Elephant Park H1 Development

Detailed Circular Economy Statement

May 2021

Prepared by HDR | Hurley Palmer Flatt

lendlease

Application documents

Affordable Workspace Strategy

Application Form and Ownership Certificate

Arboricultural Method Statement

Archaeological Desk-Based Assessment

Basement Impact Assessment

CIL Additional Information Form

Construction Environmental Management Plan

Daylight and Sunlight Report

Development Consultation Charter Engagement Summary

Draft Delivery and Servicing Management Plan

Design and Access Statement

▶ **Detailed Circular Economy Statement**

Drainage Strategy

Energy Statement

Environmental Statement

Existing and Proposed Drawings

Fire Statement

Flood Risk Assessment

Health Impact Assessment

Marketing Strategy

Phase 1 Geo-Environmental Assessment

Planning Statement

Reconciliation and Comparison Statement

Statement of Community Involvement

Sustainability Statement

Transport Assessment (inc. Travel Plan)

Television and Radio Reception Impact Assessment

Utilities and Infrastructure Statement

Whole Life-Cycle Carbon Assessment

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1. INTRODUCTION

1.1. Introduction to Planning Application

1.1.1. This Detailed Circular Economy Statement has been prepared by HDR | Hurley Palmer Flatt on behalf of Lendlease (Elephant & Castle) Limited ("Lendlease") to support an application for full planning permission ("the Application") for the redevelopment of Plot H1 ("the Site") within the Elephant Park Masterplan, Elephant and Castle, London, SE1 ("the Elephant Park Masterplan"). This standalone development proposal is referred to as "the H1 Development".

1.1.2. Plot H1 currently forms Phase MP5b within the Outline Planning Permission ("OPP") granted on 23 March 2013 for the Elephant Park Masterplan (LBS Ref: 12/AP/1092). Outline planning permission was granted under the OPP for development of Plot H1 for a mix of land uses, with matters of scale, appearance and landscaping reserved. The approved development on Plot H1 under the OPP is referred to as "the OPP Plot H1 Parameters".

1.1.3. The Application for Plot H1 seeks full planning permission to develop an office-led building (Class E) on the Site. It is being sought through a standalone planning application because it takes a form which is not capable of being approved in detail through the submission of reserved matters pursuant to the OPP. However, the H1 Development has been designed with the intention that it is to be delivered alongside the adjacent plots that have been and are being delivered under the OPP and will complete the Elephant Park Masterplan. In addition to the Application for the H1 Development, a non-material amendment application will be submitted in parallel to amend the Reserved Matters Application (RMA) approval for Plot H2, alongside a revised RMA for the Park, in order to align the public realm proposals hereby submitted with those approved on the neighbouring plots. This is explained further in Section 3.

1.1.4. The Elephant and Castle Town Centre has evolved significantly over the past decade and the Application for Plot H1 has been prepared to respond to the emerging context. Additionally, the New Southwark Plan and London Plan set ambitious targets for increasing employment space in the Borough within the Elephant and Castle Opportunity Area. The establishment of a new landmark commercial building in this location will provide new employment and business opportunities for local people and add to the vibrant mix of land uses at Elephant Park and the new Town Centre.

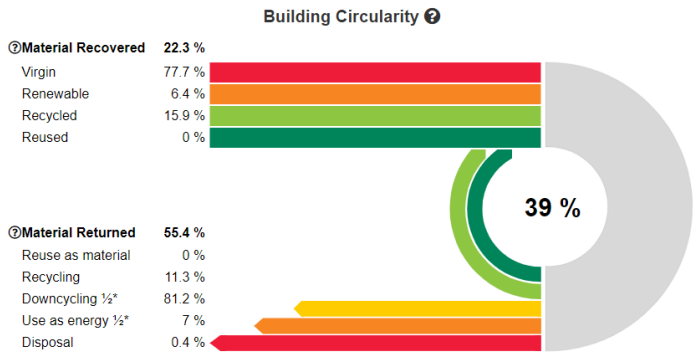
1.2. Introduction to the Detailed Circular Economy Statement

1.2.1. The H1 Development is situated in the London Borough of Southwark. This Statement is based on the final proposals and details how the H1 Development proposes to demonstrate:

- How materials arising from demolition and remediation works will be re-used and/or recycled (where in the client's control);
- 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 H1 Development 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.

1.3. Building Circularity

1.3.1. The H1 Development has a Building Circularity score of 39%.



1.3.2. The calculated Building Circularity score represents the total materials circularity both in use of materials for the project as well as end of life handling. It is calculated as the average of Materials Recovered (representing use of circular materials in the project) and Materials Returned (representing how effectively materials are returned, instead of disposed of or downgraded in value).

1.4. Bill of Material & Waste Metric Report

1.4.1. These documents in the Appendices include targets and commitments.

1.4.2. Appendix A, The Bill of Material, looks at the new materials and identifies the percentage of recycled content and the estimated recyclable materials in each element.

1.4.3. Appendix B, Recycling and Waste Report provides the estimate of the construction waste.

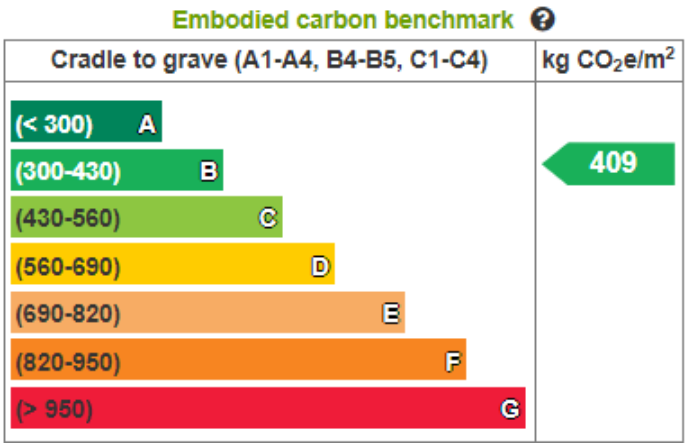
1.5. Whole Life-Cycle Carbon Assessment

1.5.1. The following opportunities were identified to reduce embodied carbon:

- Considering material type, its efficient use, and expected lifespan.
- Choose low carbon versions of materials.
- Minimise wastage on site, consider construction processes and design for adaptability, disassembly and reuse.

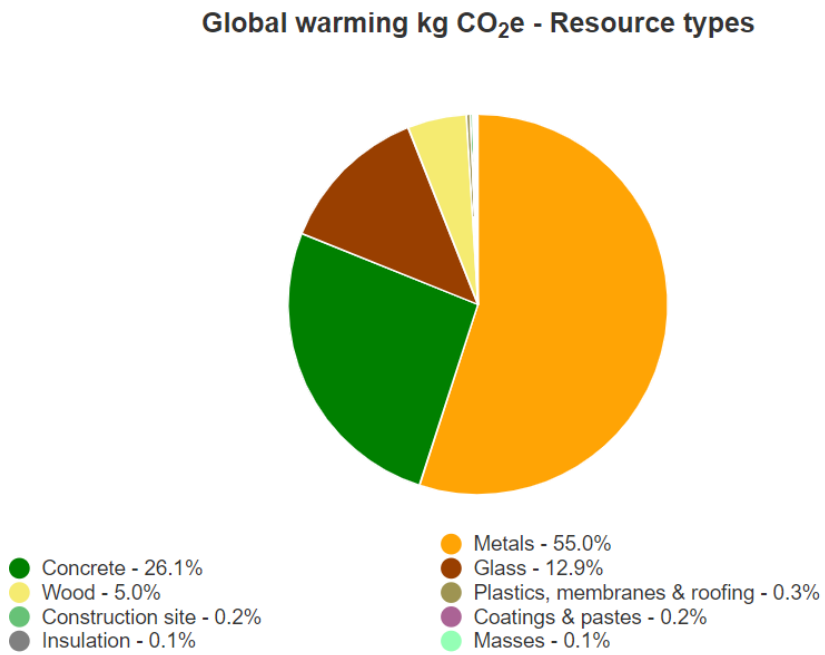
1.5.2. Conclusions can be drawn from the results summarised in the Whole Life-Cycle Carbon Assessment (WLCA) report:

1.5.3. The proposed H1 Development achieved a One Click LCA 'Carbon Heroes Benchmark'[1] rating of B, demonstrating 409kgCO2e/m2.



[1] https://www.oneclicklca.com/construction/carbonheroes/

1.5.4. ‘Product Stage’ emissions, associated with raw material supply, transport to manufacturing plant and manufacturing processes, form the largest contribution to the global warming potential of the H1 Development. The material contributing the most to kgCO2e emissions was found to be Metal (55%) followed by Concrete (26.1%), then Glass (12.9%).



2. SITE AND SURROUNDINGS

This section provides details of the Elephant Park planning permissions and the Site in its existing context.

