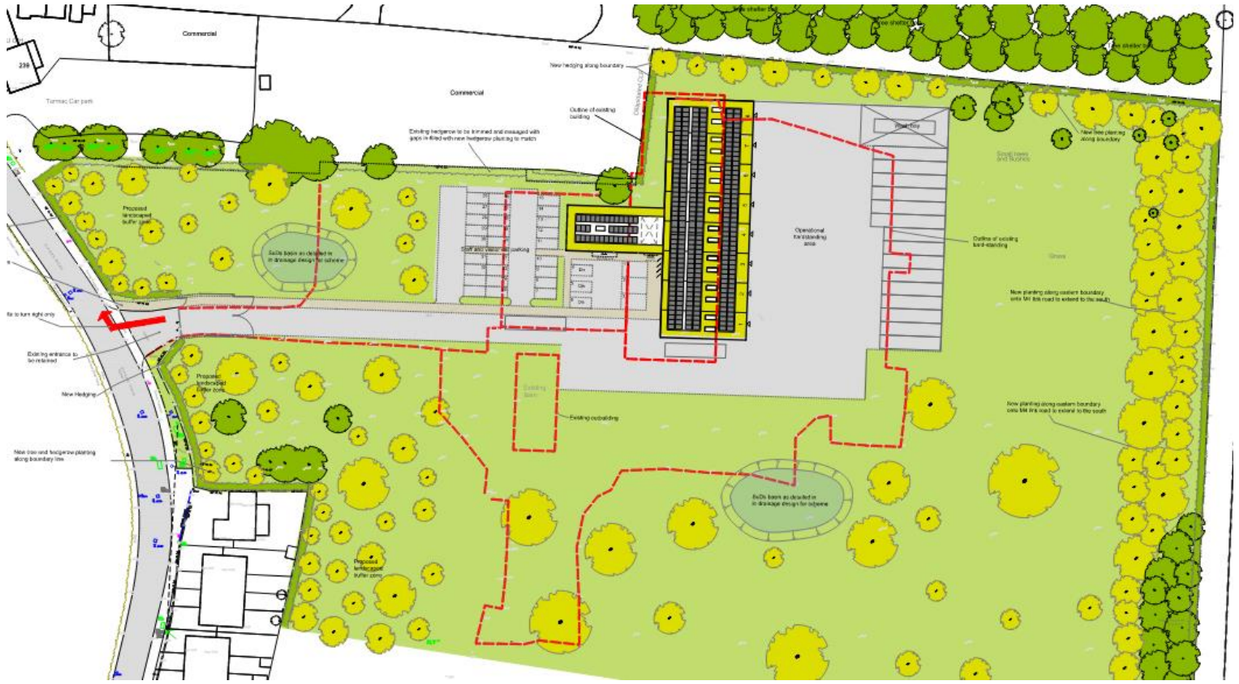

Figure 1 - Pre-Application Site Plan

Introduction to Circular Economy

This section explores what a circular economy involves and the legislation required for circular economy to gain planning approval.

3. Circular Economy Practices

A circular economy (CE) approach to building design encourages the reuse, recovery, refurbishment, remanufacturing and recycling of materials and existing buildings over the use of new material and new construction, as well as promoting the use of renewable resources and sustainable design.

Practises of a circular economy design can help to tackle a variety of global challenges including climate change, waste, pollution and biodiversity loss. A circular economy is based on the following principles, all driven by design, and supporting the application of a waste hierarchy:

1. Building in Layers;
2. Designing out Waste;
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 or Recycled.

The construction and operation of the built environment consumes 60% of all materials in the UK. Within the current building and resource environment, these minerals and metals are taken from the Earth and eventually thrown away as waste at the end of the products' life. This reflects a linear economy, whereas a circular economy, as defined by London Plan Policy SI7, is '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 of residual waste', as shown in Figure 2.

