HOARE LEA

The Goodsyard.
London.
Bishopsgate Goodsyard Regeneration Limited.

SUSTAINABILITY
DRAFT CIRCULAR ECONOMY STATEMENT

REVISION B – 05 JUNE 2020

Audit Sheet.

Rev.	Date	Description	Prepared	Verified
A	27/05/2020	Draft	YG/WB	TS
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Contents.

Executive Summary

1.1 Scope

This report constitutes a Draft Circular Economy Statement which sets out the strategic approach to Circular Economy implemented by the project. As Bishopsgate Goodsyard is a masterplan-led development, design development has been is largely concept in nature. This statement is accompanied by more detailed information relating to certain elements of the development (Plot 2 and Plot 7) for which full details are submitted as part of the planning application. Therefore, the Circular Economy Statement focuses on the work carried out to define a strategic approach to Circular Economy principles for the project and identify high level strategic opportunities early in the development process.

1.2 Development Description

The site is located in a strategic position to the south east of Shoreditch, North of Whitechapel and north east of the City of London. The development is located on the site of the former Bishopsgate Goods Yard railway station, and since its demise in the late 1960's the site has been derelict. The proposed amendments consists of comprehensive redevelopment of the site including up to 139,023 m^2 Gross External Area (GEA) of commercial floorspace (B1 use), up to 19,547 m^2 GEA of retail floorspace (A1, A2, A3 and A5 use) the provision of up to 500 residential homes and the provision for up to a 150 room hotel and public realm.

1.3 Project Team

Discipline	Organisation
Client / Developer	Hammerson & Ballymore
Architect	FaulknerBrowns / Chris Dyson Architects / Buckley Grey Yeoman
Landscape Architect	Spacehub
Building Services Consultant	Hoare Lea
Sustainability Consultant	Hoare Lea
Civils Consultant	WSP
Ecologist	AECOM
Acoustic Consultant	Hoare Lea / Temple
Vertical Transportation Consultant	Hoare Lea
Transport Consultant	WSP
Environmental Consultant	Temple

Table 1: Key Project Team Members

1.4 Summary of the approach to circular economy

The construction and operation of the built environment consumes 60% of all materials in the UK. At the end of life, materials are often diverted from landfill, but in reality, down-cycled, reducing their value.

There is growing industry consensus that the way we design, build, operate and dispose of our buildings and associated facilities needs a major overhaul to obviate waste and increase efficiency. There is an incredible breadth of opportunity that this shift in approach will create across the entire supply chain.

Designing for longevity and adaptability and maximising the use of recycled and renewable materials could reduce greenhouse gas emissions while increasing innovation opportunities and economic growth. Replacing finite and fossil-based materials with responsibly managed renewable materials can decrease carbon emissions whilst reducing dependency on finite resources.

Before considering future waste elimination and sustainable waste management practices though, opportunities for retaining and refurbishing /re-purposing existing buildings, materials and other resources on site have been assessed by the design team to maximise the residual value of existing structures and conserve resources by reducing the need for new materials.

Heritage lies at the heart of the Goodsyard site re-development. The site comprises various listed assets and elements with distinctive character. Some of these elements, such as the raised platform structure, arches and viaducts are significant built assets with structural integrity. Many of the remaining historic buildings and structures are capable of being re-used in exciting new ways. A conscious choice has been made to retain the site heritage as part of the Proposed Amendments. In line with this overarching approach to heritage emphasising re-use and retention, the design team have developed the scheme to ensure that the residual value of existing structures is maximised, and new resources are conserved.

New buildings developed on the site will follow best practise principles in their design and construction with the overarching aims of reducing material usage, minimising waste, and embedding longevity, flexibility and adaptability. It is expected that the different building typologies will lead to a variance in the final strategies adopted across the site. Furthermore, advances in innovation and best practise over time combined with effective feedback loop mechanisms are expected to lead to continuous improvement as the plots are brought forward.

A project-specific Operational Waste Management Strategy has been developed for the masterplan covering both the detailed and outline components making all necessary allowances to ensure that waste arisings can be accommodated under a full occupancy scenario. The strategy considers the flow of waste from waste generator (i.e. residents/tenants) through to storage and collection. The Strategy outlines how the development has been designed to be sustainable and forward- thinking in its approach to waste and recycling, whilst remaining workable during operation.

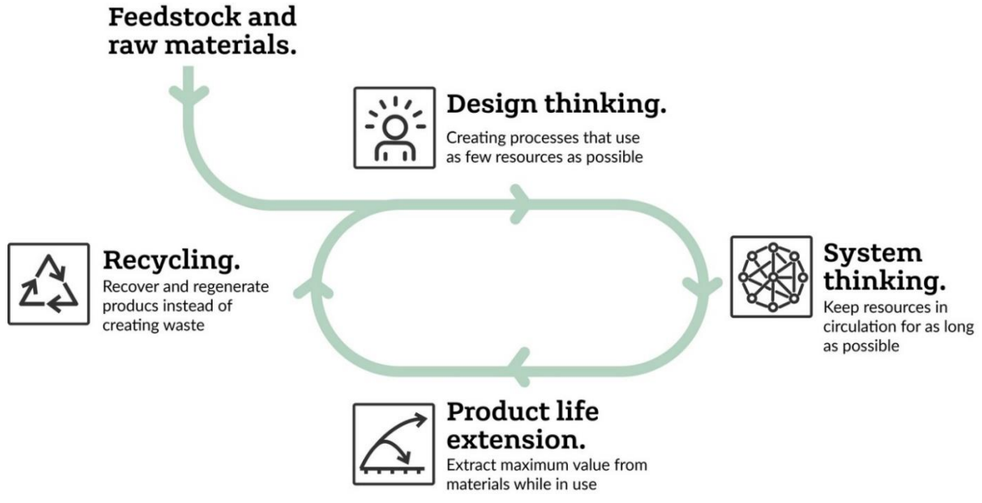


Figure 1: Circular Economy overarching principles

2. Development Description

The site is located in a strategic position to the south east of Shoreditch, North of Whitechapel and north east of the City of London. The site is approximately 4.4 hectares in area and is bounded by Bethnal Green Road to the north, Brick Lane to the east, a rail line (serving Liverpool Street Station) to the south and Shoreditch High Street to the west. Braithwaite Street/Wheler Street runs through the site connecting Bethnal Green Road to Commercial Street. The site is centred on Ordnance Survey (OS) National Grid Reference (NGR) TQ 33618 82233.

Figure 2: Site Location

The development is located on the site of the former Bishopsgate Goods Yard railway station, originally built in 1840 as a passenger station, and converted to goods usage in 1884. The Goods Yard is recognised as one of the great rail stations of London. Since its demise in the late 1960's the site has been derelict.

The next chapter in its life is to be defined by re-use as an inner city site that has the potential to be a valuable contributor to urban growth, population increase, expansion and commerce and the general regeneration of this part of London.

The project vision is to open to the public one of London's most important historic industrial assets, transforming it into a unique, characterful and authentic city quarter. The heritage assets that exist within the Goodsyard are unique in character and scale, and many of the remaining historic buildings and structures are capable of being re-used in exciting new ways that will generate new life.