2.1. Elephant Park

2.1.1. Elephant Park is located in Elephant and Castle, within the administrative boundary of Southwark Council ("the Council"). The Masterplan occupies an area of 9.71 hectares, and is bounded by:

- New Kent Road (A201) to the north,
- Rodney Place and Rodney Road to the east,
- Wansey Street to the south; and
- Walworth Road (A215) and Elephant Road to the west.

2.1.2. Heygate Street bisects Elephant Park with junctions to Walworth Road to the west and Rodney Place and Rodney Road to the east.

2.2. The Outline Planning Permission

2.2.1. The Council granted two planning permissions for Elephant Park on 27 March 2013: the OPP and the Demolition Planning Permission (ref: 12/AP/3203).

2.2.2. In summary, the OPP granted consent for up to 254,400 sqm of residential floorspace, up to 16,750 sqm of retail floorspace, up to 5,000 sqm of business floorspace and up to 10,000 sqm of community, culture and leisure floorspace, alongside a new energy centre, a new park ("The Park"), and public realm.

2.2.3. The OPP reserved the detailed design elements of Elephant Park for future approval at the Reserved Matters stage but did establish a series of approved parameters and principles for the Development within three approved application documents: the Parameter Plans, the Development Specification and the Design Strategy Document ("DSD"), as well as being accompanied by a section 106 agreement that was entered into on the same date that the OPP was granted.

2.2.4. The OPP introduced five specific character areas within Elephant Park which were established to create a variety of experience and richness to the development: 1 - The Park; 2 - Walworth Road; 3- New Kent Road; 4- Walworth Local and 5- Rodney Neighbourhood. These are shown on Figure 1 below.

Figure 1 - Extract of character areas from the consolidated Design Strategy Document (Feb 2013)

2.2.5. Elephant Park was further sub-divided into 12 individual development plots (H1 to H7, H10, H11a, H11b, H12, and H13) plus a Pavilion to be located in the new park at the centre of the scheme (known as plot 'PAV1'), refer to Figure 2 below. The individual development plots comprise a mix of residential and/or other land uses and included varying heights and massing to fit into the specific character areas in which they are located and the surrounding urban context. In particular, the height and massing of all tall buildings within Elephant Park was informed by a townscape assessment that takes into account both local and strategic London views. The plots are delivered within five phases, which are defined on the Phasing Plan (the most recent version of which is provided in Figure 2 below).

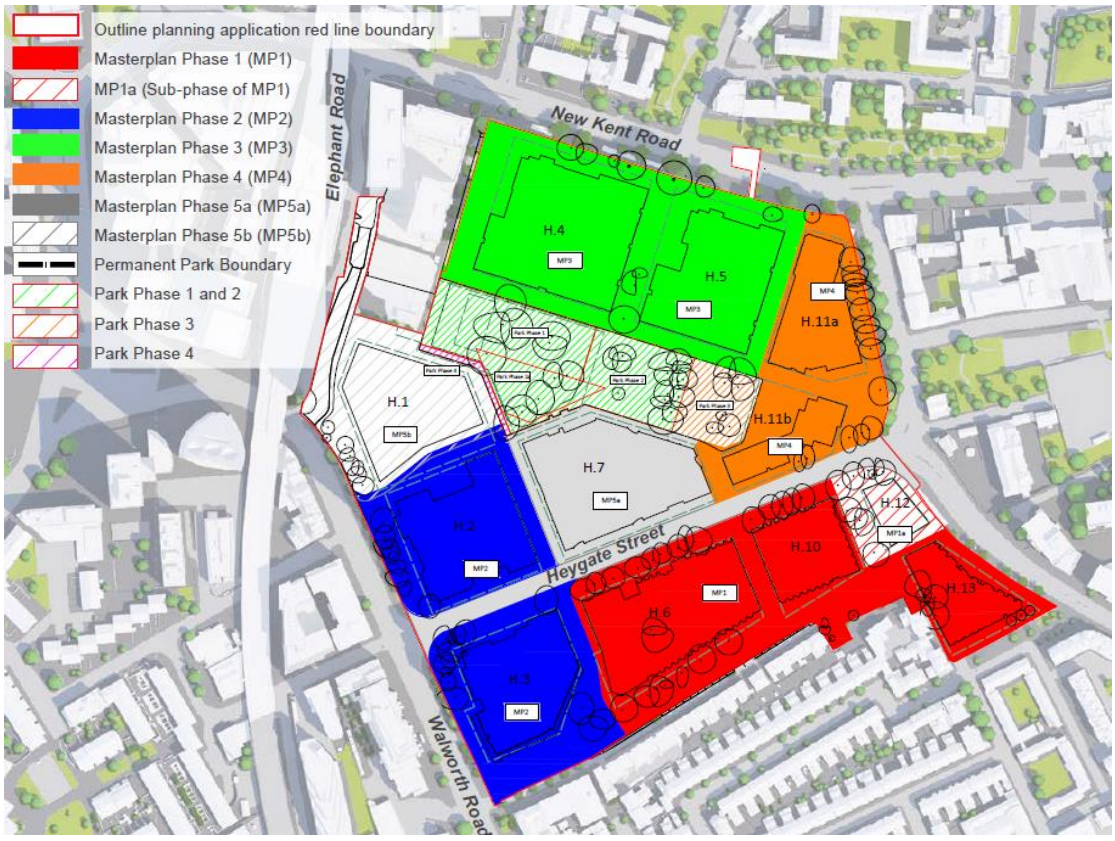


Figure 2 – Elephant Park phasing plan identifying the individual development plots

2.2.6. In addition to the built floorspace, the OPP provides significant areas of open space, including The Park, gateway spaces, pocket parks and new streets. Mature trees have been retained where possible and will be complemented with new landscape and new trees, which will ensure that there will be no net loss of trees on the Elephant Park site.

2.2.7. In March 2021, the Council approved a Detailed Phasing Plan for Elephant Park (Figure 2) setting out the current proposed sequence of construction works in respect of all phases and plots in the development. This Detailed Phasing Plan identified that Plot H1 would form part of the final phase MP5, sub-phase MP5b, of the Masterplan.

2.2.8. The Council approved the RMAs for the first phase of Elephant Park comprising Plots H6, H10 and H13 and associated public realm in February 2014. In December 2014, the Council approved the Reserved Matters Application for the second phase comprising Plots H2 and H3 and associated public realm. In October 2015, the Reserved Matters for the Energy Hub (Plot H12) and associated public realm were approved by the Council. RMAs for the third phase comprising Plot H4 and associated public realm, were approved by the Council in May 2017, and for Plot H5 and associated public realm in September 2017. RMAs for the fourth phase, comprising Plots H11a and H11b and associated public realm, were approved by the Council in September 2018. Most recently, the RMA for Plot H7 within Phase MP5a was approved by the Council in March 2020, and Reserved Matters for the Pavilion (Plot PAV1) were approved

in October 2020. Plot H1 is the only plot within the Masterplan that does not have Reserved Matters Approval.

2.2.9. In response to the increased employment targets of the Council and in the context of the evolving Town Centre, the H1 Development is being brought forward as an office, further enhancing the mixed use nature of the Elephant Park Masterplan. The H1 Development and the OPP have been designed to interface and co-exist to deliver the Elephant Park Masterplan, and it is the intention that H1 will be delivered alongside the development that has been constructed and/or approved under the OPP. The Application has been structured to interface with the OPP so that the OPP and the H1 Development can be developed out harmoniously and without either prejudicing the other. It is intended that a planning obligation will accompany the H1 Development and will secure that, upon commencement of the H1 Development, no further development will be undertaken pursuant to the OPP within the areas of the OPP that also benefit from the permission granted pursuant to the Application. In this way, it will be clear that the H1 Development supersedes the OPP in this area of the Elephant Park Masterplan. The H1 Development is brought forward without prejudice to the lawfulness, deliverability and acceptability of what has gone before under the OPP, and is capable of implementation alongside the OPP.

2.2.10. The Planning Statement submitted in support of the Application describes how this planning application has been structured in relation to the OPP. In order to explain the relationship between the H1 Development and the OPP more generally, a Reconciliation and Comparison Statement is included in Appendix 1. The Reconciliation and Comparison Statement provides a technical overview of the H1 Development in comparison with the OPP Plot H1 Parameters and a reconciliation of the Elephant Park Masterplan to show how the H1 Development and the composite RMA approvals for all other Plots granted under the OPP come together to provide a final reconciliation against the development controls of the OPP.

2.3. Plot H1

2.3.1. The Site is bounded by:

- Castle Square and Sayer Street to the north,
- Sayer Street, the Pavilion and The Park to the east,
- Walworth Road and Elephant Road to the west; and
- Deacon Street and Plot H2 to the south.