Constructing a building in independent layers which can be accessed and removed separately, promotes reuse and recycling whilst maintaining material value wherever possible as different layers have different lifespans, as displayed in Figure 3. A full list of building layers considered within a CE assessment are listed below:

- Site;
- Substructure;
- Superstructure;
- Shell/Skin;
- Services;
- Space;
- Stuff; and
- Construction Stuff

There are CE design approaches for sites which do and do not have existing structures. Multiple design approaches are expected to be adopted on a project, especially for larger developments.

The CE statement is undertaken at pre application, planning application (both outline and detailed) and post-construction stages at varying levels of detail. Early consideration of CE practises can support outcomes being achieved and embedded within the design.

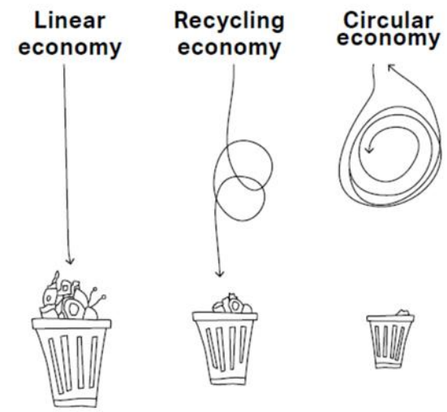

Figure 2 - Three reuse and recycling economy models

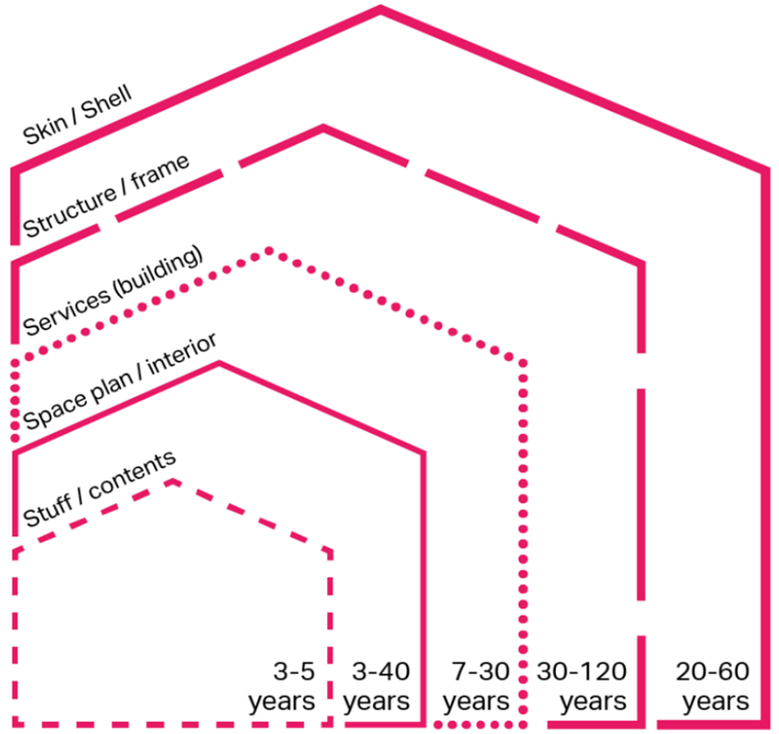

Figure 3 - Building layers and their indicative lifespans (From the London Plan CE Statement Guidance. March 2022).

4. National and Regional Policy and Guidance

4.1 UK Climate Change Act 2008

Although there are no national policies directly laying out CE guidance, the UK government amended the Climate Change Act 2008 in June 2019 to target net zero carbon emissions by 2050. The target requires the UK to bring all greenhouse gas emissions to net zero by 2050, compared with the previous target of at least 80% reduction from 1990 levels.

Any emissions must be balanced by schemes to offset an equivalent amount of greenhouse gases.

4.2 The London Plan

The London Plan was adopted in March 2021 and is the Mayor of London's statement on London planning policy and provides 'regional' level material considerations when determining planning applications in London Boroughs. The policies are overseen by the Greater London Authority (GLA).

