

NDP Hotel

Circular Economy Statement

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Glossary

Term	Definition
CES	Circular Economy Statement
CMP	Construction Management Plan
FSC	Forest Stewardship Council
GIA	Gross Internal Area
GGBS	Ground Granulated Furnace Slag
GLA	Greater London Authority
LBH	London Borough of Haringey
MRF	Material Recycling Facility
RAC	Recycled Aggregate Concrete
RC	Reinforced Concrete
SPG	Supplementary Planning Guidance
SWMP	Site Waste Management Plan
SuDS	Sustainable Drainage Systems

1 Executive Summary

This Circular Economy Statement (CES) has been prepared by Buro Happold on behalf of Tottenham Hotspur Property Company Limited (THFC) (hereafter referred to as 'TSP' or 'the Applicant') in support of a Hybrid Planning Application. The proposed NDP development will propose for minor material amendments to the London Borough of Haringey (LBH) made under Section 73 (S73) of the Town and Country Planning Act 1990 (as amended), following the grant of planning permission for the Northumberland Park Development. The Plot 3 Site lies to the south-west corner of Tottenham Hotspur Stadium on the corner of Park Land and Tottenham High Road.

This statement establishes the project's aspirations regarding circular economy. This is based on a workshop, and subsequent discussions with the design team, setting out initial concepts and opportunities for the Proposed Development to reduce, reuse, recycle waste and implement circular economy principles. The aim of the statement is to demonstrate how the Proposed Development has incorporated circular economy measures into all aspects of the design, construction, and operation processes.

As the scheme continues to develop beyond planning and into detailed design, it is proposed, in accordance with the Greater London Authority (GLA) pre-consultation draft guidance, that this statement be reviewed and updated with further detail, providing clear targets and guidance for the procurement, construction and operation of the scheme.

2 Introduction

Buro Happold have prepared this Circular Economy Statement to support the planning application for “The Hybrid Consent” which comprises of: full planning permission for Plot 1 (The Stadium), Plot 2 (The Tottenham Experience) and Plot 3 (Hotel). The Site is to be developed by Tottenham Hotspur Property Company Limited (THFC) referred to hereafter as “the Applicant”, on behalf of whom this document is produced.

The document describes the Circular Economy strategy for the development as agreed with the Applicant and their design team and is produced in order to address relevant planning policy regarding the transition away from a linear “take-make-dispose” economic model, as the London Plan 2021 advocates. It is also proposed, in accordance with Greater London Authority (GLA) Circular Economy guidance, that this statement be reviewed and progressed to a more detailed state, providing clear guidance for the procurement, construction and operation of the scheme.

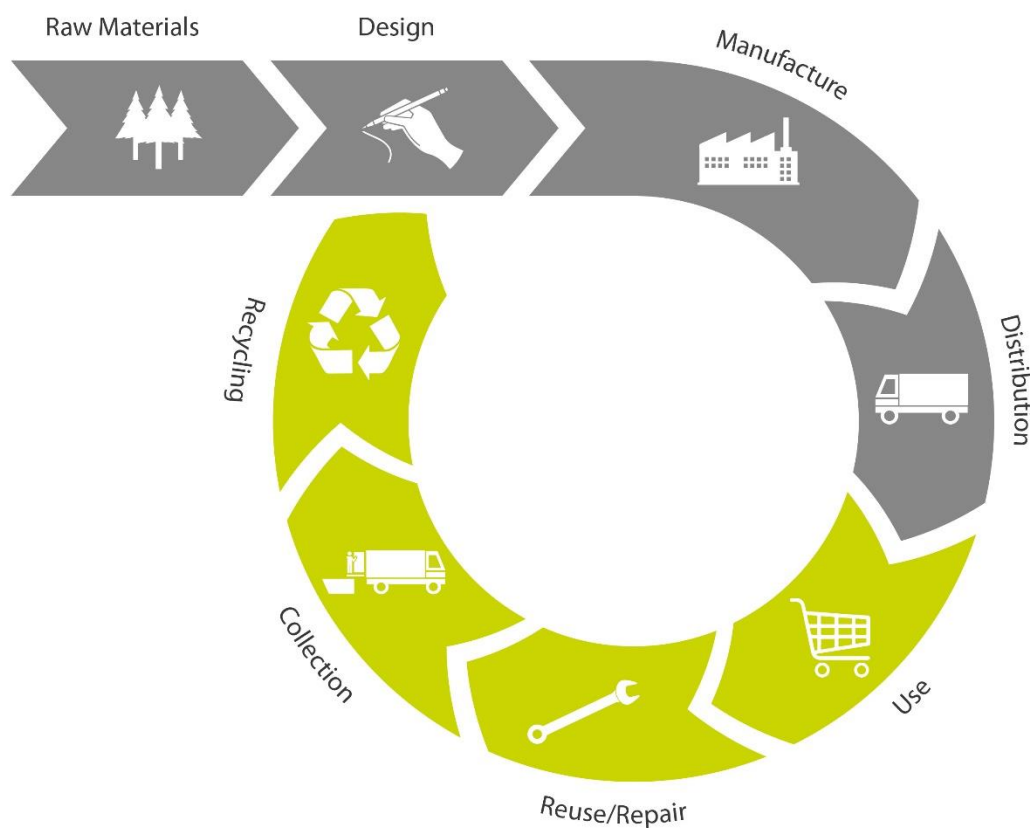


Figure 2—1 The circular economy

The aim of circular economy (Figure 2—1) is to achieve an economy in which materials and services are maintained at their highest value for as long as possible. The aim of the statement is to demonstrate how a development will incorporate circular economy measures into all aspects of the design, construction, and operation process.

In particular, the objectives of the statement are to:

- Consider strategies to facilitate the transition towards a circular built environment;
- Report against numerical targets that will facilitate monitoring of waste and recycling; and
- Recognise opportunities to benefit from greater efficiencies that can help save resources, materials, and money.

2.1.1 Development description

The Site is located in North London and is within the London Borough of Haringey (LBH) who are the statutory authority for the planning application. **Error! Reference source not found.** illustrates the proposed illustration of the development. The Proposed Development includes:

The Proposed Development described in this report is the NDP Hotel which lies to the south-west corner of Tottenham Hotspur Stadium on the corner of Park Lane and Tottenham High Road.



Figure 2—2 The Proposed Development

"Application under Section 73 of the Town and Country Planning Act for variations to Condition A4 (Consented Drawings and Documents) and Condition A7 (Maximum Quantity/Density) of the hybrid planning permission HGY/2015/3000 (as amended) for the proposed demolition and comprehensive redevelopment of the Northumberland Park Development Project (the amendments consist of revisions to the design, height and maximum floorspace at Plot 3 Hotel and other changes)."

Applicant Name: Tottenham Hotspur Property Company Ltd

The following images show the typical floor plans of the hotel levels and the residential levels and are used to give the energy officer context of the scheme, these plans may need to be updated following the receipt of the final drawings.