2.3.2. As shown in Figure 3 below, the Site is largely surrounded by other elements of Elephant Park and sits at the confluence of The Park and Walworth Road Character Areas, marking the westernmost plot within the Masterplan. The Site is largely vacant however, at present, it contains a temporary modular building providing staff welfare in relation to the ongoing construction of the Elephant Park Masterplan along with accommodating the meanwhile use of the Urban Farm, as consented by Southwark (20/AP/2612) in November 2020.

2.3.3. The land uses surrounding the Site, particularly within the Elephant Park Masterplan, are primarily residential in character with commercial uses at ground level. To the east of the Site is The Park, the main public open space within the Elephant Park Masterplan. The southern boundary is characterised by Plots H2 and H7 which comprise mixed residential and commercial land uses. The area to the north and west is more varied and is characterised by the commercial uses within Castle Square and along Walworth Road, one of the main arterial routes in the Borough. There are no designated heritage assets (Conservation Areas or Listed Buildings) in close proximity to the Site.

2.3.4. The Site is situated within close proximity to the significant transport infrastructure around Elephant and Castle, with the Underground Railway Station to the north-west, and mainline Railway Station on the west side of Elephant Road. Further details are provided in the Design and Access Statement, prepared by Acme, that accompanies the Application.

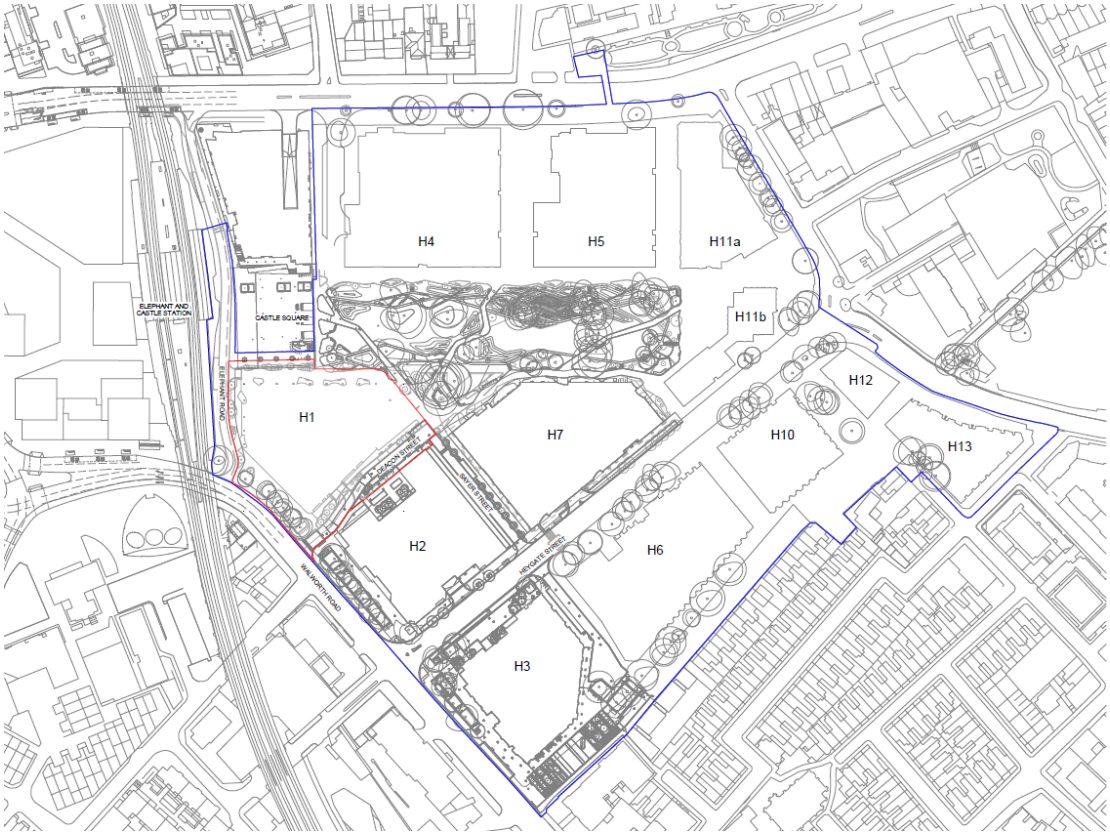


Figure 3 - Application Site boundary shown in red. OPP boundary line shown in blue.

3. DESCRIPTION OF DEVELOPMENT

This section describes what is being applied for in the Application for the H1 Development, explains why it is coming forward as a standalone planning application and how it relates to the Elephant Park Outline Planning Permission (OPP).

3.1. Description of Development

3.1.1. This section should be read in conjunction with the Design and Access Statement which is submitted in support of the Application and describes the principal components of the H1 Development.

3.1.2. This Application seeks full planning permission for the H1 Development. Specifically, the Application seeks approval for:

'Redevelopment of the site to provide a building of ground plus 17-storeys (including a mezzanine floor) with basement and rooftop plant providing office floorspace (Class E) and areas of flexible floorspace for the following uses; office/retail/services/food and drink/medical or health floorspace (Class E), including ancillary cycle parking, accessible car parking, servicing, landscaping, public realm improvements and other associated works incidental to the development.'

3.2. The Proposed Development

3.2.1. Working in partnership with Southwark Council, Lendlease is delivering a £2.5 billion regeneration programme on 28 acres of land in the centre of Elephant and Castle creating one of the capital's most exciting places to live, work and visit. The vision for Elephant Park is to breathe new life into this special part of Central London, building on Elephant and Castle's heritage to create thousands of high-quality new homes, jobs, business opportunities and green space for locals and Londoners.

3.2.2. The H1 Development will contribute to this vision by delivering an employment led development with an emphasis on health and wellbeing which maximises the connection with The Park. The vision for the Site is a direct response to its location, which will complement the transformation of Elephant and Castle Town Centre by diversifying the mix of uses in the neighbourhood and providing local employment and business opportunities to the area, whilst strengthening the connection between Elephant and Castle Town Centre and Walworth.

3.2.3. The H1 Development comprises ground plus 17 storeys (including mezzanine) with a basement level and rooftop plant, extending to a maximum height of 85.730 m AOD (including rooftop plant). The building will serve as a key focal point within Elephant Park and along Walworth Road, with the tallest element situated adjacent to the railway line and stepping down towards the neighbouring residential buildings.

3.2.4. The Application proposes 63,599 sqm (GIA) of floorspace, comprising 49,351 sqm (GIA) of offices, 8,681 sqm (GIA) of flexible of floorspace at ground floor, mezzanine and first floor level suitable for office, retail, food and drink, medical and health uses, alongside 5,566 sqm of shared plant, servicing and cycle parking facilities. All proposed uses fall within Use Class E of The Town and Country Planning (Use Classes) Order 1987 (as amended). A full breakdown of the proposed floorspace is provided in Table 3.1.

Table 3.1: Total Development Floorspace

Land Use (All Class E)	Floor Level	NIA (sqm)	GIA (sqm)	GEA (sqm)
Offices	02 - 16	40,783	49,351	49,565
Offices / medical or health	Mezzanine - 01	4,300	6,728	6,795
Offices / retail / services / medical or health	GF	259	264	277
Offices / retail / services / food and drink	GF	1,683	1,689	1,728
Ancillary (loading bay, plant, cycle facilities and other BOH space)	GF / Roof / Basement	-	5,566	6,258
Total	**All**	**47,025**	**63,599**	**64,624**

3.2.5. The H1 Development also proposes to provide 10% (GIA equivalent) of the office floorspace in the H1 Development as affordable workspace in line with emerging policy. As an alternative to the proposed affordable workspace, there is also a possibility that a new health hub to serve the local area could be provided within the H1 Development. Further information is provided in the supporting Affordable Workspace Strategy.

3.2.6. A key ambition of the H1 Development is to be open and accessible, evident through the provision of the active lobby - an extensive, publicly accessible ground floor space serving both future office occupants and the wider public. The ground floor frontages around the building will reflect the hierarchy of the adjacent streets and routes, with the frontages along Sayer Street North, Elephant Road and Walworth Road providing the main active frontages. This will enhance the surrounding streetscape and the relationship between the H1 Development and The Park, whilst also helping to strengthen the relationship between Elephant and Castle Town Centre and Walworth. The main office entrance is situated along the north elevation fronting Sayer Street North as it turns to meet Elephant Road, ensuring maximum visibility and accessibility for workers and visitors accessing the building from Elephant and Castle Railway and Underground Stations (through the viaduct archway pedestrian routes to be delivered as part of Delancey's Elephant and Castle Town Centre development).