The GLA London Plan has specific requirements in carbon emission reduction and circular economy practises required for major developments

4.2.1 Policy SI 7 Reducing Waste and Supporting the Circular Economy

Waste reduction, increases in material re-use and recycling, and reductions in waste going for disposal will be achieved by:

1. Promoting a more circular economy that improves resource efficiency and innovation to keep products and materials at their highest use for as long as possible;
2. Encouraging waste minimisation and waste avoidance through the reuse of materials and using fewer resources in the production and distribution of products;
3. Ensuring that there is zero biodegradable or recyclable waste to landfill by 2026;
4. Meeting or exceeding the recycling targets for each of the following waste streams and generating low-carbon energy in London from suitable remaining waste:
   a. Municipal waste – 65 per cent by 2030
   b. Construction, demolition and waste excavation – 95 per cent by 2020; and
5. Designing developments with adequate and easily accessible storage space that supports the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food.

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 will enable building material, components, products and construction 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 to support recycling and re-use; and
- How much waste the proposal is expected to generate, and how and where the waste will be handled.

4.3 Guidance Documents

There are several guidance documents can be referred to when writing a CE statement, listed below:

- 'Circular Economy Guidance for Construction Clients' by UK Green Building Council (UKGBC), April 2019.
- 'Circular Economy in Cities: Project Guide' by Ellen Macarthur Foundation, March 2019.
- 'BS 8001:2017 – Framework for Implementing the Principles of the Circular Economy' by British Standards Institution, May 2017.
- 'London Plan Guidance - Circular Economy Statements' by GLA, March 2022.

Method Statement

This section provides a summary of the processes in undertaking a CE statement, as well as the key aspirations for the project.

5. Methodology Overview

The approach to a circular economy assessment requires collaboration from all design team members, to provide advice and confirmation for reuse and repurposing principles.

5.1 Workshops

An important part of the circular economy process is to hold workshops during an early stage in the design process in collaboration with the project team and/or client to help define the sustainability and CE strategy.

Workshops were held on the 17th November 2023 and the 22nd of November 2023, with members of the project team including architects, structural engineers and MEP engineers to consider appropriate circular economy principles for the Sipson Garden Centre development. This was then followed up with meetings with individual consultants as the design progressed.

Thoughts and ideas regarding the 6 CE design principles for different building layers were collated on an online whiteboard, shown in figure 4, and in more detail in Appendix A.

5.2 Key Aspirations

One of the main goals in a CE is removing the loss of value of recycled or remanufactured materials, keeping products at their highest value in reuse. Lewdown Holdings Ltd. will aspire to meet this where practical, and key aspirations in line with this will fall under the overarching CE themes listed below:

- Conserving and Reducing Resources
- Managing Waste and Pollution
- Sourcing Materials Responsibly and Sustainably

As the proposal moves toward the construction stage, early engagement will be sought with contractors to assist in refining strategies for delivery.

To aid this robust data collection plans will be implemented through design and construction to facilitate ongoing monitoring against intended outcomes.