Figure 2—3 Typical hotel floor plan (Levels 2 to 10)

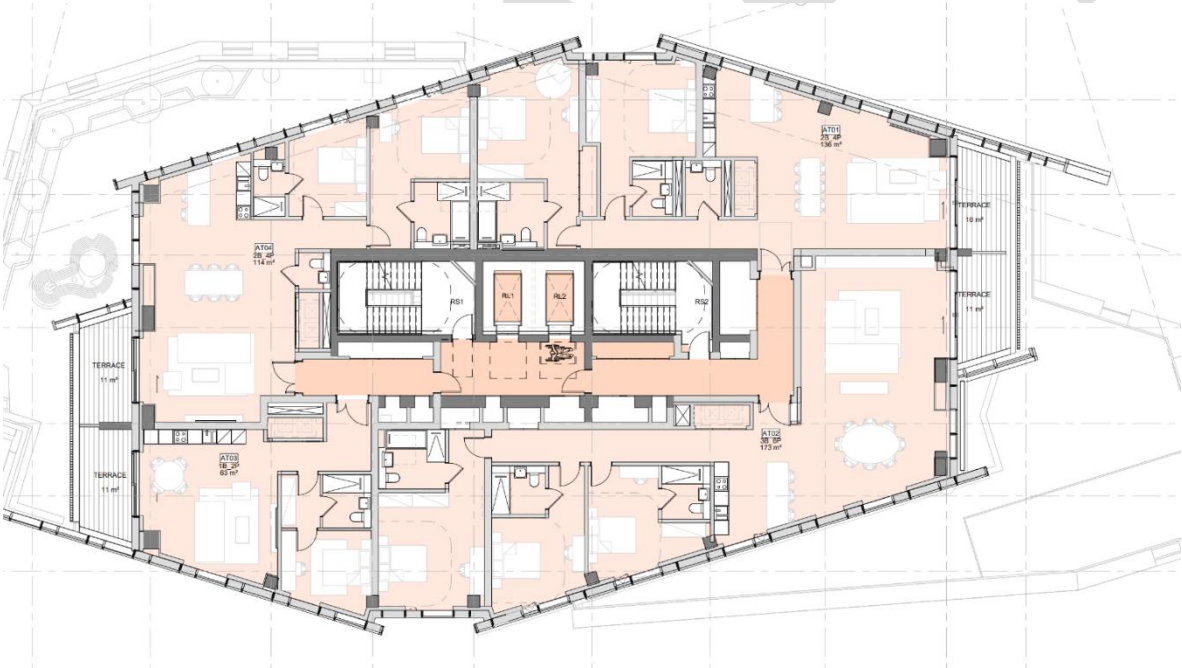


Figure 2—4 Typical residential floor plan (Levels 14 to 18)

2.1.2 Policy context

2.1.3 The National Planning Policy Framework, NPPF

The NPPF consolidates previously issued documents called Planning Policy Statements (PPS) and Planning Policy Guidance Notes (PPG). A greater focus is now placed on the dissemination of energy policy within regional development frameworks.

Within the NPPF's planning guidance relating to energy is set out in section 14 – "meeting the challenge of climate change, flooding and coastal change".

Additionally, paragraphs 7 and 8 of the NPPF highlight that the purpose of the planning system is to contribute to the achievement of sustainable development, which has the following three overarching objectives:

- *"an economic role – to help build a strong, responsive and competitive economy...*
- *a social role – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations...*
- *an environmental role to contribute to protecting and enhancing our natural, built and historic environment..."*

The NPPF is underpinned by a presumption in favour of sustainable development. Paragraph 11 of the NPPF states that decisions should apply a presumption in favour of sustainable development and approve development proposals that accord with an up-to-date development plan without delay.

Paragraphs 81 and 83 of the NPPF are also relevant. These require policies and decisions to create the conditions for businesses to invest and expand, support economic growth and allow areas to build on their strengths.

2.1.4 Climate Change Act

The Climate Change Act 2008 established a legally binding target to reduce the UK's greenhouse gas emissions by at least 80% below 1990 levels by 2050. To drive progress and set the UK on a pathway towards this target, the Act introduced a system of carbon budgets which provide legally binding limits on the amount of emissions that may be produced in successive five-year periods, beginning in 2008.

The first three carbon budgets were set in law in May 2009 and require emissions to be reduced by at least 34% below base year levels in 2020. The fourth carbon budget, covering the period 2023–27, was set in law in June 2011 and requires emissions to be reduced by 50% below 1990 levels. The fifth carbon came into force in July 2016, limiting the budget for 2028–2032 of is 1,725 mega tonnes of carbon dioxide equivalent. This correlates to the reduction of 57% in greenhouse gas emissions compared to 1990 levels.

2.1.5 Greater London

Tottenham Hotspur Property Company Limited The plan also includes the requirement for a Circular Economy Statement for all referable applications. At the time of writing, the Guidance for Circular Economy Statements remains in pre-consultation draft. The key policy points regarding the circular economy, detailed in **Policy SI 7 – 'Reducing waste and supporting the circular economy,'** are reproduced here for convenience and to provide context to the report.

Policy SI 7 – Reducing waste and supporting the circular economy**A Resource conservation, waste reduction, increases in material reuse and recycling, and reductions in waste going for disposal will be achieved by the Mayor, waste planning authorities and industry working in collaboration to:**

1. 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
2. Encourage waste minimisation and waste prevention through the reuse of materials and using fewer resources in the production and distribution of products
3. Ensure that there is zero biodegradable or recyclable waste to landfill by 2026
4. Meet or exceed the municipal waste recycling target of 65% by 2030
5. Meet or exceed the targets for each of the following waste and material streams:
 - a. Construction and demolition – 95% reuse, recycling or recovery
 - b. Excavation – 95% beneficial use
6. 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 and glass) and food.

B Referable applications should promote circular economy outcomes and aim to be net zero waste. A Circular Economy Statement should be submitted, to demonstrate:

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

C Development Plans that apply circular economy principles and set local lower thresholds for the application of Circular Economy Statements for development proposals are supported.

As noted, the GLA has produced supplementary planning guidance (SPG) to support the production of Circular Economy Statements. This guidance considers the key policies outlined above and assists in interpreting them for the writing of a clear and coherent statement. At time of writing, the Circular Economy Statement SPG is in pre-consultation draft form, yet to be fully published. Notwithstanding the draft status of this guidance, it has informed the preparation of this Circular Economy Statement.

2.1.6 London Borough of Haringey

Haringey's Local Plan | Strategic Policies | 2013 – 2026 (LBH, 2017)

The London Borough of Haringey's spatial vision is underpinned by several key principles which guide and steer the Local Plan and its long-term implementation. In the context of circular economy, LBH's Local Plan stipulates that conserving and reusing resources is a key principle with the objective of lessening Haringey's impact on the environment and developing the Council's sustainable design and construction policies. SP6: Waste and Recycling stipulates that LBH should:

- Seek to minimise waste creation and increase recycling rates;
- Address waste as a resource;
- Require integrated and well-designed recycling facilities in new developments; and
- Require Site Waste Management Plans for all major applications to identify volume and types of demolition and construction waste, and to demonstrate how waste will be minimised and managed during construction and operation.