The 2015 Amended Scheme proposed the comprehensive mixed-use redevelopment of the site comprising of up to 1,356 residential units (Class C3), up to 65,859 m^2 Gross Internal Area (GIA), retail (Class A1, A2, A3 and A5) up to 17,499 m^2 GIA, assorted uses (Class D1, D2, sui generis) and 22,642 m^2 of new public open space and landscaping.

Following further consultation with the GLA, London Borough of Tower Hamlets (LBTH) and London Borough of Hackney (LBH), in October 2019 the Applicant submitted the Proposed Amendments which consist of: a comprehensive redevelopment of the site which will include the provision of up to 139,023 m^2 Gross External Area (GEA) of commercial floorspace (B1 use), up to 19,547 m^2 GEA of retail floorspace (A1, A2, A3 and A5 use) the provision of up to 500 residential homes and the provision for up to a 150 room hotel and public realm.

The design of the public realm and landscape for The Goodsyard builds on the principles of the masterplan and is founded on the historic fabric of The Bishopsgate Goods Yard. The provision of significant new public realm and green infrastructure are a key focus for the regeneration of this lost part of Shoreditch. The space between buildings has been re-thought to respond more effectively to the needs of the local community and improve the permeability of the site. The design is to create a unique three-dimensional landscape - the concept for which evolves 'From The Ground Up'.

The Proposed Amendments adopt a new approach to public spaces, greater emphasis on connectivity and permeability of the site and retains more of the site heritage. It encourages links between people through the provision of a network of public spaces to develop sense of place and enhance relationships between the realm and its surrounding buildings.

Use type	Gross External Area (GEA) Totals (Maximum Parameter)
Retail (A1, A2, A3 and A5)	19,547 m2
Office (B1)	139,023 m2
Hotel (C1)	11,595 m2
Residential (C3)	48,508 m2
(Non-resi inst. / Ass / Leisure (D1/D2)	7,074 m2
Sui Generis	301 m2
Total (including Plant / Ancillary & Service Yard)	243,856 m2

Table 2: Area Schedule.

The masterplan has been developed to enable phased development to allow for a meaningful place to be created in each phase and to grow the community in stages.

The Proposed Amendments consist of a hybrid application including an outline application for the wider masterplan accompanied by detailed design proposals for Plot 2 (commercial building with retail at the ground floor and Plot 7 (mix of retail uses within the Oriel as well as the potential for Class D1/D2 uses within the Braithwaite arches with public open space above).

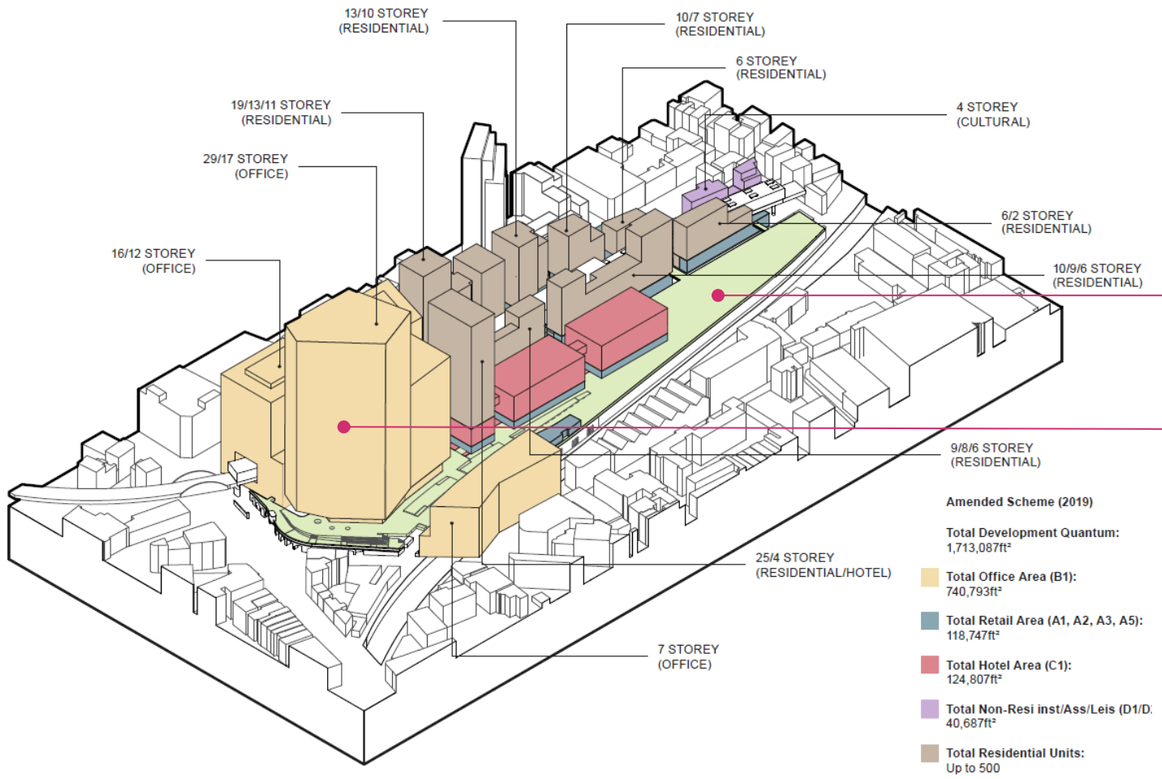


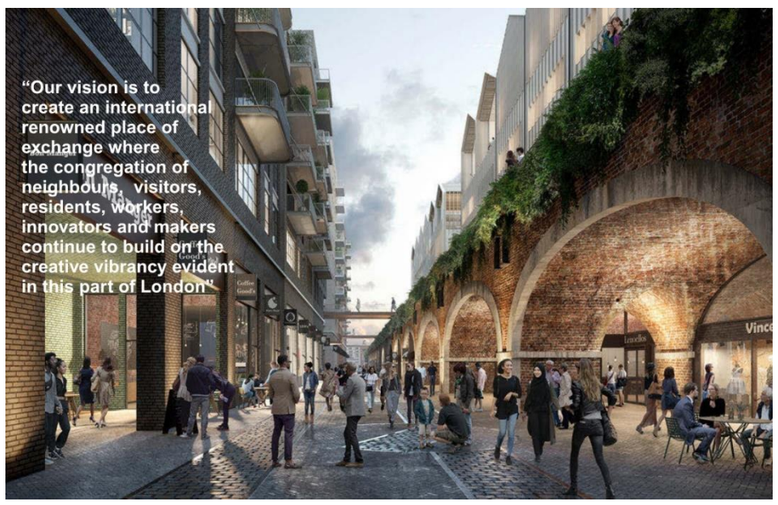
Figure 3: Amended Scheme Axonometric, View from South West.

Plot 7

Plot 7 is located at grade (ground level) under the historic Grade II Listed Braithwaite Viaduct structures, proposed uses are for retail, food and beverage, community and ancillary uses. Plot 7 also includes works to and under the Oriel gateway and adjoining structures for retail food and beverage uses.