3.2.7. The proposed H1 Development building will be complemented by the enhancement of the surrounding public realm, including Sayer Street North, which will be a pedestrian priority route and cycle route, along with improvements to Deacon Street and completion of the Elephant Road and Walworth Road landscape. The H1 Development public realm proposals have been developed in response to the key landscape Character Areas identified in the OPP, which define Elephant Park. The stepped approach to the massing facilitates the provision of external amenity space serving the office accommodation in the form of roof terraces, which will also allow for a strong visual connection between The Park and the building, whilst responding positively to the Site's prominent position on Walworth Road. The outdoor terraces and integration of public realm in the design of the H1 Development is also increasingly important in supporting occupier health and wellbeing in a post-Covid-19 workplace environment.

3.2.8. All servicing will be carried out from an internal loading dock, accessed from Deacon Street, with vehicles both entering and exiting Deacon Street from Walworth Road to minimise disruption to the wider street network within the Masterplan. The H1 Development will be car free other than allocated accessible spaces located on Deacon Street. Long stay cycle parking is proposed within the basement of the H1 Development, accessed from Walworth Road with further short stay cycle parking in the surrounding public realm.

4. POLICY CONTEXT

The Statement responds to the London Plan policy requirements:

- Policy D 3 'Optimising site capacity through the design-led approach'; and
- Policy SI 7 'Reducing waste and supporting the Circular Economy'

4.1. Objectives

4.1.1. The above planning policies outlined by the Greater London Authority (GLA) in the London Plan have set out the following objectives:

- Aim for high sustainability standards and take into account the principles of the circular economy;
- Promote a more circular economy that improves resource efficiency and innovation to keep products and materials at their highest use for as long as possible;
- Encourage waste minimisation and waste prevention through the reuse of materials and using fewer resources in the production and distribution of products;
- Ensure that there is zero biodegradable or recyclable waste to landfill by 2026;
- Meet or exceed the municipal waste recycling target of 65 per cent by 2030, the reuse/recycling or recovery of 95 percent of construction and demolition waste, and the beneficial use of at least 95 per cent of excavation waste; and
- Design developments with adequate, flexible, and easily accessible storage space and collection systems that support, as a minimum, the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food.

4.1.2. It is considered essential that the H1 Development meets planning policy guidelines and aims to adopt the latest industry sustainable design and construction methods to ensure it becomes one of London's most exemplary buildings.

5. METHOD STATEMENT

5.1.1. A Circular Economy is defined in London Plan Policy SI 7 '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 of residual waste.

5.1.2. For buildings, this means creating a regenerative built environment that prioritises retention and refurbishment over demolition and rebuilding. It means designing buildings that can be adapted, reconstructed and deconstructed to extend their life and that allow components and materials to be salvaged for reuse or recycling.

5.1.3. Designing buildings for a circular economy can increase their value by avoiding depreciation and can help to stave off obsolescence. It can even secure a positive residual value at end-of-life.

5.1.4. In a circular economy, built environment assets are designed so that whole buildings, and materials, components and parts can be continually and easily recycled.

5.2. Circular Economy Hierarchy

Redevelopment should be assessed against the following Circular Economy Hierarchy.

1. Refurbishment

5.2.1. Redeveloped for similar needs and uses but meeting or exceeding current regulations and standards through restoring, refinishing and future proofing while minimising changes and avoiding replacement of any parts. Parts of historical significance are incorporated in the design and carefully preserved. Designed for longevity, adaptability or flexibility to prolong the new life of the development.

2. Repurpose

5.2.2. Redeveloped to accommodate different needs and/or uses (e.g. from industrial use to mixed use) but exceeding current regulations and standards though with significant changes and replacement of shorter-life parts. Parts of historical significance are incorporated in the design and carefully preserved. Designed for longevity, adaptability or flexibility to prolong the new life of the development.

3. Deconstruct and reuse

5.2.3. Building/infrastructure disassembled, with the entire asset being reconstructed elsewhere, or individual components directly reused elsewhere.

4. Demolish and recycle

5.2.4. Traditional demolition, with elements and materials converted into new elements and materials and objects for use on the site or on another site nearby.

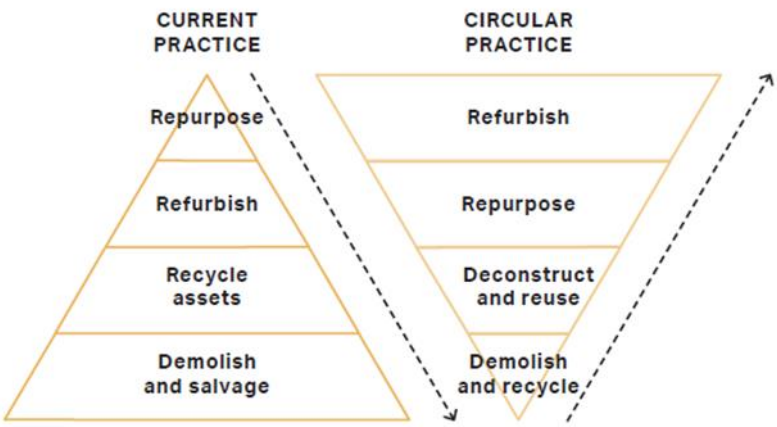


Figure 4 - Source: Design for a circular economy, GLA

5.3. Circular Economy Workshop

5.3.1. A series of workshops with key stakeholders have been undertaken during RIBA stages 0-2 to develop the sustainability strategy for the H1 Development. A specific 'Circular Economy Workshop' was held on the 10th & 15th December 2020 as well as other forms of communication including the following stakeholders;

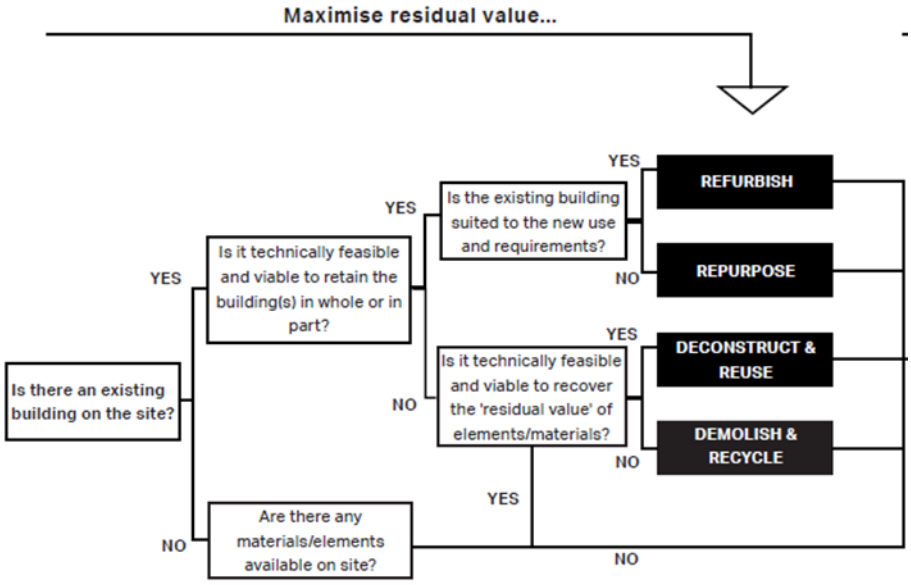
- HDR | Hurley Palmer Flatt – MEP;
- HDR | Hurley Palmer Flatt – Sustainability;
- Robert Bird & Partners – Structures; and
- ACME – Architects.

5.3.2. During the workshop the design team investigated how materials can be optimised and waste eliminated not just during construction but over the life of the project and how materials can be reused beyond the life of the H1 Development. It was recommended that, through engagement with the appointed main contractor and product supply chain, opportunities to create a circular development would continue to be investigated.

5.4. Decision Flow Charts

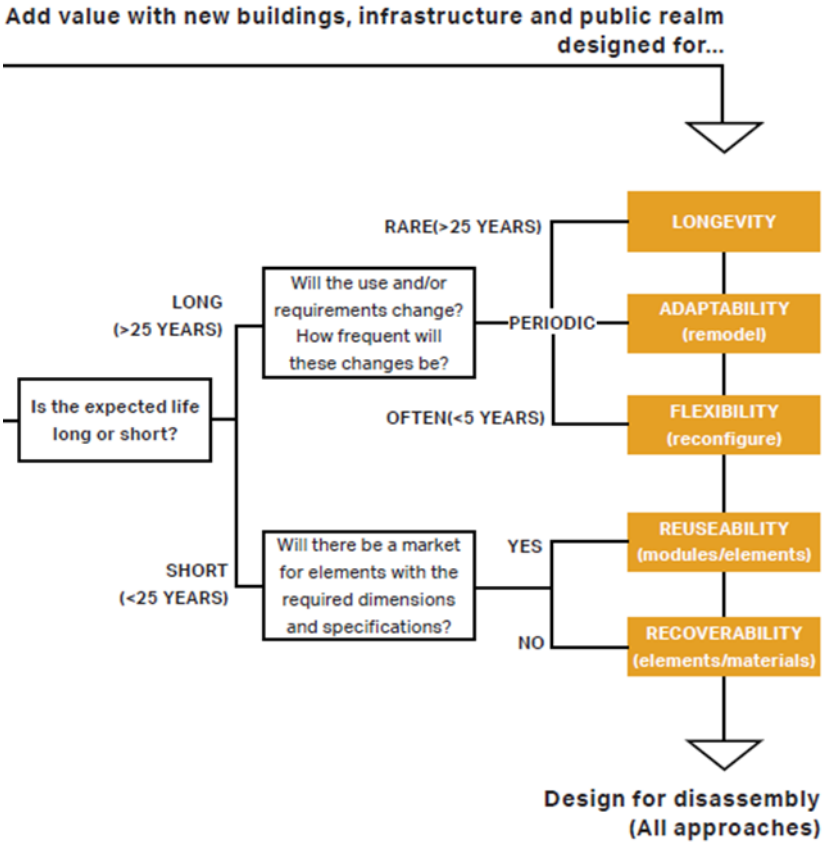
5.4.1. Two different flow charts should be considered for refurbishments and new built elements as recommended by the guidance.