New Local Plan | First Steps Engagement (LBH, 2021)

The London Borough of Haringey is currently in the early stages of engagement of a New Local Plan. The council is currently considering the consultation comments on the New Local Plan. The New Local Plan Engagement Document (2021) suggests that LBH will be looking to adopt a 'low carbon circular economy' where materials are retained in use at their highest value for as long as possible before being reused or recycled leaving only a minimum of remaining waste. Through the New Local Plan, the Council is also considering whether it should require circular economy statements, or something similar, for smaller applications. The emerging Local Plan is in the early stages of production however, and as such it attracts no weight at the current time.

2.1.7 Method statement

The requirement for a CES is still in the early stages at the time of the first application and the design development of the scheme was at a mature stage when the process of drafting this statement commenced. Buro Happold have coordinated with the project team to understand the pre-existing brief for the development and to assess where the development design aligns with the principles of a circular economy, and where additional opportunities may still be worked into the project and the future RIBA design stages. The CES at this stage is limited in scope due to the advanced stage of the design programme. As such it is proposed that the CES is further developed in the post-planning stage, to provide additional detail on commitments, targets and implementation.

A workshop was held on 19th October 2023 and on the 20th October with the design team to agree a strategic approach and assess the design to date against the principles of circular economy. Following the workshop, further correspondence between the design team finalised any outstanding actions from the workshop. The aspirations and commitments agreed are outlined in this statement, which will be further developed during the detailed design stage (post-planning) and will be distributed to all parties in the future design, procurement, construction and operation of the scheme, so that these aspirations and commitments may be translated to measurable targets and outcomes.

The following parties were in communication with:

- Buro Happold (structural engineering, MEP engineering, sustainability consultancy, waste consultancy, environmental consultancy)
- Quod (planning consultancy)
- F3 Architects (architecture)

It is agreed that further workshops will be held following the planning process and prior to the commencement of detailed design, to agree key objectives, any additional surveys, studies and analyses required as part of the ongoing development of the scheme, and to establish an implementation strategy for the next stages.

2.1.8 Circular economy aspirations

The current linear, “take-make-dispose” model for the economy is inherently unsustainable, and in London it is becoming increasingly problematic in the level of waste it is producing, and equally the amount of resource value being lost. Action is required across all levels of the economy and society in the city in order to reduce the material being sent to environmentally damaging landfills and incinerators, and to begin to transition towards a more circular model, in which the intrinsic value of material is realised and retained.

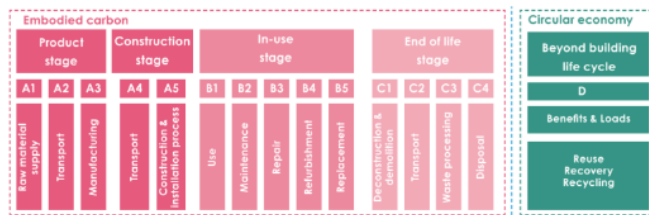
From this perspective, the statement sets out the intentions for the Proposed Development and the ways in which its design can begin to aid this transition from linearity to circularity in London’s economy. The scheme will look to consider the full life cycle of the building and its component parts, finding opportunities to enable the reuse and recycling of materials wherever possible, to use resources ethically, to improve the longevity of the structure, to reduce waste produced during construction and operations, as well as applying principles of adaptability and disassembly to the development’s end-of-life. The circular economy decision tree illustrated in

CE Principles/Commitments	Site	Substructure	Superstructure	Skin/Shell	Services	Space/Lay-out	Challenges	Actions
1. Designing out waste – ensuring that waste reduction is planned in from project inception to completion, including consideration of standardised components, modular build, and reuse of secondary products and materials								
a) A Modules (Raw materials to manufacturing)	Hours of substructure material During the construction phase of the project, materials used for temporary works will include recycled content or use themselves re-used throughout the project e.g. shoring ply.	Low embodied carbon and high recycled content: Grounded Blast Furnace Slag (GBFS) GBFS Paving bricks/risers foundation	The current design has already reduced floor to floor height from 3.2m to 3m and reduced the number of stories of each tower by two floors.	Building fabric to be considered as an off-site element of construction allowing for greater control of waste in the potential for re-cycling material.	Suspended ceiling or exposed services?	External facade and design can be innovative to allow for external recycling made from waste to be queried within the UK (local sourcing) to help minimise embodied carbon emission	High-rise and complexity of the project limits the amount of natural material, due to existing substructure.	
b) B Modules (In-use stage - Operational)					Optimisation of the services?			
c) C Modules (End-of-life stage to disposal)								
d) D Modules (Re-use, recovery, recycle)								
2. Designing for longevity (increasing life span of building elements)				The materials of the facade are predominantly constructed by: Aluminium and precast concrete at the base which are robust and durable. Materials selection have been taken into consideration to understand the impact of use in terms of embodied carbon. Building maintenance and replacement strategy to be considered.	The space allowance for building services throughout the development enables easy access for maintenance.	Specifications of high-quality hard landscaping finishes that are durable and fit for purpose (in conjunction with suitable sub-base drains). Specification of trees and landscape that are tolerant to challenging urban conditions and climate change. Establish a lifetime maintenance strategy for hard landscape (equivalent for critical replacement or necessary).	Submittal landscape maintenance strategy?	
3. Designing for adaptability or flexibility		Open space have been designed for that space that offer flexibility of use for both daily activities and programmed events, is the load capacity suitable for adaptable for different future uses?	Floor plate depth allow for the flexibility in the building use e.g. a residential office space	Easy to assemble for flexible use in the future (off-site construction for building of apartments).	Factory made utility units are proposed providing a more flexible approach to servicing apartments, i.e. upgrading or replacement only.	Use of the residential units to Part M2 to Part D3 to allow for accessibility for wheelchair users.		
4. Designing for disassembly			Grade between rooms rather than floor plates which take off the floor level for the structure which allow for easier disassembly	Where possible use (e.g. an balancer), bolted connections can be designed to allow material to be recovered at the end of life.	Where possible, the building services are to be designed to be modular.			

Figure 2—6 should be considered as part of the design process.

The GLA guidance on the circular economy offers a number of main principles to steer this transition:

1. **Designing out waste** – ensuring that waste reduction is planned in from project inception to completion, including consideration of standardised components, modular build, and reuse of secondary products and materials



2. Designing for longevity
3. Designing for adaptability or flexibility
4. Designing for disassembly
5. Using systems, elements or materials that can be reused and recycled

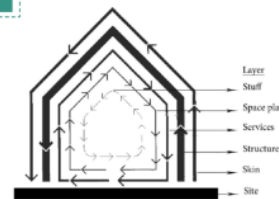


Figure 2—5 A diagram used to illustrate circular design thinking through five steps and design in layers.