Plot 2

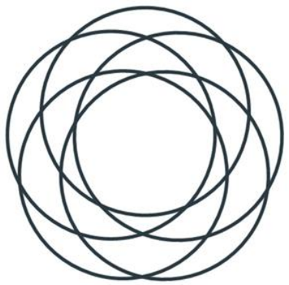
Plot 2 is located on the western edge of the masterplan area and is bounded to the west by Shoreditch High Street. The building is to provide predominantly office accommodation with retail uses activating areas adjacent to public realm and would extend up to 17 - 29 storeys (the tallest building proposed). This building is being submitted with all matters in detail. The reduction in height of Plot 2 means that no part of the scheme is now visible in views from the South Bastion of Tower Bridge.



3. Method Statement

A holistic, interdisciplinary approach has been adopted to define and communicate the sustainability strategy for the Goodsyard. The proposed framework utilises systems thinking and spans the whole project lifecycle with the project legacy in mind from day one.

The design of the Proposed Amendments is based on sustainable design and construction principles as informed by planning requirements and industry best practice. The project has utilised a sustainability framework based on five defined factors; the people, the building, the social network, the natural environment, and the economic aspects to capture the multi-faceted sustainability benefits and values that the development seeks to bring to the application site; local community; surrounding businesses and future building users.



A FRAMEWORK FOR
SUSTAINABLE DEVELOPMENT

CREATING VALUE

Social Capital	Placemaking - By enabling community identity, SOCIAL VALUE is increased where a great place brings people together, and creates a community.
Human Capital	People-centred design - With a focus on people, HUMAN VALUE is increased where quality and longevity of life is improved and happiness is increased.
Natural Capital	Enhancing the environment - By seeking to achieve positive gain, NATURAL VALUE is increased where existing quality is protected and new complementary resources are introduced.
Physical Capital	Mobility and form - Creating high quality buildings ensures PHYSICAL VALUE is increased where buildings and infrastructure design for longevity, and allow people to navigate easily on foot/by bicycle.
Economic Capital	Local prosperity - By ensuring equity for all, ECONOMIC VALUE is increased where all users of a place feel they have a level of ownership of the asset and buy-in to the outcomes it is seeking to achieve.

3.1 Circular Economy Approach

- Working with all key stakeholders, an overall sustainability vision for the masterplan has been defined and agreed.
- A series of sustainability workshops have been held during the master-plan concept design stages, in collaboration with the client and project team to help create a sustainability charter.
- The sustainability charter, based on the five capitals framework, defines the project vision, themes and intended outcomes. Circular economy aspects are captured within both natural and physical capital.
- A detailed delivery plan capturing all elements of the strategy, target 'owners' and timelines for the proposed activities and milestones has been developed. It is intended that the agreed objectives are tracked and monitored throughout project delivery and operational phases.
- Circular economy principles have been reviewed by the project team as part of this process, specifically in relation to the physical capital, and the re-use of existing buildings and heritage aspects on-site.
- Sustainability certification is also being pursued, in the form of BREEAM assessment of the detailed elements (at this stage). A BREEAM pre-assessment exercise has been undertaken for Plots 2 and 7, via workshops in conjunction with the project team. This exercise has assisted in more detailed consideration of specific targets for these elements of the scheme.
- Additional workshops will be held during the detailed design stages to explore further opportunities to incorporate key Circular Economy principles into aspects of the design, procurement and construction process.
- As the proposals move toward construction stage, early engagement will be sought with contractors to assist in refining strategies for delivery.
- Robust data collection plans will be implemented through design and construction to facilitate ongoing monitoring against intended outcomes.
- Given the scale of the development and the likely phased nature of the programme over several years, it is expected that the strategies and approach will evolve over time.

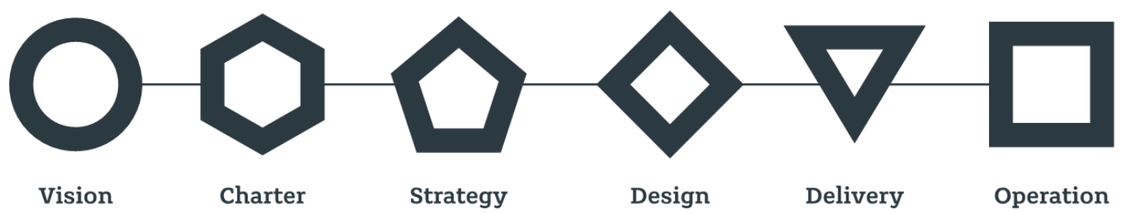


Figure 4: Sustainability Strategy – Delivery Phase (Inception to Completion).

4. Circular Economy Aspirations

Consumption of natural resources has historically followed a linear approach, heightened by the industrial revolution, which while lifting the living standards of millions, also dramatically increased pressure on environmental resources. Under the traditional take-make-use-dispose model raw materials are collected, then transformed into products that are used until they are finally discarded as waste. Apart from failing to capture value over the lifetime of products, this system also produces a range of negative externalities that include resource scarcity, unsustainable levels of water extraction, rising carbon emissions, and widespread ecosystem pollution.

The built environment sector is a major consumer of natural resources. There is growing industry consensus that the way we design, build, operate and dispose of our buildings and associated facilities needs a major overhaul to obviate waste and increase efficiency. There is an incredible breadth of opportunity that this shift in approach will create across the entire supply chain.

Hammerson have a well-developed sustainability agenda and is committed to continuously evolving its approach to achieve stronger results for the benefit of all. Their "Positive Places" strategy provides the framework for the organisation's sustainability efforts for making change happen. In 2015 it defined five core commitments pursued at corporate level. In 2017 Hammerson's sustainability vision evolved further setting a bold new objective to become net positive by 2030 in the organisation's four key material impact areas:

- Carbon
- Resource Use;
- Water; and
- Socio-Economic Impacts

Simply put, this means that a business should put back more into our environment and society than it takes out. Hammerson interprets its "Net Positive for Resource Use" ambition as making sure that waste avoided, recycled or re-used exceeds materials used that are neither recycled, renewable or sent to landfill. It includes:

- All operational waste (including tenant waste managed by Hammerson);
- All construction and fit out waste; and
- All materials used in our construction and major refurbishment programmes and in Hammerson managed fit out projects

"Our assets have significant material impacts on the landscape, the environment, their local communities and local and regional economies. Such significant impacts must be managed responsibly, through real collaboration with our suppliers and clients; with respect for their local communities and with enough ambition to make them fit for the future generations they will serve.

We are designing assets now that we expect to be part of our built landscape for the next 50 years and beyond. Making sure they are designed to remain fit for purpose over such a significant time frame and through a period of rapid environmental, technological and social change is a major challenge. Our Positive Places framework was established to help us meet this challenge."

Louise Ellison – Head of Sustainability, Hammerson Plc

The approach developed for the Proposed Amendments is aligned with and draws upon Hammerson's wider sustainability approach whilst focusing on the specific elements most relevant for the project given its context.

Hammerson's Net Positive targets have been divided into three 5-year phases starting in 2016 and ending on 31 December 2030. As the Goodsyard masterplan has been prepared to enable phased development with a construction programme likely to stretch over several years, there is an opportunity to adopt a living lab approach and deliver continuous improvement via ongoing monitoring and feedback loops as each plot is brought forward.