5.4.2. The first chart aims to maximise residual value in an existing building as below:



Source: Design for a circular economy, GLA

5.4.3. The second flow chart aims to add value to the new build and this was the chart applicable to H1 development.



Source: Design for a circular economy, GLA

5.4.4. The design team have sought to ensure that all the building elements are designed to be long lasting, adaptable and flexible, and be easy to disassemble.

5.5. Sustainable Third-Party Certification

5.5.1. The design team are targeting a BREEAM NC 2018 'Excellent' rating. As part of the BREEAM assessments the following credits relevant to the principle of a circular economy are being pursued:

- Man 01 Commissioning and Handover
  - Commissioning and testing schedule and responsibilities
  - Commissioning building services
- Man 02 & 03 Responsible Construction Practices
  - Environmental management
  - Sustainability champion
  - Considerate construction
  - Monitoring of construction site impacts - Utility consumption
  - Monitoring of construction site impacts - Transport of construction materials & waste
- Mat 01 Life cycle Impacts
  - Life Cycle Assessment
- Mat 05 Responsible Sourcing of Materials
  - Responsible sourcing of materials (RSM)
- Mat 07 Designing for Robustness
- Wst 01 Construction Waste Management
  - Pre-demolition/refurbishment audit
  - Reuse and direct recycling of materials
  - Construction resource efficiency
  - Diversion of resources from landfill
- Wst 03 Operational Waste

6. GOALS AND CIRCULAR ECONOMY PRINCIPLES

The three core principles of a circular economy as recommended in the Guidance by the Mayor of London, promote a regenerative and restorative approach. This sets out how the H1 Development responds to these principles.

6.1. Principle 1 - Conserve Resources, Increase Efficiency and Source Sustainably

This Principle addresses the following main points:

- Minimising the quantities of materials used
- Minimising the quantities of other resources used
- Specifying and sourcing materials and other resources responsibly and sustainably

H1 Development response

6.1.1. A WLCA has been undertaken with options assessed to reduce the embodied carbon of the new materials including seeking to rationalise and minimise material volume. The lowest carbon option over the 60-year life horizon for the H1 Development was chosen. The WLCA shows the total carbon dioxide emissions for the project is 409 kg/CO2e/m2 as calculated using 'One Click LCA' software. A structural solution based on timber (CLT) has been selected as one of the key measures to substantially reduce embodied carbon of the H1 development.

6.1.2. The calculated operational energy WLC emissions for the H1 Development using current grid electricity carbon factors (SAP 10) are 1,623kgCO2e/m2(GIA) and 425kgCO2e/m2(GIA) for future decarbonised grid electricity.

6.1.3. An energy assessment has been undertaken seeking to minimise energy consumption, which predicts the H1 Development achieves a 38% CO2 emission savings over Part L 2013.

6.1.4. The WLCA undertaken used comparable Environmental Product Declaration (EPD) and generic LCA data to assess the proposed design. During the specification and procurement process there are opportunities to further assess the environmental impact of the H1 Development by choosing products with product level EPD's and using the EPD data as a key driver in product selection.

6.1.5. The approach to the construction product impacts encourages the consideration of impacts during manufacture, design, procurement, installation, in-use and end-of-life. This is undertaken with a focus on the Environmental impacts from construction products and encouraging the specification of products with Environmental Products Declaration (EPD).

6.1.6. The same approach is used during the procurement of the materials, responsible sourcing of construction products. Maximum available credits are targeted for BREEAM Mat 05 'Responsible Sourcing of Materials'.

6.2. Principle 2 - Design to Eliminate Waste (And for Ease of Maintenance)

This Principle addresses the following main points:

- Designing for longevity, adaptability or flexibility and reusability or recoverability
- Designing out construction, demolition, excavation and municipal waste arising

H1 Development response

6.2.1. The H1 Development is targeting a waste efficiency target of ≤7.5 tonnes per 100m2 of GIA.

6.2.2. As part of the WLCA and Circular Economy assessment the design team have maximised the longevity, adaptability, flexibility and reusability or recoverability of the materials. This has also been supported by the Wst 06 assessment carried out for this project.

6.3. Principle 3 - Manage Waste Sustainably and at the Highest Value

In the third principle the following points are addressed:

- Managing construction waste
- Managing municipal waste (and industrial waste, if applicable)

H1 Development response

6.3.1. A Site Waste Management Plan (SWMP) will be produced and includes the following recommendations.

6.3.2. Application of WRAPs waste hierarchy, which is reduce, reuse, recovery and disposal of waste through the following:

- Procurement of products with minimal packaging.
- Prioritising procurement of materials with high recycled or reused content.
- Demolition and deconstruction subcontractors (where applicable) should consider maximising the recovery of materials and resources, recycling and identifying reuse opportunities, design modification to limit amount of demolition and input into new design proposals to assist future demolition.
- BIM (Building Information Modelling) will be used where feasible.
- Avoid over-ordering, ordering standard lengths rather than the lengths required, ordering for delivery at the wrong time, damage during unloading, delivery to inappropriate areas of site, accepting incorrect deliveries, specification or quantity.

6.3.3. A minimum of 80% (by volume) of construction waste from the H1 Development will be diverted from landfill.

6.3.4. A waste and recycling strategy document has been developed for the Site. The document includes likely waste arisings volumes and waste and recycling storage requirements to facilitate achieving a minimum of 65% of municipal waste to be reused, recycled or composted.

7. STRATEGIC APPROACH

7.1. GLA Circular Economy Statement Guidance Table 1.

A strategic approach has been prepared and defined following a workshop with the design team. Appendix 4 includes the completed strategic approach in line with the GLA Circular Economy Statement Guidance, Table 1.

8. CIRCULAR ECONOMY COMMITMENTS

8.1. Key Commitments for the H1 Development – GLA Circular Economy Statement Guidance Table 2.

8.1.1. Appendix 5 includes a completed GLA Circular Economy Statement Guidance Table 2.

8.2. Plans for Implementation

8.2.1. It is proposed the following actions are taken to implement and monitor the actions included in this Circular Economy Statement;

8.2.2. RIBA stage 4/5 Design and construction stage

- BREEAM interim certificate including credits included in this statement
- Updated Building Circularity score
- Updated SWMP waste targets
- Updated recycling and waste metrics form
- Updated bill of materials

8.2.3. As Built stage

- BREEAM certificate including credits included in this statement
- Updated Building Circularity score
- Updated SWMP demonstrating compliance to waste targets
- Updated recycling and waste metrics form
- Updated bill of materials

8.3. End of Life Strategy

8.3.1. The material specification and manufacturers data sheets used in the H1 Development will be stored and updated as and when additional works are undertaken. This information can be used towards the end of life to inform the end of life strategy, disassembly, future reuse, waste avoidance, waste reduction.

8.3.2. The project envisaged end of life is not for 60 years at which point material reuse and recycling technologies are expected to be more advanced than today.

9. CONCLUSION

9.1.1. This Circular Economy Statement sets out a course to maximise materials and resources circulating in the economy and so reduce reliance on virgin materials.

9.1.2. The calculated Building Circularity score **(Figure 5)** represents the total materials circularity both in use of materials for the project as well as end of life handling. It is calculated as the average of Materials Recovered (representing use of circular materials in the project) and Materials Returned (representing how effectively materials are returned, instead of disposed of or downgraded in value). The calculation is purely mass based without material weighting.

9.1.3. **Figure 6** shows the quantities of Materials Recovered and Returned for the various categories with the information we have at this stage. In the H1 Development the quantity of recovered materials is 65,294t, which corresponds to 22.3% of materials recovered. Figure 6 also shows the quantities of materials returned which corresponds to a total of 55.4%.