CE Principles/Commitments	Site	Substructure	Superstructure	Skin/Shell	Services	Space/ Layout	Challenges	Actions
1. Designing out waste – ensuring that waste reduction is planned in from project inception to completion, including consideration of standardised components, modular build, and reuse of secondary products and materials								
a) A Modules (Raw materials to manufacturing)	None of materials were sourced during the construction phase of the project, materials used for temporary works will include recycled content or are themselves re-used throughout the project e.g. shoring ply.	Low embodied carbon high recycled content - Recycled Blast Furnace Slag (GBS) 75% GBS) Reusing existing formwork	The current design has already reduced floor to floor heights from 3.2m to 2m and reduced the number of stories of each tower by two floors.	Building skin to be considered as an off-site element of construction allowing for greater control of waste in the potential for re-cycling material.	Suspended ceiling or exposed services?	External facade and cladding can incorporate the all-in-one external service and structure to be specified within the BMS (thermal mass) to be minimally embodied carbon emission	High-rise and complexity of the project limits the amount of natural materials. Also likely constructed due to existing infrastructure.	
b) B Modules (In-use stage - Operational)					Optimisation of the services?			
c) C Modules (End-of-life stage to disposal)								
d) D Modules (Re-use, recovery, recycle)								
2. Designing for longevity (increasing life span of building elements)			The design focuses on building quality and longevity with robust and well-constructed methods design, materials, and details.	The materials of the facade are predominantly constructed by aluminium and precast concrete at the base which are robust and durable. Materials selected have been taken into consideration to undertake the impact of use in terms of embodied carbon. Building maintenance and replacement strategy has considered.	The space allowance for building services throughout the development enables early access for maintenance.	Specification of high-quality hard landscape finishes that are durable and fit for purpose (in conjunction with probable carbon use during). Specification of trees and plantery cover that are relevant to challenging an on-site climate and climate change. Establish a lifetime maintenance strategy for hard-soft landscape (specify for replacement/ replacement as necessary).	Subsidiary landscape maintenance strategy?	
3. Designing for adaptability or flexibility		Open spaces have been designed in that space that offer flexibility of use for both daily activity and programmed events. Is the land capacity suitable/feasible for different future uses?	Floor plate depth allows for the flexibility in the building use e.g., a hotel and office space	Easy to assemble for flexible use in the future (off-site construction for building facade system)	Factory made utility units are proposed providing a more flexible approach to servicing apartments i.e. upgrades to recovery units.	Work of the residential units to Part M2 to Part C10 to allow for accessibility for wheelchair users		
4. Designing for disassembly			Create a bolted system rather than floor plate which takes off the dead load for the structure which allows for easier disassembly.	Where steelwork (e.g. an balcony), bolted connection can be designed to allow for the recovery at the end of life.	Where possible, the building services are to be designed into modular.			

Figure 2—6 We used an excel sheet to populate the different circular economy commitments to simulate both short-term and long-term thinking for the proposal. Source: Buro Happold

2.1.9 Scheme specific aspirations

2.1.10 BREEAM

A BREEAM pre-assessment has been undertaken for the retail elements of the scheme following BREEAM 2018 New Construction, Shell Only Retail, as part of the design process. The pre-assessment sets out an indicative route to achieving a target of Very Good, with a 5% buffer. The pre-assessment has been carried out demonstrating that a Very Good score should be readily achievable following all mandatory requirements are met, and "Excellent" attainable with some additional requirements.

2.1.11 Energy and Sustainability Statement

An Energy and Sustainability Statement has been prepared by Buro Happold as part of the planning submission and outlines the energy and sustainability objectives and deliverables for the design, construction, and operation of the development. The statement communicates that the Proposed Development aims to minimise energy consumption through the application of the Energy Hierarchy (lean/clean/green), including the use of a district heat network (Figure 2—7).