Hammerson have extensive experience both developing and managing assets, often remaining involved with the operation and management of development projects or parts thereof, and therefore adopt a whole life-cycle approach to development.

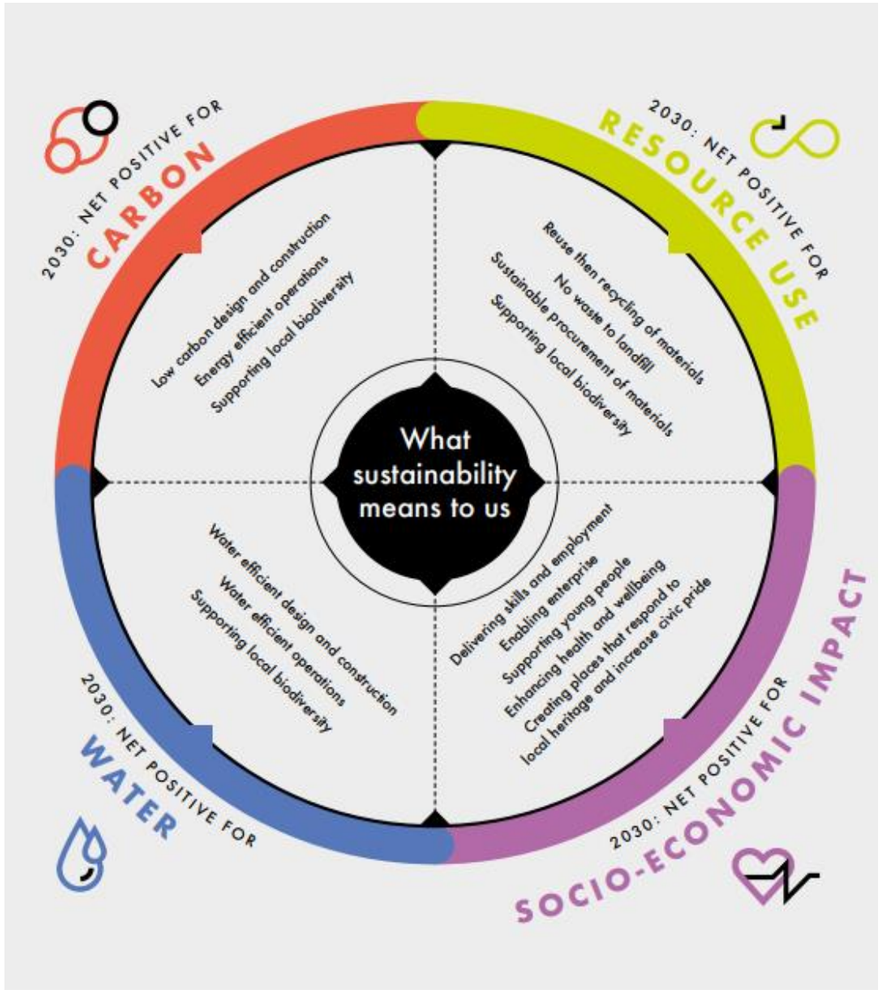


Figure 5: Hammerson Creating Positive Places – Net Positive Areas.

5. Circular Economy - Strategic Approach

Circular Economy considerations have formed a key part of the project sustainability strategy, given the scale of the development, and the client's wider sustainability aspirations. It is recognised that in order to implement Circular Economy principles most effectively, it is helpful to explore high level strategic opportunities as early in the development process as possible.

It should be noted that the masterplan is of significant scale, and is likely to be built out over a number of years. The sphere of influence in relation to circular economy principles therefore ranges from early strategic design decisions about how the masterplan is integrated into the existing site, to detailed construction methodologies of the later plots, to be developed in the coming years.

Given this context, different approaches have been adopted for different areas of the development, particularly with respect to the retention of existing structures compared to new buildings. This is evident in the variation in focus of the site-wide Circular Economy strategy and the more detailed commitments for Plot 2 and Plot 7.

As discussed earlier, a series of sustainability-focused workshops were held in collaboration with the client and project team to help craft a holistic and consistent sustainability approach for the masterplan. Considerations around resource efficiency, material circularity and ethical sourcing have been a critical element of the overarching sustainability strategy.

It is acknowledged that the approach to circular economy will evolve as the design evolves, or in response to wider considerations and feedback from the GLA or other stakeholders.

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
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 0

Figure 6: GLA Building Layers (Guidance Section 2.3)

5.1 Existing Site - Circular Economy Approach

The masterplan design adopts an approach to development that is an authentic response to its context, past and present. The existing site contains a number of important heritage assets such as the Oriel Gateway, the historic buildings on Sclater Street, the boundary wall and the viaduct structures. The viaduct structure and arches represent a significant built asset.

Figure 7: Existing heritage assets: Sclater Street, London Rd, Grade II listed Braithwaite Viaduct.

The masterplan follows the principle that, wherever feasible, these historic structures are retained and deployed to be significant features of the new development. For example, the existing boundary walls provide a characterful edge to the surrounding streetscape

Furthermore, wherever possible these assets are utilised as structural elements. For example, the viaduct and arches allow for new uses to be deployed within, and their super structures have the capacity to carry new structures above.

This approach ensures that the Victorian heritage of the site is put back to use to generate usable floor space as part of the development, reducing the quantity of new materials required.

A hierarchical approach has been adopted in relation to the existing structures on-site, in-line with Circular Economy principles of maintaining assets at their highest value wherever possible:

1. The existing structure is retained and it is integrated into a new building;
2. The existing structures are retained and they stand alone;
3. The existing structures form the base to bring new structures to ground;
4. The existing structures are in such a poor condition that it is not possible for them to be retained, reused or repurposed