9.1.4. **Figure 7** shows the carbon emissions of the transport in the categories A & B of RICS. The total global warming produced for H1 Development is 370,278 KgCO2e. **Figure 8** shows that 48.28% of it is coming from foundations and substructure, 35.26% of it is coming from the horizontal structures.

9.1.5. Carbon emissions associated with transportation of construction can be managed and reduced by consolidating trips, reducing distances and shifting freight movements to cleaner modes.

9.1.6. **Figure 7** shows the key material groups and their percentages of recovery, recycled and returned, therefore giving the percentage of circularity for each category. The percentage of circularity can be increased through specification of products with high levels of recycled materials and which are readily recyclable. The recyclability and overall environmental impact of a chosen material is most accurately assessed using product level EPD's. The percentage of circularity can be tested through the procurement process as more detail surrounding the final products included EPD's are known.

9.1.7. The increase of recyclability for the aluminium in the façade up to 75%, has boosted the building circular economy of +4%, which is the highest change in a single material.

9.1.8. This Circular Economy Statement summarises the proposed approach and actions taken up to RIBA stage 2 for the H1 Development as well as the proposed measures and monitoring and reporting mechanisms that will be implemented through its life cycle.

9.1.9. The Statement demonstrates the project adheres to the GLA's circular economy principles and policy requirements and has a calculated building circular economy score of 39%.

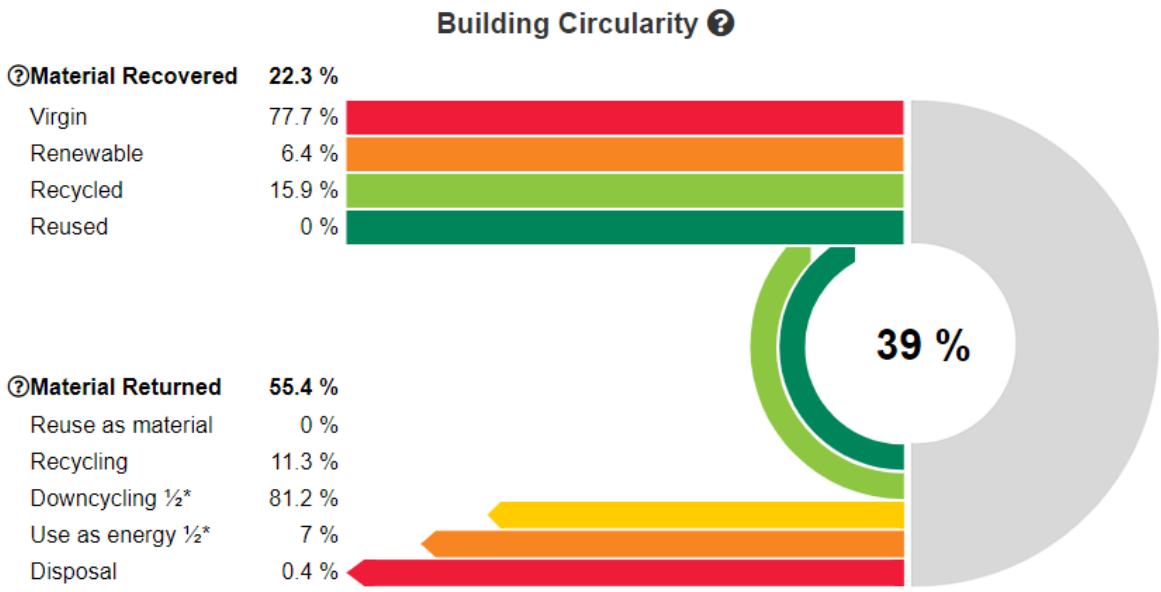


Figure 5 - diagram showing building Circularity score as calculated using Bionova One Click

Building Circularity - Materials Recovered

Result category	Total tons	Virgin tons	Renewable tons	Recycled tons	Reused tons	
Construction Materials	62 624	49 012	3 588	10 024	0	Details
Earth masses, asphalt and stones	396	396	0	0	0	Details
Construction site - material wastage	2 266	1 304	599	363	0	Details
Material replacement and refurbishment	8	8	0	0	0	Details
Total	65 294	50 720	4 187	10 387	0	Details

Building Circularity - Materials Returned

Result category	Reuse as material tons	Recycling tons	Downcycling tons	Use as energy tons	Disposal tons	
Construction Materials		7 140	51 536	3 933	15	Details
Earth masses, asphalt and stones			127		269	Details
Construction site - material wastage		236	1 373	656	1	Details
Material replacement and refurbishment				8		Details
Total		7 375	53 036	4 597	285	Details

Figure 6 – Tables showing quantities of Materials Recovered and Returned

Transport carbon intensity

Transport carbon intensity values are based on the transport figures from associated LCA tool. They are not rendered in the input forms of the circular economy tool to maintain the tool readable. Use these data for HQE Performance Economie Circulaire for example.

Result category	Global warming kg CO_2e	Payload distance tkm	
Transport	370 278	4 545 581	Details
Transport - A4	355 310	4 351 298	Details
Transport - A5	14 943	193 624	Details
Transport - B4-B5	25	659	Details

Figure 7- Transport Carbon Emissions associated with RICS modules A + B

Construction	Resource	User input	Global warming kg CO_2e	Payload distance tkm	Comments
Building materials > Foundations and substructure > Foundation, sub-surface, basement and retaining walls					
		Section share	48,28 %	31,6 %	
Building materials > Vertical structures and facade > External walls and facade					
		Section share	0,96 %	2,04 %	
Building materials > Vertical structures and facade > Columns and load-bearing vertical structures					
		Section share	15,09 %	28,82 %	
Building materials > Horizontal structures: beams, floors and roofs > Floor slabs, ceilings, roofing decks, beams and roof					
		Section share	35,26 %	37 %	
Building materials > Other structures and materials > Other structures and materials					
		Section share	0,01 %	0,02 %	
Building materials > External areas and site elements > Materials and constructions for external areas					
		Section share	0,4 %	0,53 %	

Figure 8- Breakdown of emissions from transport in modules A+B

Building Circularity - Key Material Groups

Result category	Total tons	Virgin %	Materials Recovered %	Disposal %	Downcycling and use as energy %	Recycling and reuse as material %	Materials Returned %	Circularity %	
Concrete	51 536	89	11		100		50	31	Details
Metals	5 896	42	58			100	100	79	Details
Bricks and ceramics									Hide empty
Gypsum-based									Hide empty
Insulation	10	56	44	59	41		21	32	Details
Glass	1 244	30	70			100	100	85	Details
Wood and biogenic	3 921	8	92		100		50	71	Details
Earth masses and asphalt	396	100	0	68	32		16	8	Details
Other materials	17	100	0	51	49		25	12	Details

Figure 9 - Key materials groups and the predicted percentages of recovery, recycling and returned at decommissioning

APPENDIX 1

Bill of Materials

APPENDIX 1 – BILL OF MATERIALS

Materials	Element	Material quantity (kg)	Material intensity (kg/m2 Gross Internal Area (63,598)	Recycled content (% by value)= Downcycling / recycling and reuse	Reused content (% by value) = Materials Recovered	Estimated reusable materials (kg/m2)	Estimated recyclable materials (kg/m2)	Source of information
Concrete		*51,536 tons*	*810Kg/m2*	*100%*	*11%*			*OneClick Software, Architects, Structure Engineers and Quantity Surveyor information*
Metal		*5,896 tons*	*93kg / m^2*	*100%*	*58%*			*OneClick Software, Architects, Structure Engineers and Quantity Surveyor information*
Insulation		*10 tons*	*0.15kg / m2*	*41%*	*44%*			*OneClick Software, Architects, Structure Engineers and Quantity Surveyor information*

Glass		*1,244 tons*	*19.56kg / m2*	*100%*	*70%*			*OneClick Software, Architects, Structure Engineers and Quantity Surveyor information*
Wood and biogenic		*3,921 tons*	*61.65kg / m2*	*100%*	*92%*			*OneClick Software, Architects, Structure Engineers and Quantity Surveyor information*
Earth Masses and asphalt		*396 tons*	*6.23kg / m2*	*32%*	*0%*			*OneClick Software, Architects, Structure Engineers and Quantity Surveyor information*

APPENDIX 2

Recycling and Waste Report

APPENDIX 2 – RECYCLING AND WASTE REPORT

Category	Total estimate	Of which…		% not reused or recycled max 5%		Source of information
	t/m2 Gross Internal Area (GIA)	*% reused or recycled onsite*	*% reused or recycled offsite*	*% to landfill*	*% to other management (e.g. incineration)*	
Excavation waste	*1.13 t/m2* *(40,000X1.8= tonnes/m3)*	*Not applicable*	*Not applicable*	*Not applicable*		
Demolition waste	*N/A* *Not part of the scope*	*N/A*	*N/A*	*N/A*		
Construction waste	*≤ 7.5 m^3 per 100sqm*	*10%*	*80%*	*5%*		*BREEAM Pre-Assessment document*
Municipal waste	*3 litres per m^2 of floor area per week = density of $8m^2$ for the office*	*0%*	*100%*	*Max. 35% and no recyclable or compostable waste*		*See Waste Strategy*
Industrial waste (if applicable)	*N/A*	*N/A*	*N/A*	*N/A*		*N/A*