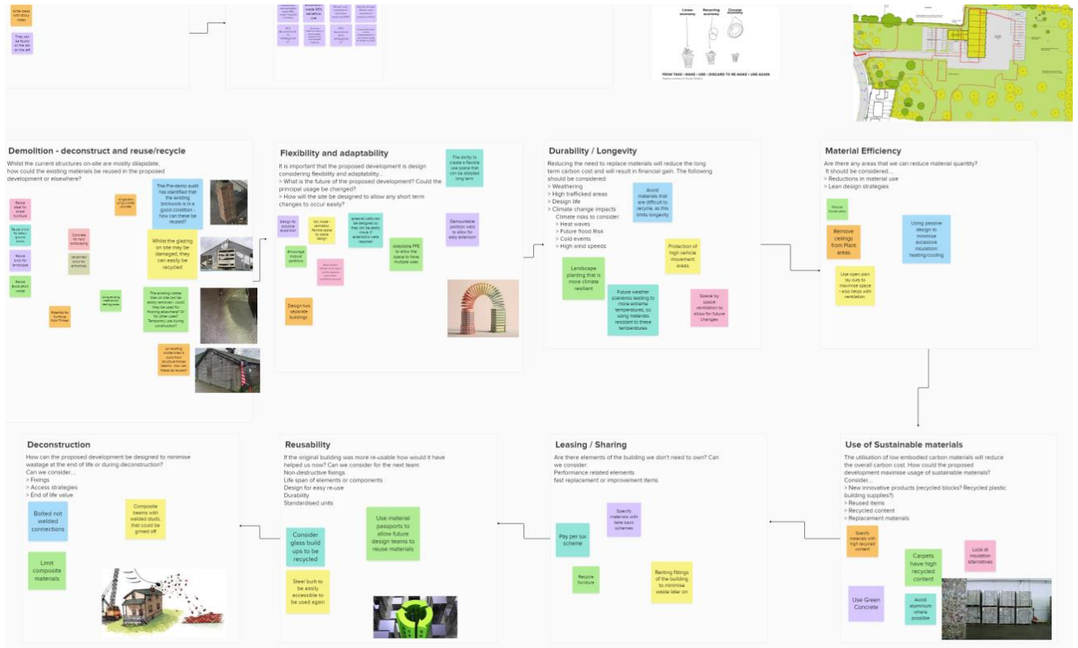

Figure 4 - Online whiteboard from circular economy statement

Strategic Response for the Design Approach

The section considers the circular economy design approaches for existing structures and new buildings on the site.

6. Existing Structures and Buildings

The existing buildings on-site are basic and consist of a greenhouse and a timber shed. It is not technically feasible or viable to retain or retrofit this building for the proposed development due to the fact that the existing building's structure is damaged and unsafe.

A pre-demolition audit has been completed, which has led to the consideration of material and waste management in the early stage of the development.

In order to limit waste, and maximise material reuse, the following approaches will be undertaken:

- Existing bricks, concrete and asphalt to be crushed and re-used in the hard landscaping and building foundations.
- Existing timber to be used as staking posts to assist with site vegetation.
- Re-use of the existing CCTV equipment, subject to quality testing.
- Recycling of all remaining existing materials, offsite.

7. New Buildings, Infrastructure and Layers

As the team is demolishing and building again from scratch, it is important that lessons are learnt from the existing building.

Any new building should be developed to allow for future adaptation which will ensure an extended building lifespan. Additionally, all new builds should be able to be deconstructed and reconstructed with ease; as a result of this, materials and components of the building can be reused or recycled in another design.

Figure 5 shows the decision tree produced by the GLA to help inform the appropriate design approach for any new building or infrastructure in a proposed development.

The new development proposed to be built on-site is designed to be adaptable across the lifetime of the building, and for any potential change in ownership. In particular the site is design to allow for easy extension of the service and office buildings, without the need to demolish the current design. This is achieved through an adaptable façade.

Therefore, using the design decision tree, focusing on the design for Adaptability is key but opportunities and commitments throughout this report will still take into account the design for flexibility and replaceability as well.