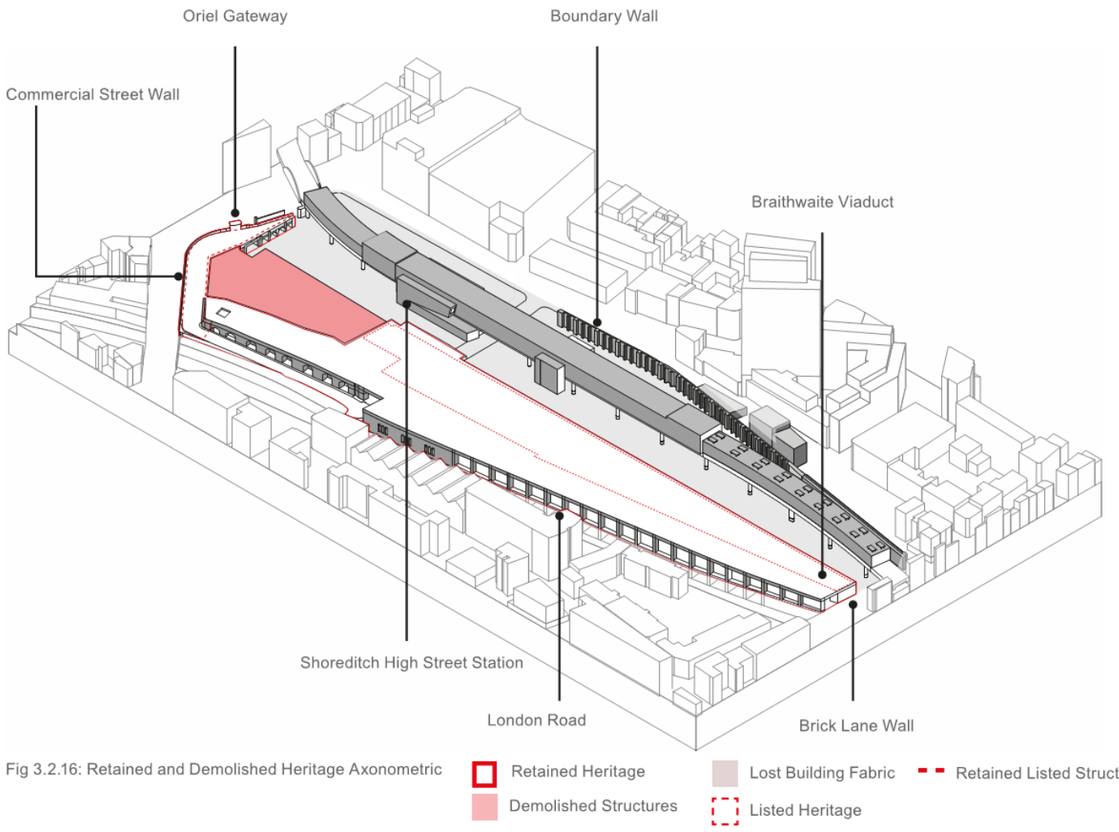


Figure 8: Retained / Demolished Heritage Axonometric (Figure 3.2.16 within DAS – Part 3 of 20)

The masterplan places the buildings with the most significant footprints and structural solutions in locations where the historic fabric is removed (red). New buildings that integrate with the finer historic grain are scaled to fit on available footprints (grey).

New buildings that are founded on the existing structures are defined by the load capacity capabilities of the existing structure. The masterplan proposes buildings of 4-5 storeys in this location, similar in scale to the structures that existed here when the Goodsyard was operational.

Key retained historic features are the Oriel Gateway, a significant local landmark on Shoreditch High Street, the boundary wall that sets the character of the edge condition on Sclater Street, the Braithwaite Viaduct, a currently inaccessible listed structure with historic significance, London Road to the southern edge of the site and the eastern edge of the viaduct and boundary wall that address Brick Lane.

5.2 New Development - Circular Economy Approach

New buildings developed on the site will follow best practise principles in their design and construction with the overarching aims of reducing material usage, minimising waste, and embedding longevity, flexibility and adaptability.

The following focus areas will be reviewed for each plot to maximise opportunities to embed circular economy principles:

- Lean design principles
- Material efficiency
- Adaptability
- Flexibility
- Low carbon construction
- Offsite / modular construction
- Design for Manufacture and Assembly (DfMA)
- Dry construction techniques minimising wet trades on-site
- Minimisation of demolition / excavation waste
- Re-use of materials on-site
- Recycled content
- Material circularity
- Material procurement via leasing frameworks
- Responsible procurement
- Sustainable sourcing
- Local sourcing
- Supply chain engagement
- Tenant engagement
- Structural and fabric resilience
- Life-cycle assessments
- Disassembly and demountability

It is expected that the different building typologies will lead to a variance in the final strategies adopted across the site. Furthermore, advances in innovation and best practise over time combined with effective feedback loop mechanisms are expected to lead to continuous improvement as the plots are brought forward.

Consideration would be required from the earliest stages, with the overarching circular economy ambitions embed in the brief for each plot. Active engagement would be required from early design stages.

Some project examples are shown below to indicate relevant experience and provide examples of some relevant Circular Economy outcomes achieved previously on new development projects of a comparable scale to the Goodyard individual plots.

Watermark, Southampton (Hammerson - Completed)

- BREEAM Excellent
- Constructing Excellent Sustainability Award 2017
- Construction waste generated: 5.9 $m^3/100m^2$
- Construction waste diverted from landfill: 97%
- Demolition waste diverted from landfill: 99.5%
- Excavation waste diverted from landfill: 99.9%
- FSC timber: 74%

Elliots Field, Rugby (Hammerson - Completed)

- BREEAM Outstanding
- Construction waste generated: 4.3 $m^3/100m^2$
- Construction waste diverted from landfill: 99%
- Demolition waste diverted from landfill: 98%
- Excavation waste diverted from landfill: 100%
- FSC timber: 95%

Wardian, London (Ballymore - In Construction)

- Construction waste target: <7.5 $m^3/100m^2$
- Diversion from landfill target: >85%
- BRE green guide ratings target: A+ to D for key building elements.
- Timber procurement target: All timber within key building elements responsibly sourced, e.g. Forest Stewardship Council (FSC) certification.
- Responsible sourcing target: >80% of materials in main building and finishing elements responsibly sourced.

Figure 9: Project examples highlighting relevant Circular Economy outcomes

5.3 Municipal Waste During Operation - Circular Economy Approach

As part of the its overall sustainability strategy, Hammerson has set itself a 2025 target to become Net Positive for operational resource use across the directly managed portfolio, corporate operations & development.

Figure 10: Hammerson 2019 Operational Waste Figures – Directly Managed Portfolio.

A project-specific Operational Waste Management Strategy has been developed for the masterplan covering both the detailed and outline components making all necessary allowances to ensure that waste arisings can be accommodated under a full occupancy scenario.

The strategy considers the flow of waste from waste generator (i.e. residents/tenants) through to storage and collection. The Strategy outlines how the development has been designed to be sustainable and forward-thinking in its approach to waste and recycling, whilst remaining workable during operation.

Sufficient storage for the segregation and storage of at least three waste streams (recycling, food and residual waste) in both individual units and communal bin stores will be provided to enable effective waste segregation and promote higher recycling and composting rates.

Innovative waste management strategies including compaction have been proposed in commercial waste stores. Waste compaction allows for more waste to be stored in the same space which helps to conserve valuable airspace and to extend the landfill's life span, thus reducing the need to build new sites.

Recyclable and residual waste will be stored in 1,100L bins, and food waste will be stored in 240L bins. Appropriate servicing arrangements have been made for the collection of residential waste by the LBTH waste collection vehicle. Storage requirements for non-residential waste have predominantly been based on a twice-weekly or daily collection frequency (plot and use-class dependant).