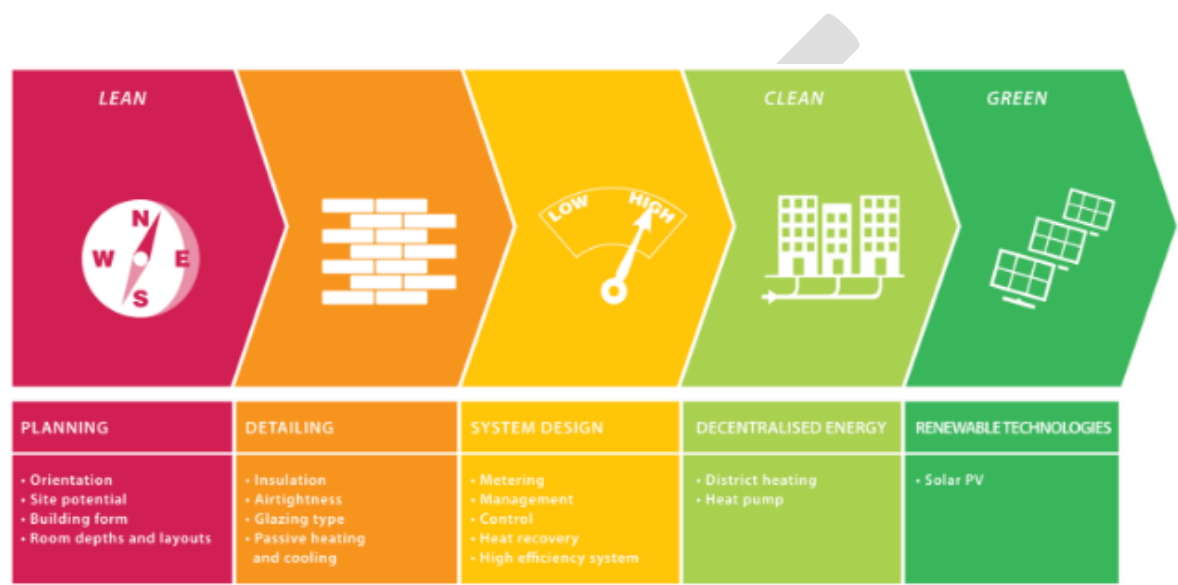


Figure 2—7 The energy hierarchy

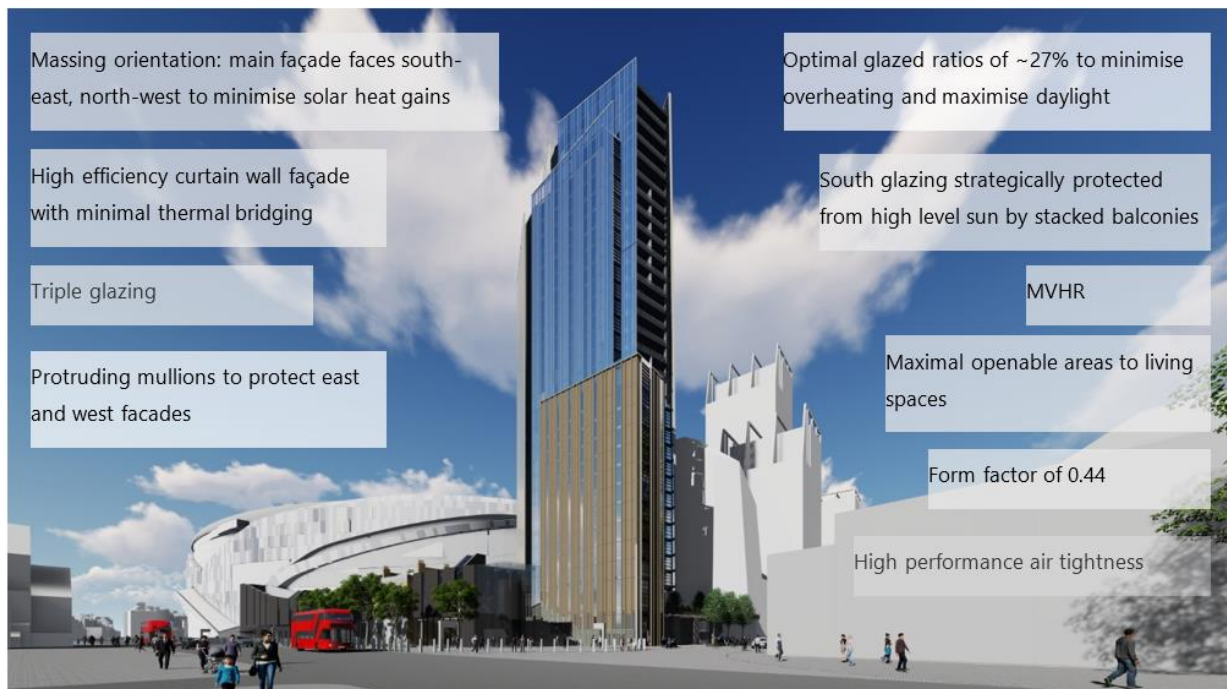


Figure 2-8 Summary of passive design measures

It can also be referenced shown in **Error! Reference source not found.**, of the sustainability statement produced that it is estimated that the NDP-Hotel project could achieve total site-wide Carbon Dioxide emission reductions of 50% compared to the 35% Part L 2021 baseline. This exceeds the onsite GLA target of 35%.

2.2 Circular economy goals and strategic approach

2.2.1 Strategic approach

Overarching strategic aspirations were agreed with the team and are outlined in Table 2-1. The design team are committed to seeking opportunities to maximise circular economy measures during the forthcoming stages of design. However, as the appointment of writing this statement was not completed until after the design brief was established, consequently the strategic aspirations are an amalgamation of pre-existing goals within the scheme and new approaches that may be feasible as detailed design is developed.

Table 2-1 Strategic approach

Aspect	Phase / building / area	Steering approach	Explanation
Circular economy approach for the new development	Full scheme / all areas	Design for longevity and disassembly	All building structures will allow for longevity with a long lifespan of beyond 25 years, expected to approximately 50 years. This is with a view to their being maintained for use on the site when the current scheme reaches end of life. Careful and thorough record keeping and building modelling will assist with this. There is a focus on sustainable procurement of materials during design and construction.
	Building	Design for flexibility and adaptability	The buildings structural design will allow for flexible and adaptable use spaces. The scheme will allow for different building use in the future through a modular design strategy.
Circular economy approach for the existing site	N/A	Designing out waste	The current substructure is being retained with the current plan to extend the foundation area. Any temporary works and excavations will be handled appropriately with the intention to minimise waste generation.
Circular economy approach for the bigger picture	All areas	Implementation of the CE principles	The development will align with the current circular economy principles. The design aims to approach all different aspects of circularity from conceptual design to make a positive impact on the project.

3 Circular economy commitments

This section aims to expand upon the initial strategic goals, looking for opportunities within the constraints of the site. These findings are based on the design team's technical understanding of the project, its activities and design features, and review of other design documentation produced as part of the planning application, and related documents. These include:

- NDP Hotel | Sustainability Statement | (Buro Happold)
- Ongoing BREEAM pre-assessment (Buro Happold).

3.1 Key commitments

This section will expand on the initial strategic approaches as they might be applied to different scales and areas of the proposal and site. It can be read in conjunction with the GLA template which provides a summary as well as key challenges and metrics. The commitments are based on the design team's technical understanding of the project and its activities and design features, and on review of the other design documentation produced as part of the planning application: the Sustainability Statement, the Whole Life Carbon assessment, and the ongoing BREEAM pre-assessments, amongst others.

The feasibility of these opportunities will continue to be reviewed as this statement is updated during the detailed design stage.

In developing the key circular economy commitments for the development, the team has assessed the scheme against the 6 main circular economy principles. The principles are set out in the GLA's Circular Economy guidance (2023). The 6 main principles are as follows:

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

The following subsection lists provide the headline commitments being explored for the Proposed Development.

Table 3-1 Key commitments	Site	Substructure	Super-structure	Shell/Skin	Services	Space/layout	Summary	Challenges	Actions
1. Designing out waste – ensuring that waste reduction is planned in from project inception to completion, including consideration of standardised components, modular build, and reuse of secondary products and materials									
a) A Modules Minimising the quantities of materials used	Reuse of site won soil (subject to detailed soil analysis to BS 6801-2013 and BS3882-2015). Existing hard standing to be sorted, crushed, and used as sub-base material (subject to testing and viability). Further detailed analysis will be undertaken at the next stage to consider how material use can be reduced, for example by optimising structural member sizes of ground floor slabs. During the construction phase of the project, materials used for temporary works will include recycled content or are themselves re-used throughout the project e.g. shuttering ply.	The next stages of the scheme will further develop the basement and associated layout. Current plant space take is based on assumptions regarding the future DEN connection. Future floorspace reduction may be possible in light of the services design resolution. Key to this is the use of post-tensioned slabs which reduces the overall weight of the frames and foundations loads i.e. foundations are smaller.	The current design has already reduced floor to floor heights to 3.3m and 3.1m The super-structure is based on a reinforced concrete (RC) frame design. The future design development will look to optimise the size of structural members and consider other structural methodologies to reduce material consumption. Post-tensioned slab will be used to minimise slab depth. The structural design would aim to avoid transfer systems, allowing for an efficient design by avoiding additional material used to construct the transfer structures.	Building skin to be considered as an off-site element of construction allowing for greater control of waste and the potential for re-cycling material.	A prefabricated utility room is proposed. This would enable all of the apartment-based plant in one location, which minimises the amount of materials used. An energy strategy utilising a connection to an off-site district heat network provides a significant reduction in the amount of materials required with a high environmental impact (e.g. metals & refrigerants).	Layouts have been optimised commensurate with the design stage being undertaken – size and layout is largely driven by the statutory minimum space standards imposed. The design team will investigate the option to modularize the construction of internal wall partitions to enable off-site manufacture. External surfaces and edging can be investigated to allow for external scaping made from stone to be quarried within the UK (local resourcing) to help minimise embodied carbon emissions.	The design has looked for efficiencies of layout and scale and considered how to optimise the services installation.	Unknown nature of some design aspects, such as how the DEN connection will be resolved. High-rise and complexity of the project limits the quantities of natural materials. In addition, the overall design of the structure is highly constrained due to existing substructure design.	Enshrine the commitment to the DEN connection in planning and legislative terms as far as is possible at an early stage. Develop the design at the next stage of work to further improve the detail and reduce material use. Existing materials on site to be tested for viability. Engagement with contractors to begin discussions regarding local resourcing of materials.