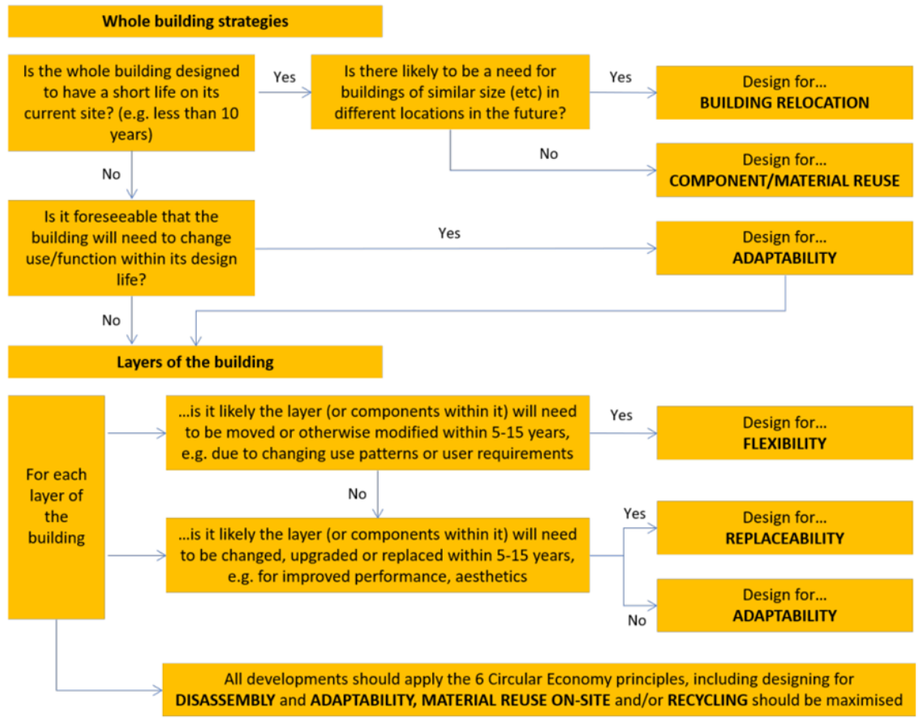

Figure 5 - New Buildings, infrastructure and layer design decision tree for the lifetime of a development

Circular Economy Design Principles

This section details how the Sipson development will meet the circular economy design principles including designing out waste, adaptability and longevity for each building layer in the design.

8. Building Layers

Within each of the following building layers, a description of the commitments to key CE design principles have been discussed. To reiterate, these design principles include:

- Designing out Waste;
- Designing for Longevity;
- Designing for Adaptability or Flexibility;
- Designing for Disassembly; and
- Using Systems, Elements or Materials that can be Reused or Recycled.

A definition of what each building layer consists of is summarised in Table 1, taken from the GLA CE Guidance document.

The key strategies for each layer are as follows:

Site

- Diverting at least 95% of demolition waste from landfill, with adequate bin storage.
- Plans for disassembly of existing fencing, to be recycled
- Re-use of existing concrete, bricks and asphalt for hard landscaping
- Infrastructure for a high number of electrical parking spaces and EV maintenance areas to be established
- Existing timber and steel frames to be used as staking posts

Substructure

- Re-use of existing concrete, bricks and asphalt for foundations.
- Prioritise usage of materials that have undergone minimal processing
- Usage of long-lasting foundations that can be re-used on another site

Superstructure

- Looking to use steel with a high recycled content.
- Bolted connections mean that steelwork can be deconstructed and reused, and allows for frame partitions to move and create a flexible space within the building

Shell/Skin

- Mechanically fixed glazing enabling easy disassembly and reuse/recycle.
- Regular façade allows for changes to the internal use of the building and easy extension
- Low maintenance materials and high construction quality to limit repair or replacement requirements.
- Consider the use of material passports to allow future design teams to be able to reuse materials.
- Weather resistant external skin to limit replacement and repair requirements.

Services

- New high-efficiency ASHP system for the longevity of the plant.
- Adaption and retrofit enabled to modify systems for future needs and future climate change.
- All services will be clustered together to allow for easy amended to the building.

Space

- High footfall areas feature high-impact resistant materials and protection measures like kickboards, tiled carpets, washable floors etc.
- Use of sustainable and low-carbon finishes throughout.
- Adhesive-free application where possible for ease of replacement.

Stuff

- High recycled content and durable FF&E which can be disassembled into constituent parts for reuse and upcycling will be selected.
- Consider manufacturers with take-back schemes where appropriate.

Construction Stuff

- Contractor to provide space on-site for waste stream separation and plan deliveries and packaging with supply chain to reduce site collection.
- Use the bill of materials to order the exact quantities of material required to avoid over ordering.
- Industry-standard specification of all components to enable multiple points of engagement with the construction market.
- Material passports will be used where possible to assist with future reuse.