6. Strategic Approach Summary – GLA Table 1

Aspect	Phase / Building/ Area	Steering Approach	Explanation	Target	Supporting Analysis/Studies/Surveys/Audits
Circular economy approach for the new development	Site-wide	New buildings developed on the site will follow best practise principles in their design and construction with the overarching aims of reducing material usage, minimising waste, and embedding longevity, flexibility and adaptability. The following focus areas will be reviewed for each plot to maximise opportunities to embed circular economy principles: – Lean design principles – Material efficiency – Adaptability – Flexibility – Low carbon construction – Offsite / modular construction – Design for Manufacture and Assembly (DfMA) – Dry construction techniques minimising wet trades on-site – Minimisation of demolition / excavation waste – Re-use of materials on-site – Recycled content – Material circularity – Material procurement via leasing frameworks – Responsible procurement – Sustainable sourcing – Local sourcing – Supply chain engagement – Tenant engagement – Structural and fabric resilience – Life-cycle assessments – Disassembly and demountability	It is expected that the different building typologies will lead to a variance in the final strategies adopted across the site. Furthermore, advances in innovation and best practise over time combined with effective feedback loop mechanisms are expected to lead to continuous improvement as the plots are brought forward. Consideration would be required from the earliest stages, with the overarching circular economy ambitions embed in the brief for each plot. Active engagement would be required from early design stages.	95% diversion from landfill at end of life (GLA target)	Sustainability strategy Architecture reports Structural technical report ES Chapter 6: Waste Management BREEAM Pre-assessments Pre-construction engagement with main contractor and supply chain.
Circular economy approach for the existing site		Wherever feasible, historic structures are retained and deployed to be significant features of the new development. A hierarchical approach has been adopted in relation to the existing structures on-site, in-line with Circular Economy principles of maintaining assets at their highest value wherever possible: 1. The existing structure is retained and it is integrated into a new building; 2. The existing structures are retained and they stand alone; 3. The existing structures form the base to bring new structures to ground; 4. The existing structures are in such a poor condition that it is not possible for them to be retained, reused or repurposed	The site contains a variety of heritage assets including significant structural elements. This approach ensures that the Victorian heritage of the site is put back to use to generate usable floor space as part of the development, reducing the quantity of new materials required.	95% diversion from landfill (GLA target)	Structural site surveys Structural technical reports Heritage surveys and reports
Circular economy approach for municipal waste during operation	Site-wide	A project-specific Operational Waste Management Strategy has been prepared in accordance with relevant requirements, in order to embed and enable sustainable waste management in operation. This Strategy provides an overview of how the Revised Scheme has been designed so as to consider the flow of waste through the development, from waste generator (i.e. residents/tenants) through to storage and collection, in a sustainable manner during its operation. The Strategy outlines how the Revised Scheme has been designed to be sustainable and 'forward-thinking' in its approach to waste and recycling, whilst remaining 'workable' during the operation of the Revised Scheme.	Operational waste arisings have been determined, to enable a strategic approach to storage and collection is embedded into plot designs. Further details regarding specific waste composition and estimated quantities for these elements will be provided through revisions to this strategy at a later stage, if required, as the proposals develop.	65% diversion from landfill (GLA target)	Operational Waste Management Strategy Waste Storage and Collection Requirements & Calculations Waste Streams - Definitions and Responsibilities ES Chapter 6: Waste Management

Table 3: Strategic Approach.

7. Preliminary targets and commitments

This section focuses on the wider masterplan commitments and preliminary targets. More detailed information on the approach proposed for Plot 2 and Plot 7 can be found in Sections 8 and 9 below. In order to achieve Net Positive for Resource use, Hammerson have identified 5 key steps which apply to their portfolio:

1. *Minimise waste generated on our operational assets and maximise the recycling and reuse of waste materials on site.*
2. *Work with our contractors to minimise construction and demolition waste from our developments and maximise reuse and recycling.*
3. *Design waste out of our developments during the design phase, reducing resource consumption.*
4. *Minimise the use of resources that are neither recycled nor renewable through application of our design standards across all areas of work, including fit out.*
5. *Create innovative ways to offset any raw material use, and any waste sent to landfill.*

These organisational principles have been transposed to project level. Working with the client and wider design team, a preliminary agreement has been reached regarding the set of targets and commitments that the project will report against at detailed application stage.

As a site-wide strategy, the project has formulated commitments around the promotion of sustainable use of materials comprising several targets around materials and waste including priority given to renewable construction materials such as timber, diversion of construction waste from landfill, maximising the use of recycled or secondary aggregates giving preference to solutions available closer to the site, construction resource efficiency and an overarching ambition to reduce the project's supply chain carbon intensity from materials and manufacturing relative to standard industry performance to be achieved through measures including:

- "Smart" material choices (prioritisation of durable, biodegradable, recycled / recyclable materials and materials that can be reused or re-purposed, where possible)
- Incorporation of modular elements for higher levels of design flexibility and adaptability
- Procurement of products as a service – leasing access to a solution instead of buying it
- Product life extension through improved maintenance, remanufacturing, repairing and upgrading / upcycling
- Closed loop / Take back – working with manufacturers who take back used products to recover the value by using them to make new products.

An effective incorporation of circular economy principle represents a tremendous opportunity for the Goodsyard site and the UK as a whole. With its system-wide perspective, the circular economy has the potential to help us make better decisions about resource use, design out waste, provide added value for business and society, and proceed along a secure route to society-wide prosperity and environmental sustainability for future generations.

While specific values levels of ambition / benchmarks have been defined for some of the metrics, it is recognised that these are preliminary targets and commitments. They will be reviewed on a plot by plot basis and may be adjusted as appropriate at detailed design to respond to the specific requirements of each element and ensure that current best practice is being followed and opportunities to innovate are maximised. The preliminary targets and commitments will be replaced with specific commitments in the Detailed Circular Economy Statement.

There is a clear understanding that in order to achieve the ambitious objectives set for the project the design team will have to engage and collaborate extensively with the supply chain to foster knowledge sharing and fast track innovative ideas and techniques spanning the design, construction and operation stages thus enabling synergies.