Table 3-1 Key commitments	Site	Substructure	Super-structure	Shell/Skin	Services	Space/layout	Summary	Challenges	Actions
b) B Modules (In-use stage – Operational)	The Proposed Development is to be built on a brownfield site, minimising greenfield land use. The design has developed to provide as efficient a layout as possible at this stage in terms of built form to open space. For example, an eco-walk is proposed to the West side of the site, so a long strip of space remains undeveloped.	Structural design to be optimised during future phases of work to help reduce the amount of concrete needed and therefore the energy/water usage associated with its manufacturing.	The design team will investigate the feasibility of including alternative construction methods such as using cold formed steel or cross laminated timber for canopies or roof top screens etc..	Glazing ratios have been optimised across site. The thermal performance of the façade will be enhanced through good detailing. This means the design can achieve the energy efficiency requirements without resorting to excessive use of materials e.g. triple glazing. Passive façade design has been used to reduce overheating risk and energy consumption. Green roofs and SuDs to provide biodiversity gains and reduce flood risk.	Connection to off-site district heat network by 2026 would result in very significant savings on both energy usage and the space required for plant within individual units and the masterplan as a whole.	Consideration of layout design efficiency will in turn reduce heating/ventilation energy requirements.	The potential use of an offsite source for heating the scheme is the most important gain from an energy reduction perspective. There are also plans for that decentralised source to be carbon neutral in the future.	At the time of writing this report, there are a few challenges with the insurance of using cold formed steel methods.	In the next stage, a whole life-cycle assessment options appraisal could be undertaken to assess the benefits of these methods
c) C Modules (End-of-life stage to disposal)									
d) D Modules (Re-use, recovery, recycle)	Ground floor slabs are to be analysed for how much recycled content could be included. Demolition will be subject to a detailed analysis to understand what can be re-used/re-cycled.	-	In the next stage, 35-65% Ground Granulated Blast-Furnace Slag (GGBS) cement can be specified. Up to 20% Recycled Concrete Aggregate (RCA) will be permitted in the next stages of design.	In the next stage the following will be considered during the specification of materials: lowering façade aluminium content, increasing recycled content of steel and, use of renewable or recycled insulation.	-	Low embodied carbon and high recycled content products are to be used for external surfaces and edging. Specification of recycled sub-base aggregates for external surfaces.	Given the early stage of the design there have only been very high-level decisions taken regarding material specification – this will be developed at the next stage with a focus on sustainability.	Given the height of the towers, and the emerging legislation around fire performance (especially to do with tall residential buildings) it is likely there will be some lag before products are available which offer the necessary range of characteristics to respond to quality, performance and cost requirements. Discussion with Contractor and supply chain regarding external surface materials and sub-base design.	Detailed material specification to be undertaken during future design phases. Review and workshop with Contractor regarding external surface materials and sub-base design.
2. Designing for longevity (increasing life span of building elements)									

Table 3-1 Key commitments	Site	Substructure	Super-structure	Shell/Skin	Services	Space/layout	Summary	Challenges	Actions
Designing for longevity (increasing life span of building elements)	The layout has been carefully considered to balance 'buildings' with the 'streets and squares' neighbourhood design to be as efficient as possible in terms of the overall development.	The original Hotel foundations, built as part of the stadium build, are all to be retained	Where steel is used (e.g. on balconies), bolted connections can be designed to allow steel to be recovered at the end of life. The design focuses on building quality and longevity using robust and well-rehearsed methodologies, materials, and details.	The materials of the façade are predominately constructed by aluminium and precast concrete at the base which are robust and durable. Material selections have been taken into consideration to understand the impacts of use in terms of embodied carbon. Building maintenance and replacement strategy to be carried out.	Where possible, modularised services, i.e. risers could be manufactured offsite with the intent to minimise material waste.-	Establish a lifetime maintenance strategy for hard and soft landscape to prologue performance and guide rectification / replacement as necessary. Specification of high-quality hard landscape finishes that are durable and fit for purpose (in conjunction with suitable sub-base design).	Optimising layout and planning to further develop efficiencies associated with the structural and services deign at later stages in the project.	The existence of contaminated land nearby.	To be reviewed during the later design stages. Submit a landscape maintenance strategy. Landlords to utilise waste reduction measures. Building maintenance and replacement strategy to be carried out. There will be a commitment to promoting the waste hierarchy and the Landlord will be encouraged to utilise waste reduction measures once the Proposed Development is operational.
3. Designing for adaptability or flexibility									
Designing for adaptability or flexibility		--	The Floor plate depth design allows design for flexibility for other potential building uses, for example, the building's feasibility a ventilated office space	Easy to assemble façade materials for flexible use in the future. The unitised façade system will be assembled off-site construction for unitised façade system)	Factory made utility units are proposed providing a more flexible approach to re-servicing apartments, i.e. upgrading heat recovery units.	10% of the residential units will be converted from Part M (2) to Part M (3) to allow for accessibility for wheelchair users. -		To be reviewed during the later design stages.	Explore modular designs that can be implemented to allow for easier adaptability and flexible use of the spaces both in the short term and long term

Table 3-1 Key commitments	Site	Substructure	Super-structure	Shell/Skin	Services	Space/layout	Summary	Challenges	Actions
	The building footprints have been considered to limit the impact on the site given the number of new homes being provided. Open spaces have been designed so that spaces that offer flexibility of use for both daily activity and programmed events. The design has developed to provide as efficient a layout as possible at this stage in terms of built form to open space. For example, an eco-walk is proposed to the West side of the site, so a long strip of space remains undeveloped.	Foundation design to provide building longevity where interiors/ façade can be re-fitted numerous times without need to re-develop the structure. Foundations of the building will be designed to last 50 years.	A simple grid of structure is proposed to provide flexibility for different future configurations, particularly at ground floor. Structures of all new buildings will be designed to last 50 years.	Off-site construction is being considered for the building cladding which would support flexibility of future re-development. An iterative process of testing and updating has been undertaken to optimise fenestration size in relation to daylight, overheating, and overlooking.	Factory made utility units are proposed providing a more flexible approach to re-servicing apartments, i.e., upgrading heat recovery units. The space allowance for building services throughout the development enables easy access for maintenance and disassembly. Where possible, the building services are to be designed to be modular. Aluminium and precast concrete at the base which are robust and durable. Material selections have been taken into consideration to understand the impacts of use in terms of embodied carbon.	Specification of high-quality hard landscape finishes that are durable and fit for purpose (in conjunction with suitable sub-base design). Specification of tree and plant species that are tolerant to challenging urban conditions and climate change. Establish a lifetime maintenance strategy for hard and soft landscape to prologue performance and guide rectification / replacement as necessary. Design in sustainable urban drainage solutions integrated within the landscape. External surfaces and edging can be investigated to allow for external scaping made from stone to be quarried within the UK (local resourcing) to help minimise embodied carbon emissions.	-	Designing for longevity and flexibility will compete to some extent. Discussion with Contractor and supply chain regarding external surface materials and drainage proposals. The design focusses on building quality and longevity using robust and well-rehearsed methodologies, materials, and details	Following later design work and construction, the Health and Safety file will be an important document regarding the record of materials and methodologies employed to inform future re-use. Review and workshop with Contractor regarding external surface materials and drainage proposals. Structural design to be developed in further detail at the next stage.
4. Designing for disassembly									
Designing for disassembly	Demolition will be subject to a detailed analysis to understand what can be re-used/re-cycled. Appropriate shelter and storage for waste will be given to maintain the quality of materials and limit litter. An individual will be nominated to oversee waste controls.	--	A large excavator will separate and process the arisings as demolition progresses and load into appropriate recycling / waste skips.	-	-	-	Plan for future analysis prior to demolition phase. Materials generated at worksites in accordance with the waste hierarchy to prevent, reduce, reuse, recycle, recover, and dispose of materials and within the relevant regulatory controls. An individual will be appointed by the contractor to ensure waste is treated correctly.	To be reviewed during the later design stages. Contractor to appoint individual to have responsibility for good waste management on site. A Site Waste Management Plan will be sought to be prepared via condition. Potential hazardous materials, subject to survey.	To be discussed in the next stages