Layer	Summary and constituent elements	RICS reference
Site	The geographical setting, urban location and external works	NRM 8
Substructure	Excavations, foundations, basements and ground floors	NRM 1
Superstructure	Load-bearing elements above plinth including roof supporting structure	NRM 2.1, 2.2 and 2.4 - frame, upper floors, stairs and ramps
Shell/Skin	The layer keeping out water, wind, heat, cold, direct sunlight and noise	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, doors, fitted furniture	NRM 2.7, 2.8 and NRM 3
Stuff	Anything that could fall if the building was turned upside down	N/A
Construction Stuff	Any temporary installations/works/ materials, packaging and equipment.	NRM

Circular Economy Targets and Commitments

Based on the opportunities discussed in the previous section, this page discusses the targets and commitments of how circular economy principles will be implemented for the proposed development.

This includes specific measures to conserve resources, eliminate waste and manage waste sustainably.

9. Eliminating Waste

The proposed development at Sipson will seek to eliminate waste, a core principle of circular economy, by carefully managing demolition, construction and municipal waste to maximise recycling and reuse whilst minimising waste sent to landfill. Additionally, ensuring the design is flexible and adaptable, increases the building's lifespan and minimises maintenance, further reducing demolition and maintenance waste across the lifetime of the building. The team has done this by ensuring capacity in the structure and good floor to ceiling heights for adaptability.

An Outline Construction Waste Management Plan (OCWMP) has be prepared for this project by Kanect, and is submitted alongside this document.

The OCWMP has considered sustainable methods for management construction, demolition and excavation waste and surplus material during the construction phase. The plan states that it is anticipated that a total of 4789.23 tonnes of waste material will be generated during construction. After the recycling and re-use targets have been applied, a total of 163.56 tonnes of waste will be generated. This is broken down into:

- 5.2 tonnes from construction works
- 25.06 tonnes from demolition works
- 2666 tonnes from excavation works, with 95% of this diverted from landfill, resulting in 133.3 tonnes.

9.1 Demolition Waste Target

Lewdown Holdings Ltd will commit to diverting 95% of demolition waste from landfill, in line with requirements in the London Plan Policy S17.

Outputs from the workshop with the design and planning teams highlighted that the following materials from the demolition of the existing building have the potential to be reused in the proposed development:

- Existing bricks, concrete and asphalt will be crushed and re-used in the hard landscaping and foundations.
- Existing timber on site from a shed will be used as staking posts to support on site trees.

Re-use of materials has been investigated and detailed in the pre-demolition audit and the opportunities to segregate waste on-site at the source have been detailed in the OCWMP. It is anticipated that 2019.23 tonnes of waste will be generated from demolition works, with at least 95% of this being recycled or re-used on site. This brings down the waste to landfill to 25.06 tonnes.

The following actions have contributed to achieving this significant reduction in demolition waste:

- 1452.5 tonnes of concrete wastage predicted, 100% of which will be crushed and re-used on site
- 490.52 tonnes of bituminous mixtures wastage predicted, 95% of which will be diverted from landfill
- 50.06 tonnes of mixed metals wastage predicted, 100% will be diverted from landfill

9.2 Construction Waste Target

Lewdown Holdings Ltd will commit to diverting 95% of construction waste from landfill, in line with requirements in the London Plan Policy SI7. The completed OCWMP helps to monitor, record and project waste quantities during this stage and has predicted 104 tonnes of waste will be generated. With 95% of the wastage being diverted from landfill via recycling or re-use, the final construction wastage will be approximately 5.2 tonnes.

The following measures are mentioned in the OCWMP and should be implemented to ensure waste generation is minimised:

- Implementation of a 'just-in-time' material delivery system to avoid materials being stockpiled, which would increase the risk of their damage and disposal as waste;
- Sourcing materials from as close to the site as possible to reduce emissions of greenhouse gases from vehicles
- Use standard size components in design to eliminate waste at source where possible to do so
- Agreements with material suppliers to reduce the amount of packaging, use reusable packaging or participate in a packaging take-back scheme. This can be achieved by consolidated material delivery.