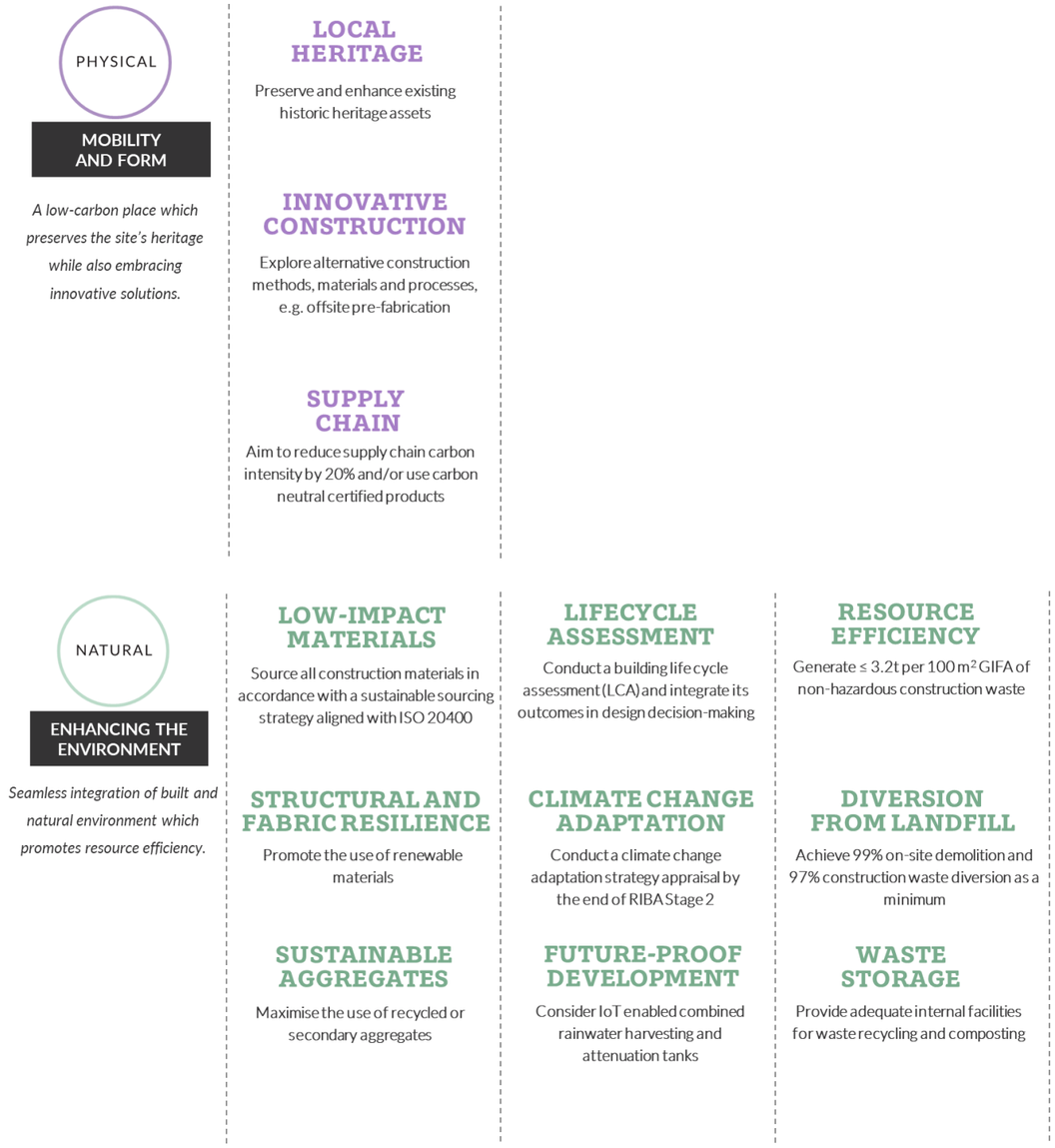


Figure 11: Masterplan Sustainability Strategy – Circular Economy Highlights.

8. Key Commitments for Plot 2 (Detailed Application) – GLA Table 2

*Related BREEAM credits. Note, in some instances numerical targets proposed here are beyond BREEAM requirements.

Building "Layer" (as per GLA guidance)	Site	Substructure	Superstructure	Shell/Skin	Services	Space	Stuff	Construction Stuff	Summary	Challenges	Counter-Actions + Who + When	Plan to prove and quality
	SECTION A: CONSERVE RESOURCES											
Minimising the quantities of materials used	Retention of elements of the existing archways (Mat 06)*	Retention of historic listed wall to form part of the base (Mat 06)*	Lean design principles adopted. Material efficiency review at detailed design. (Mat 06)*	Material efficiency review at detailed design. (Mat 06)* Expressed steel extrusions on the façade to be refined to minimise volume of material required. (Mat 01/06)*	Exposed services to be considered (i.e. exposed soffits with no suspected ceilings provided) (Mat 06)*	Limit any finishes installed prior to leasing to absolute minimum. (Mat 06)* Use of recycled raised access floors to be reviewed in detailed design.	To be considered with tenant as part of incoming fit-outs. Guidance / targets included in fit-out guide.	To be reviewed with contractor during pre-construction supply chain engagement	Some retention of existing substructure has been utilised. Refinement of material quantities will be reviewed as design proceeds.	Ensuring sub/structure material quantities are minimised whilst dealing with below ground site constraints	Ensure structural design is optimised (Structural engineer)	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)	-	-	Consider DfMA and modular design opportunities in order to reduce construction programme therefore associated resources (energy, water, etc) (Wst 06)*	Consider DfMA and modular design opportunities in order to reduce construction programme therefore associated resources (energy, water, etc) (Wst 06)*	Follow the Design for Performance (DfP) process in order to set and deliver against a challenging energy in-use target. (Ene 01)* Target operational water efficiency performance of at least 40% over BREEAM baselines. (Wat 01)* Include rainwater harvesting systems (as part of the landscape water management strategy). (Wat 01)*	-	Minimise carbon emissions from tenant's operational activities and fit out (Ene 01)*	To be reviewed with contractor during pre-construction supply chain engagement	Consideration of DfMA and offsite fabrication where possible. Adoption of DfP process.	Maturity of the market /design solutions. Specific site constraints driving bespoke solutions.	Ensure structural design is optimised (Structural engineer) Pre-construction supply chain engagement	Review exercise at next stage of design.

*Related BREEAM credits. Note, in some instances numerical targets proposed here are beyond BREEAM requirements.

Building "Layer" (as per GLA guidance)	Site	Substructure	Superstructure	Shell/Skin	Services	Space	Stuff	Construction Stuff	Summary	Challenges	Counter-Actions + Who + When	Plan to prove and quality
Specifying and sourcing materials responsibly and sustainably	Responsible procurement plan established across the development. (Mat 03)* Prioritise locally sourced materials where possible Target 50% of materials from renewable, reused and recycled sources (Wst 02)*	Prioritise certified products / materials, i.e: - EPDs - ISO14001 - BES6001 - FSC - PEFC - CARES (Mat 03)* Concrete GGBS content to be optimised. Preliminary target of >50%. Target 80% materials that can be reused at end of life	Prioritise products certified with BES6001 'Good' certification. Preliminary target >20%. (Mat 03)* Concrete GGBS content to be optimised. Preliminary target of >50%. Recycled content of structural steel to be maximised. UK average currently approx. 20%. Preliminary target of >60%. Target 80% materials that can be reused at end of life	Prioritise façade systems with EPDs. (Mat 02)* Expressed steel extrusions on the façade to have a high recycled content.	Recycled content of ductwork to be maximised. Consideration of materials and / or equipment being procured through a leasing framework, e.g. Lighting or chillers	-	To be considered with tenant as part of incoming fit-outs. Guidance / targets included in fit-out guide.	To be reviewed with contractor during pre-construction supply chain engagement	**All materials to be responsibly sourced, locally where possible.** **Structural elements to have high recycled content or cement replacement levels.**	Potential cost premium. Higher recycled content targets may limit supply chain. Structural constraints for higher GGBS content. Market for MEP systems "leased as a service" currently immature.	Responsible procurement plan to be developed during detailed design. Ensure structural design is optimised (Structural engineer) Pre-construction supply chain engagement	Review exercise at next stage of design
	SECTION B: DESIGN TO ELIMINATE WASTE (AND FOR EASE OF MAINTENANCE)											
Designing for reusability / recoverability / longevity / adaptability / flexibility	-	-	The following aspects have been considered: - Flexible floorplates layouts / structural grids - Avoidance of toxic treatments and finishes. - Floor to ceiling heights - Placement of the core. - Visible connections and limiting welded elements - Standardised components (Mat 05/Wst 06)*	The following aspects have been considered: - Modular assembly of curtain walling - Off-site fabrication - Visible connections and limiting welded elements - Disassembly strategy - Standardised components (Mat 05/Wst 06)*	The following aspects have been considered: - Flexibility / adaptability - Metering / split tenancies - Standardised components - Disassembly strategy (Mat 05/Wst 06)*	The following aspects have been considered: - Flexible floor plates and layout of core (Mat 05 / Wst 06)*	To be considered with tenant as part of incoming fit-outs. Guidance / targets included in fit-out guide.	To be reviewed with contractor during pre-construction supply chain engagement	**Design spaces for flexibility whilst enabling access to all elements that could be re-used/replaced.**	Avoiding common design solutions which constraint disassembly / recoverability.	Disassembly / recoverability review during detailed design (structural engineer, architect, contractor input)	-

*Related BREEAM credits. Note, in some instances numerical targets proposed here are beyond BREEAM requirements.