Table 3-1 Key commitments	Site	Substructure	Super-structure	Shell/Skin	Services	Space/layout	Summary	Challenges	Actions
5. Using systems, elements or materials that can be reused and recycled									
Using systems, elements or materials that can be reused and recycled	N/A other than pile arisings which will be screed and removed appropriately.	-	Some building services to be considered as an off-site element of construction, e.g., utility rooms, allowing for greater control of waste and the potential for re-cycling material.	In the next stage the following will be considered during the specification of materials: lowering aluminium content (40% and above), increasing steel and, use of recycled insulation.	-	-	Further design development required to understand specific material proposed. Materials generated at worksites in accordance with the waste hierarchy to prevent, reduce, reuse, recycle, recover, and dispose of materials and within the relevant regulatory controls. Use of construction materials can be planned for reuse, to limit the total quantity required.	Further design development required to understand specific materials/methodologies proposed. To be reviewed during the later design stages.	In the next stage, a whole life-cycle assessment options appraisal could be undertaken to assess the benefits of using recyclable materials.

3.2 Reporting numerical targets and commitments

3.2.1 Bill of materials

A high-level breakdown of construction material requirements has been provided by Arcadis and is detailed in Table 3-2. This information should be updated in later stages of design and construction once information on material sourcing, specification documentation, etc. are available from contractors and suppliers.

Information regarding reused and recycled material content of each material is limited at this stage. A minimum of 20% reuse for recycled content is targeted in line with the London Plan requirements. The design team have committed to continuing to seek out opportunities to increase reused and recycled material content throughout the design and construction process.

Table 3-2 Bill of materials

	Material	Estimated weights
Substructure	Concrete	10,620,480 kg
	Carbon steel	632,088 kg
Superstructure: Frame/upper floors/roof/stairs and ramps/external walls/doors etc	Concrete	35,352,200 kg
	Carbon steel	4,249,908 kg
	Insulation	431,792 kg
	Aluminium	713,505 kg
	Wood	46,834 kg
Finishes	Mixed	830,333 kg
Services (MEP)	Mixed	348,943 kg
External works	Mixed	1,643,250 kg

3.2.2 Recycling and waste reporting

Table 3-3 sets out the estimated waste material generation and targeted reuse and recycling rates for the Proposed Development. While waste and materials has been scoped out of the current Environmental Impacts Assessment submitted as part of the planning application, LBH requires Site Waste Management Plans to be developed for all major applications. The Applicant will commit to the current London Plan targets for construction, demolition, and excavation wastes.

An Operational Waste Management Plan has been produced, which details the strategy for the operational waste produced by the Proposed Development. The strategy assumes that mixed dry recyclable waste (paper, cardboard, plastic, aluminium, glass) will be sent to a Materials Recycling Facility (MRF), organic waste will be treated by a digester and residual waste will be sent for waste to energy recovery.

Table 3-3 Recycling and waste reporting form

Category	Area m2	Total estimate		Of which...			Source of information
		Tonnes	kg/m² GIA	% reused or Recycled on-site	% reused or recycled off-site	% not reused or recycled	
Excavation waste	500 (applies to basement extension only)	<10*	n/a	London Plan (2021) target for 95% beneficial use		5%	The London Plan 2021 The Spatial Development Strategy for Greater London
Demolition waste	500 (note original basement and piling to be retained)	2,910*	n/a	London Plan (2021) target for 95% reuse / recycling / recovery		5%	
Construction waste	27,300	4,177	153	London Plan (2021) target for 95% reuse / recycling / recovery		5%	
Category	Area	t/annum	t/m² GIA	% reused on or off site	% recycled or composted, on or off site	% not reused or recycled	Source of information
Municipal waste	Hotel	189.87	n/a	London Plan (2021) target of 65% municipal waste recycling		0%	Buro Happold; The London Plan 2021 The Spatial Development Strategy for Greater London
Municipal waste	Residential	467.12	n/a	London Plan (2021) target of 65% municipal waste recycling		0%	Buro Happold; The London Plan 2021 The Spatial Development Strategy for Greater London
Industrial waste	All	n/a					

* Figures based on study by structural engineer, based on minimal excavation as the basement is already existing.

** Figures based on study by structural engineer taking into account quantity of existing structure (built in 2018) to be removed.

3.3 Circular economy narrative

This section aims to add some context and narrative detail to the concepts and commitments assembled in Table 3-1. Commitments are organised into subsections which reflect the key circular economy principles from the GLA's guidance. Within each subsection, the narrative will discuss the key areas of commitments discussed by the design team. While some commitments are already integrated into the design, many commitments will reflect the design team's continuous commitment to explore better options to embed the principles of the circular economy within their design in the future stages of design.

Minimise the quantities of materials used

Retention of existing foundation

The current existing foundation will be used with only an extension of the current substructure will be carried out within the new design of the development. The reduction of building works will help to minimise the number of materials that would be used that will also reduce overall embodied carbon levels of the project. The full structural design and reuse of the foundations will be determined at a later stage.

Optimal structural design

To minimise the material consumption of the structural design of the new buildings, the current design utilises post-tensioned slab and has a reduced floor plate depth. This consequently reduces the amount of material used in the construction of the slab. Transfer systems will be avoided, and in turn avoid the construction of additional material used to construct the transfer structures.

At the next stage, the structural design will continue to be optimised as the design is developed. The design team is assessing options to reduce the material consumption as far as possible, while also keeping in mind the scheme's future. For example, while the super-structure is based on a RC frame design, the future design development will look to optimise the size of structural members and consider other structural methodologies to reduce material consumption. The basement and associated layout will also be developed further.