APPENDIX 3

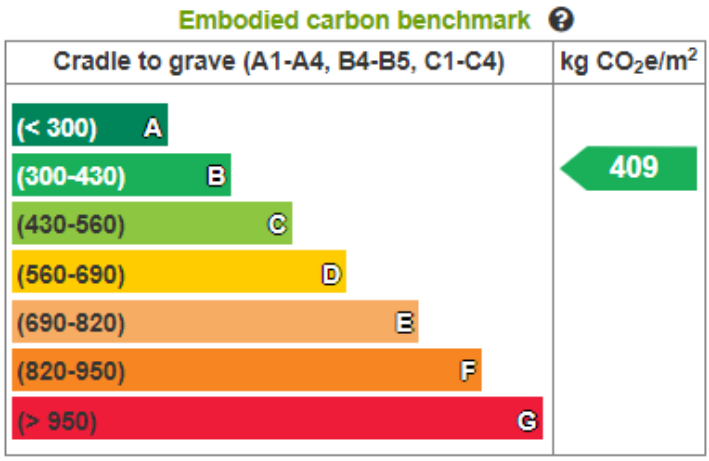
WLCA- Summary

APPENDIX 3 – WLCA - SUMMARY

9.1.10. A Whole Life-Cycle Carbon Assessment in accordance with the GLA requirements has been undertaken for the H1 Development. This has been done with the aim of recognising and encouraging measures to optimise construction product, consumption efficiency, and the selection of products with a low environmental impact (including embodied carbon) over the life cycle of the building. The WLCA has been run for the entire building, in line with the GLA requirements. This has been based on materials data provided by the project design team for applicable building elements required by the GLA methodology.

9.1.11. The following conclusions can be drawn from the results summarised in this report:

The proposed H1 Development achieved One Click LCA 'Carbon Heroes Benchmark' rating of B, demonstrating 409kgCO2e/m2.



9.1.12. 'Product Stage' emissions, associated with raw material supply, transport to manufacturing plant and manufacturing processes, form the largest contribution to the global warming potential of the H1 Development. The material contributing the most to kgCO2e emissions was found to be Metal (55.4%), followed by Concrete (25.6%), then Glass (12.4%).

9.1.13. The calculated operational energy WLC emissions for the development using current grid electricity carbon factors (SAP 10) are 1,623 kgCO2e/m2(GIA) and 425 kgCO2e/m2(GIA) for future decarbonised grid electricity.

9.1.14. The GLA WLC Module A-D, total emissions for the proposed development using current grid electricity carbon factors (SAP 10) are 1,917.51 kgCO2e/m2(GIA) and 41,489 kgCO2e/m2(GIA) for future decarbonised grid electricity.

APPENDIX 4

STRATEGIC APPROACH TABLE 1

APPENDIX 4 – STRATEGIC APPROACH – TABLE 1

Aspect	Building area	Steering Approach	Strategy Implemented	Target	Supporting analysis / studies/ surveys / audits
Circular economy approach for the existing site	All areas	BREEAM 2018 NC 'Excellent' rating targeted. Includes BREEAM Wst01 requirement: A compliant SWMP will need to be produced. Waste targets for non-hazardous construction waste generated from the building (excluding demolition and excavation waste) need to be set at no more than ≤ 7.5m3 or ≤ 6.5 tonnes per 100m2 of gross internal floor area. The contractor will also have procedures for monitoring, measuring and reporting hazardous and non-hazardous site waste. Where space on site is too limited to allow materials to be segregated, a waste contractor may be used to separate and process recyclable materials off site. Similarly, manufacturers take-back schemes could also be used. Where this is the case, sufficient documentary evidence must be produced which demonstrates that segregation of materials is carried out to the agreed levels and that materials are reused/recycled as appropriate. In addition, 95% for non-hazardous construction waste and for demolition waste will need to be diverted from landfill in accordance with GLA target.	A BREEAM compliant SWMP will be produced and incorporate the results from the pre-demolition / refurbishment audit. Pre-Demolition Audit to be undertaken to identify opportunities for reuse, recycling or recovery, disposal. E.g.: – Use of re-usable hoardings, wherever possible – Rainwater harvesting system for use in equipment and vehicle washing – Any suitable material from the existing site could be used as a piling mat. – Excavated material for filling whenever feasible	95% diversion from landfill (The higher value out of the GLA target and BREEAM target).	SWMP
Circular economy approach for the new development	All areas	Create flexible and adaptable spaces	Maximise building life cycle and asset value through flexible and adaptable spaces	Design for ease of change of use, adaptation to climate change, material longevity and replacement, material disassembly and reuse.	WLCA / Wst 06 Report
	All areas	Make holistic design decisions. In H1, the following has been implemented:	Utilise material LCA including reusability module as a key indicator in the design and material selection process.	Whole life new material embodied carbon target of 217kgCO2e/m2(GIA) based on RICS modules A-C.	WLCA

Aspect	Building area	Steering Approach	Strategy Implemented	Target	Supporting analysis / studies/ surveys / audits
		• CLT – hybrid structure • Modular structure • Steelwork also offsite	Utilise operational energy as key indicator in the design and material selection process.	38% regulated CO^2 emission savings over Part L 2013. Aspiring towards net zero energy consumption targets.	Energy statement
	All areas	Minimise potable water consumption	Review potable water consuming sanitaryware and plant. Use greywater recycling.	Where specified sanitary ware will achieve the following minimum water efficiency; • WC's • Taps • Showers • Urinals Should be 40%(litres/person/day) against a baseline performance. In H1 there is also Greywater harvesting	BREEAM pre-assessment
	All areas	Maximise material reuse and minimise waste	Design for end of life reuse and recycling throughout the project.	95% diversion from landfill at end of life (GLA target)	Sustainable Procurement Plan Pre-Demolition Audit Sustainability Statement Architecture reports (DAS) Structural technical report Waste and recycling strategy BREEAM Pre-assessment
Circular economy approach for municipal waste during operation	All areas	BREEAM 2018 NC 'Excellent' rating targeted. Includes BREEAM Wst01 requirement Minimise operational waste to landfill	Waste transferred from small localised receptacles and taken to recycling area next to the delivery area Primary waste collection in relevant locations ensure that waste can be collected and then taken to the relevant final recycling reciprocal in the delivery area. Keeping the final recycling area in one place ensures that refuse collection services can locate and pick up the relevant waste reciprocals effectively.	A minimum of 10m2 for buildings ≥5000 m2 An additional 2m2 per 1000m2 of net floor area where catering is provided (with an additional minimum of 10m2 for buildings ≥5000m2). A minimum of 65% of municipal waste to be reused, recycled or composted.	BREEAM Pre-assessment Waste and Recycling Strategy

APPENDIX 5

CIRCULAR ECONOMY COMMITMENTS TABLE 2

APPENDIX 5 – CIRCULAR ECONOMY COMMITMENTS – TABLE 2

Building " Layer"	Site	Substructure	Superstructure	Shell/Skin	Services	Space	Stuff	Construction stuff	Summary	Challenges	Counter actions + Who + When	Plan to prove and quantify
Section A: Conserve Resources												
Minimising the quantities of materials used	Pre-enabling works audit to be undertaken	Specifying concrete materials and reinforcements with recycle contents as feasible.	Lean design principles targeted. In H1 there are: • CLT & Studies of façade. • size of planks to minimise waste have driven the project. • EPD certification	Materials chosen for longevity, adaptability, flexibility and reusability or recoverability and to minimise operational energy consumption. In H1 60-75% recycled aluminium in the facade	Avoid over-specifying the required loads for the services.	Avoid additional finishes were not required. In H1 it is not proposed to use false ceilings (exposed services strategy)	Client to be involved in the specification throughout the process.	Manufacturers' packaging take-back schemes could also be used to reduce the packaging. Best practice material procurement to minimise stockpiling and reduce risks of damages and waste; accurate material quantity to avoid over ordering; reuse of existing materials where feasible.	Encouraging measures to optimise construction product consumption efficiency and the selection of products with a low environmental impact (including embodied carbon), over the life cycle of the building.	New constructions require large quantities of materials.	Structural Engineer to optimise the design of substructure and superstructure	Material efficiency review exercise at next stage of design. Bill of quantities analysis against material benchmarks.
Minimising the quantities of other resources used (energy, water, land)	A Whole Life Carbon Assessment has been undertaken and accompanies the planning application (and is summarised in Appendix 3) aiming to reduce the embodied and operational carbon emissions	A Whole Life Carbon Assessment has been undertaken and accompanies the planning application (and is summarised in Appendix 3) aiming to reduce the embodied and operational carbon emissions	Designing for disassembly and adaptability to avoid unnecessary materials use, cost and disruption arising from the need for future adaptation works as a result of changing functional demands and to maximise the ability to reclaim and	Designing for disassembly and adaptability to avoid unnecessary materials use, cost and disruption arising from the need for future adaptation works as a result of changing functional demands and to maximise the ability to reclaim and	The consumption of potable water is minimised in sanitary applications and cooling systems by encouraging the use of low water use and water efficient fittings, technologies and processes. Greywater recycling is also proposed. The development is	Floor areas designed to provide flexibility to potentially accommodate other uses in the future.	To be further considered during later stages and fitout design.	The contractor will be required to monitor, and report energy and water use during construction works on-site. (BREEAM Man 03)	Disassembly and adaptability strategy will be carried out. Monitoring and reporting of energy and water use during construction works.	New construction require large quantities of materials due to the size of the buildings.	Ensure structural design is optimised (Structural engineer) Preconstruction supply chain engagement	Review exercise at next stage of design.