9.3 Municipal Waste Target

Lewdown Holdings Ltd will commit to diverting 65% of operational waste from landfill, in line with requirements in the London Plan Policy SI7. An operational waste management strategy has been prepared for this project, helping to forecast operational waste and manage waste streams and collection services. This waste plan is in accordance with the waste hierarchy.

Table 2- Estimated Waste Streams

Waste Stream	Weekly Waste (L)
Landfill	1145
Recycled	2360
Cardboard	2202
Food/Green	118

Waste generation on-site will be segregated into dry recycling and general waste for ease of recycling and to minimise unnecessary waste. The occupiers will be expected to transport their waste to the communal waste stores for collection by the waste collection contractor. For more information, please see the operational waste plan submitted alongside this document.

10. Recycled content

This development will target 20% of the building material elements to be comprised of recycled or reused content. This will take into account the form of the building structure, requiring concrete to contain recycled aggregate, steel containing recycled content and existing brickwork to be recycled into the belowground structure where feasible. All the bricks, concrete and asphalt from the existing building will be

crushed and recycled in the new development. This contributes to a large percentage of the 20% target.

11. Conserving Resources

The proposed development at Sipson Garden Centre will seek to ensure that material and resource use is minimised as far as possible, in line with the principles of conserving resources and sourcing ethically. This focus has been given to not only minimising the quantities of materials and other resources used, but also ensuring materials are sourced responsibly during construction.

Where feasible, any timber on-site will originate from certified sources, meeting the sustainable forestry standard of the Forestry Stewardship Council (FSC). The contractor will also be encouraged to source materials from suppliers with recognised responsible sourcing certifications including BES 6001, ISO 14001 and CARES.

The proposed scheme will utilise the following measures to conserve and efficiently manage materials and additional resources where possible:

- Participate in take-back schemes
- Utilise materials with a high recycled content
- Design to a standardised grid and regular material dimensions to reduce waste from offcuts
- Utilise pre-assembled / pre-fabricated elements and/or off-site manufacture

12. End of Life Strategy

The development is designed and will be constructed to minimise waste and maximise reusability at end-of-life. The 'building in layers' technique will minimise waste during disassembly and will allow reuse, without major damage to other materials.

Avoiding the use of unnecessary adhesives will further minimise wastage or damage to materials, again increasing reusability and recovery of the materials.

The usage of material passports will ease future usage of materials, and will facilitate future circular economy principles for future contractors.

All the end-of-life strategies contained within the GLA circular economy spreadsheet will be passed onto future occupants.

Conclusion

A summary of the circular economy approach of the proposed Sipson Garden Centre development.

13. Conclusion

Following the circular economy workshop and report, a detailed action list will be put together to ensure that the CE opportunities which are identified in the above sections are carried through to the next stage.

Circular economy strategies have been determined for all building layers for each of the key design principles: Waste, Longevity, Adaptability or Flexibility, Disassembly and Recycling. A full list of these strategies can be found in the Circular Economy GLA spreadsheet submitted alongside this statement.

A summary of the Circular Economy Targets and Commitments section and key plans for implementation are listed below:

- Minimum of 95% of demolition, excavation and construction waste diverted from landfill for reuse, recycling or recovery.
- Investigating the re-use of demolition materials such as crushed concrete to use for piling mats.
- Minimum 65% recycling rate of municipal waste.
- Attention to material quantity requirements, to avoid over-ordering and generation of waste materials.
- Minimum 20% of the building material elements to be comprised of recycled or reused content.
- Conserving resources wherever possible through methods such as participating in take-back schemes and utilising materials with high recycled content.

These requirements, along with the circular economy aspirations of the project, will be communicated to tendering sub-contractors, and they will be made aware of their responsibilities in line with these aspirations.

Progress will be reported against commitments, verified, and compared with Post Completion Report quantities.

Appendix A - Online whiteboard from the circular economy workshop