Building "Layer" (as per GLA guidance)	Site	Substructure	Superstructure	Shell/Skin	Services	Space	Stuff	Construction Stuff	Summary	Challenges	Counter-Actions + Who + When	Plan to prove and quality
Designing out construction, demolition, excavation, industrial and municipal waste arising	Retention of elements of the existing archways (Mat 06)*	Retention of historic listed wall to form part of the base (Mat 06)*	The following have been considered: - Modular construction - DfMA approaches - Supplier take-back schemes (Wst 01/06)*	The following have been considered: - Modular construction - DfMA approaches - Supplier take-back schemes - Just-in-time delivery (Wst 01/06)*	The following have been considered: - Modular construction - DfMA approaches - Supplier take-back schemes - Just-in-time delivery (Wst 01/06)*	The following have been considered: - Supplier take-back schemes - Just-in-time delivery - Minimising Packaging (Wst 01)*	To be considered with tenant as part of incoming fit-outs. Guidance / targets included in fit-out guide.	To be reviewed with contractor during pre-construction supply chain engagement	**Designing out waste through modular design.**	Specific site constraints driving bespoke solutions.	Review during detailed design	
	SECTION C: MANAGE WASTE											
Demolition waste (how waste from demolition of the layers will be managed)	Pre-demolition audit for elements of archways requiring demolition to maximise recovery. (Wst 01)* Aim to achieve 99% diversion from landfill (Wst 01)*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**Elements being demolished will undergo pre-demolition audits, targeting 99% of waste diversion from landfill.**	Ensuring 99% of waste is diverted from landfill.	Pre-demo audit, pre-contract engagement with demolition contractor.	Demolition SWMP records.
Excavation waste (how waste from excavation will be managed)	Audits to be conducted with the aim of maximising recovery. Excavation quantity estimated as 1,860m3. (Wst 01)* Opportunities to re-use excavation waste as per DoWCoP will be investigated.	Audits to be conducted with the aim of maximising recovery. (Wst 01)* Opportunities to re-use excavation waster as per DoWCoP will be investigated.	N/A	N/A	N/A	N/A	N/A	N/A	**Excavated waste to be re-used on site.**	Finding applicable uses for excavated waste.	Opportunities to be investigated for re-use (structural engineer, architect)	

*Related BREEAM credits. Note, in some instances numerical targets proposed here are beyond BREEAM requirements.

Building "Layer" (as per GLA guidance)	Site	Substructure	Superstructure	Shell/Skin	Services	Space	Stuff	Construction Stuff	Summary	Challenges	Counter-Actions + Who + When	Plan to prove and quality
Construction waste (how waste arising from construction of the layers will be reused or recycled)	Aim to achieve 97% diversion from landfill. (Wst 01)* Overall project target <3.2 ton/m^2 GIFA of non-hazardous construction waste. (Wst 01)*	Aim to achieve 97% diversion from landfill. (Wst 01)* Overall project target <3.2 ton/m^2 GIFA of non-hazardous construction waste. (Wst 01)*	Aim to achieve 97% diversion from landfill. (Wst 01)* Overall project target <3.2 ton/m^2 GIFA of non-hazardous construction waste. (Wst 01)*	Aim to achieve 97% diversion from landfill. (Wst 01)* Overall project target <3.2 ton/m^2 GIFA of non-hazardous construction waste. (Wst 01)*	Aim to achieve 97% diversion from landfill. (Wst 01)* Overall project target <3.2 ton/m^2 GIFA of non-hazardous construction waste. (Wst 01)*	Aim to achieve 97% diversion from landfill. (Wst 01)* Overall project target <3.2 ton/m^2 GIFA of non-hazardous construction waste. (Wst 01)*	To be considered with tenant as part of incoming fit-outs. Guidance / targets included in fit-out guide.	To be reviewed with contractor during pre-construction supply chain engagement	Overarching project targets of 97% diversion from landfill and <3.2 ton/m^2 GIFA of non-hazardous construction waste	Dealing with the most challenging waste streams commonly send to landfill.	Pre-construction review with contractor	Final site waste management plan data as used for BREEAM PCR assessment
Municipal and industrial waste (how the design will support operational waste management)	Refuse storage planned in conjunction with wider site waste management strategy (Wst 03)*	Suitable refuse storage provided to enable segregation and storage of office waste. (Wst 03)*	N/A	N/A	N/A	N/A	N/A	N/A	Appropriate refuse storage to enable recycling and best practise waste management	-	-	-

Table 4: Key Commitments – Plot 2.

9. Key Commitments for Plot 7 (Detailed Application)

Both Plot 2 and Plot 7 have been submitted in detail, and Table 4 provides an overview of the key commitments specific to Plot 2.

Plot 7 is a unique part of the development, located at ground level under the historic Grade II Listed Braithwaite Viaduct structures, re-utilising these historic structures to provide new retail, food and beverage, community and ancillary uses. In material and waste terms this element of the development is more akin to a re-use and refurbishment project, with minimal intervention required in terms of substructure or superstructure. New construction elements will be largely limited to the new retail shopfronts. The retail units will be delivered to a form of "Shell and Core" development, with much of the new material and building "layers" falling within the scope of future retail tenants fit-outs.

As such this part of the development is one of most relevant aspects of the wider circular economy strategy, bringing the existing Victorian heritage of the site back to life and converting it at minimal material cost into new usable floor space.

Figure 12: Plot 7 - view along London Rd

As such a detailed table has not been included at this stage, and the key circular economy commitments for Plot 7 are summarised below:

- The overarching principles around material efficiency and adaptability will be applied to the shell and core spaces in the context of the project scope.
- Bespoke targets will be established during detailed design for shell and core construction waste and diversion from landfill, relevant to the context of the project.
- Engagement with retail tenants to ensure circular economy targets are implemented within individual fit-out projects will be critical. This will be achieved via tenant fit-out guidance and specific requirements.

10. Appendix

10.1 References

A wide range of established and emerging industry guidance and best practice has informed the circular economy approach adopted to date, including but not limited to:

- GLA (2020) Draft whole life carbon assessment guidance
- RIBA 2030 Climate Challenge
- LETI Net Zero Operational Carbon requirements for new buildings
- UK GBC Net Zero Carbon: Energy Performance Targets (for office buildings)
- Design for Performance (DfP) star rating (for office buildings)

10.2 Project team industry engagement

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