Building " Layer"	Site	Substructure	Superstructure	Shell/Skin	Services	Space	Stuff	Construction stuff	Summary	Challenges	Counter actions + Who + When	Plan to prove and quantify
			reuse materials at final demolition in line with the principles of a circular economy. A Whole Life Carbon Assessment has been undertaken and accompanies the planning application (and is summarised in Appendix 3) aiming to reduce the embodied and operational carbon emissions	reuse materials at final demolition in line with the principles of a circular economy. A Whole Life Carbon Assessment has been undertaken and accompanies the planning application (and is summarised in Appendix 3) aiming to reduce the embodied and operational carbon emissions	being designed to be highly energy efficient, as confirmed within the Energy Strategy, accompanying the Planning Application. A Whole Life Carbon Assessment has been undertaken and accompanies the planning application (and is summarised in Appendix 3) aiming to reduce the embodied and operational carbon emissions							
Specifying and sourcing materials responsibly and sustainably	Sustainable procurement plan to be in place at an early Stage of the design in line with BREEAM Mat 3. Prioritise locally sourced materials where possible	Materials to be certified in line with BREEAM Mat 3, i.e. - BES6001 - FSC - PEFC - CARES - ISO14001 Concrete GGBS content to be	Prioritise products certified with high tier such as BES6001 Concrete GGBS content to be optimised. Recycled content of structural steel to be	Prioritise façade systems with EPDs and compare façade manufacturers and their carbon emissions.	Source materials for services with a high percentage of recycled content, and recyclable content.	Whenever possible source local materials	Whenever possible source local materials	All timber and timber-based products used during the construction process of the project to be sustainable timber. Sustainable Procurement Plan to be developed and implemented.	Materials to be responsibly sourced, and locally sourced where possible. Structural elements to have high recycled content	Potential cost premium especially for high recycled content materials due to limited supply. Structural constraints for higher GGBS content.	Ensure structural design is optimised Preconstruction supply chain engagement	Certificates to be submitted

Building " Layer"	Site	Substructure	Superstructure	Shell/Skin	Services	Space	Stuff	Construction stuff	Summary	Challenges	Counter actions + Who + When	Plan to prove and quantify
		optimised. Whenever possible, use of materials that can be reused at end of life cycle.	maximised as per Structural Engineer specification, aiming to 80%. Whenever possible, use of materials that can be reused at end of life cycle.					Plan to be reviewed with subcontractors .				
Section B: Design to Eliminate Waste (and for ease of maintenance)												
Designing for reusability / recoverability / longevity / adaptability / flexibility	N/A	N/A	Where possible designing for disassembly and adaptability to reduce waste and cost associated with future refurbishment or fit-out works and ultimately in demolition. Where possible improve the ability to cost-effectively reuse and recycle materials and increase the lifetime value of materials and products. Where possible use standardised Components. In H1 implemented: • Precast roof (off site)	Modular assembly of curtain walling Off-site fabrication Disassembly strategy Standardised components where possible	Pipework and ductwork are sheet metal and can be recycled for new pipes and ducts / Recycled pipework and ductwork can be specified Air handling unit: coils can be stripped down and so motors have copper wire to be recycled Materials recycled as much possible	Where possible designing for disassembly and adaptability to reduce waste and cost associated with future refurbishment or fit-out works and ultimately in demolition.	To be further considered during the fitout.	Sustainable Procurement Plan to be developed and implemented. Plan to be reviewed with subcontractors .	Reduce material use in building design. Encourage the reuse of existing materials. Encourage the use of materials with higher levels of recycled content. Where possible use alternative design and construction methods that result in lower material usage and waste levels.	Where possible avoid design solutions which constrain disassembly / recoverability.	Review of Disassembly /Adaptability / recoverability during detailed design. Input is required from structural engineer, architect, contractor	Undertake lessons learnt at review at decommissioning

Building " Layer"	Site	Substructure	Superstructure	Shell/Skin	Services	Space	Stuff	Construction stuff	Summary	Challenges	Counter actions + Who + When	Plan to prove and quantify
			• Disassembly of timber and CLT									
Designing out construction, demolition, excavation, industrial and municipal waste arising	Through the Site Waste Management Plan (SWMP) design out waste (Wst 1)	N/A	Where possible use - Modular construction - DfMA approaches - Supplier take-back schemes - Using for a lean construction, an inventory management strategy	Where possible use - Modular construction - DfMA approaches - Supplier take-back schemes - Using for a lean construction, an inventory management strategy	Where possible use - Modular construction - DfMA approaches - Supplier take-back schemes - Using for a lean construction, an inventory management strategy	Where possible use: - Supplier takeback schemes - Minimising Packaging - Using for a lean construction, an inventory management strategy	To be further considered during the fitout.	Procedures and commitments for minimising waste must be in place. Procedures for monitoring, measuring and reporting waste should also be implemented.	Use regular / modular design. Use a lean construction, where possible reducing packaging and using supplier takeback schemes	Take back schemes are still challenging	Review at Detailed Design	SWMP
Section C: Manage Waste												
Demolition waste (how waste from demolition of the layers will be managed)	In H1, any existing slab has been reused on site	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavation waste (how waste from excavation will be managed)		In H1, excavation has been reduced as part of the exercise to reduce the volume of the basement	In H1 there is a further option considered, to see if it's possible to further reduce the length of piles especially form the east and reduce the secant pile walls. 1 pile mat instead of 2 if possible.	N/A	N/A	N/A	N/A	N/A	N/A	In H1 there are excavated materials because of the basement Given the confinity, will be mainly offsite. It's challenging to find a local area.	N/A	N/A
Construction waste (how waste arising from construction of the layers	95% of the waste will be diverted from landfill. (Wst 01)	N/A	95% can be crushed and recycled	95% of the waste will be diverted from landfill. (Wst 01) The project target of total waste is ≤	95% of the waste will be diverted from landfill. (Wst 01) The project target of total waste is ≤	To be further considered during the fitout.	To be further considered during the fitout.	Where space on site is too limited to allow waste materials to be segregated, a waste contractor may	95% of the waste will be diverted from landfill. (Wst 01) The project target of total waste is ≤	To reduce the total waste to the targets	Preconstruction review with contractor	The SWMP datasheets should be provided Custody/application/destination of

Building " Layer"	Site	Substructure	Superstructure	Shell/Skin	Services	Space	Stuff	Construction stuff	Summary	Challenges	Counter actions + Who + When	Plan to prove and quantify
will be reused or recycled)	The project target of total waste is ≤ 7.5m3 per 100m2 per 100sqm of gross internal floor area. (Wst 01)			7.5m3 per 100m2 per 100sqm of gross internal	7.5m3 per 100m2 per 100sqm of gross internal			be used to separate and process recyclable materials off site.	7.5m3 per 100m2 per 100sqm of gross internal			reused/recycled materials. BREEAM Wst 01 credit
Municipal and industrial waste (how the design will support operational waste management)	N/A	N/A	A minimum of 10m2 for buildings ≥5000 m2 An additional 2m2 per 1000m2 of net floor area where catering is provided (with an additional minimum of 10m2 for buildings ≥5000m2). A minimum of 65% of municipal waste to be reused, recycled or composted.	N/A	N/A	N/A	N/A	N/A	Waste transferred from small localised receptacles and taken to recycling area next to the delivery area Primary waste collection in relevant locations ensure that waste can be collected and then taken to the relevant final recycling reciprocal in the delivery area. Keeping the final recycling area in one place ensures that refuse collection services can locate and pick up the relevant waste reciprocals effectively	Site constraints	User to consider ongoing waste management	BREEAM Pre-assessment Waste and Recycling Strategy

lendlease