Minimising building services

Reduced plant space reduces the amount of materials used for building services equipment and its replacement over the lifetime of the buildings. The design team have identified several areas in which building services can be reduced:

- Connection to a site-wide district heat network so less plant is required onsite;
- A prefabricated utility room to enable all the apartment-based plant to be situated in one location; and
- Consideration of the layout and scale of the design to look for efficiencies.

Design out waste: minimise the quantities of other resources used

Minimising energy use

The Proposed Development has a particular focus on reducing energy consumption. The potential use of an offsite source for heating the scheme is the most important gain from an energy reduction perspective. Connection to off-

site district heat network by 2026 would result in very significant savings on both energy usage and the space required for plant within individual units and the masterplan as a whole. There are also plans for that decentralised source to be carbon neutral in the future.

As detailed in the Sustainability and Energy Statement, the development also aims to minimise energy consumption through the application of the Energy Hierarchy (lean/clean/green/seen). The proposed façade design and thermal specification have been optimised to minimise heating demand whilst meeting the standard of a naturally ventilated passively cooled building, albeit with active cooling to help overcome acoustic constraints. The building services are to be specified to achieve a high level of energy efficiency, including measures such as ventilation systems with low specific fan power and high efficiency LED lighting systems.

Efficient land-use

Regarding land use, the Proposed Development is to be built on what was brownfield site, minimising greenfield land use. Furthermore, the design has developed to provide as efficient a layout as possible at this stage in terms of built form to open space.

Low carbon construction methods

The design team has also begun considering the use of alternative construction methods such as using cold formed steel or cross laminated timber for the low-rise buildings within the development. While this has not been considered in detail at this stage, to take this further, a whole life-cycle assessment options appraisal could be undertaken to assess the benefits of these methods in the next stage.

Modular construction systems

The design team will investigate the option to modularize the construction of the unitised façade system to enable off-site manufacture. The construction of these elements off-site allows them to be constructed in a controlled environment, which can lead to less wastage of materials and supports better material selection and sourcing. Modular construction techniques will also be investigated for the façades and building services if the design.

Designing for Longevity

Site and structure material

At this stage, the design team has begun to investigate the use of a number of these responsible and sustainable materials. In terms of the construction of the substructure, it is proposed that in the next stage of design, 50% GGBS has been set as our base target, which is a by-product from blast furnaces. Up to 20% of RCA will also be permitted in the next stages of design. Ground floor slabs are to be analysed in the future for how much recycled content could be included.

The design team has also discussed the materials used in open space and landscaped areas and has committed to the use of low embodied carbon and high recycled content products for the external surfaces and edging. Robust and durable materials will be selected for the final design with the

Shell and skin material

In terms of the shell and skin of the Proposed Development, the design team has discussed the potential options to increase the circularity. The façades are predominantly to be constructed from pre cast concrete (around the base) and

insulated aluminium cladding, both of which are robust, long lasting materials. Further design development is required to consider other sustainable decisions which can be made regarding choice of products for the skin of the buildings, with a target of 40% recycled aluminium. The use of FSC timber (where timber is used), and the use of renewable insulation is under review.

Further to these commitments, the design team will work with the contractor and the supply chain in the next stages to appraise options and opportunities for use of locally sources, reused and high recycled content materials, and those that meet responsible certification schemes. In all cases, low embodied carbon materials will be preferred, and as details are developed on material specifications, the life cycles of the materials selected will be considered holistically.

Design for reusability / recoverability / longevity / adaptability / flexibility

The design focusses on building quality and longevity using robust and well-rehearsed methodologies, materials, and details. However, it has been noted that designing for longevity and flexibility will compete to some extent.

Flexible future building use

The Proposed Development will allow for adaptability if the building were to be converted for a different use in the future. The current floor plate design allows for the option of changing the building use if it were required for it to change. The layouts, with relatively shallow floor plates (10.5 m from façade to core) provide opportunities for good daylight and natural ventilation, can be relatively easily adapted to suite either a residential a hotel or open plan commercial offices.

Foundations and structures

In terms of the buildings designed, it is planned that all new buildings will be permanent and will have foundations and structures with a design life of at least 50 years. The foundation design itself will provide building longevity so that interiors and façades can be re-fitted numerous times without need to re-develop the structure. Similarly, the structural design is a simple grid in order to provide maximum flexibility for future configurations.

Building services

The space allowance for building services throughout the development enables easy access for maintenance and disassembly. This will ensure that equipment can operate effectively for longer. Designing for easy access means that services can be retained and maintained rather than replaced and wasted. Designing for disassembly means that should something need to be fully replaced or upgraded (e.g. if the requirements of the building were to change), the materials can be re-used or recycled and kept at their highest possible value. Factory made utility units are proposed providing a more flexible approach to re-servicing apartments, i.e. upgrading heat recovery units.

Design for disassembly

Modular systems

The design team will investigate the option to modularize the construction of the unitised façade system to enable off-site manufacture. The construction of these elements off-site allows them to be constructed in a controlled environment, which can lead to less wastage of materials and supports better material selection and sourcing. Modular construction techniques will also be investigated for the façades and building services if the design.

3.3.2 Plans for implementation

The project team, including the developer and the building contractor, will monitor the progress of the development and maintain records of key milestones against the targets and commitments set out in this Circular Economy Statement, to then be included in the final update to the report upon completion of the development. Record keeping should be updated, reviewed, and handed forward at each stage ensuring consistent messaging and communication, and should be done mindful of the project's circular economy aspirations and the end-of-life strategy.

The design and construction teams will continue to look for opportunities to meet and improve upon the aspirations set out here, as the project progresses. The post-completion report will also include a strategy for monitoring and reporting of ongoing operations of the development. It is suggested that the management teamed is tasked with producing monthly reports to record materials and waste arisings, which should be provided to occupiers to encourage feedback and continuous improvement.

3.3.3 End-of-life strategy

Consideration of what happens to the scheme at the end of its life has been alluded to throughout this Circular Economy Statement. By taking on board the aspirations, ideas, and commitments set out above, the Applicant is moving towards a scheme that breaks down barriers to ultimate disassembly, and which considers the value of the materials used. Thorough records and models will be kept, and these will be developed in the detailed design and construction stages so that they might act as a guide for the repurposing or disassembly and recovery of the layers and elements of the scheme. This will allow the future custodians to the prolong the life of the building and the maintain the value of materials it contains.

4 Post completion report

A post-completion report will be included with an updated Circular Economy Statement when the Proposed Development is at full build out. This stage is part of the wider 'reporting outcomes' portion which will include the targets, commitments and outcomes that have been achieved. This will include updates of all tables included so far in this report, such as the Bill of Materials and the Recycling and Waste Reporting form taking actual performance into account. It is anticipated that the commitment to produce this update will be secured via a suitably worded planning condition.

Updates will be supported where necessary with evidence, including audits, correspondence, record drawings and images, specifications, and product certifications. Clear indication will be made where targets have been exceeded or have not been made, and important lessons learned captured and communicated. Any ongoing suggestions for the operational life of the development will also be highlighted for handover to the building operators.

The post-completion report will be shared with the GLA (to be issued by email to the GLA at ce&wastestatement@london.gov.uk) upon completion of the development in 2028.

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