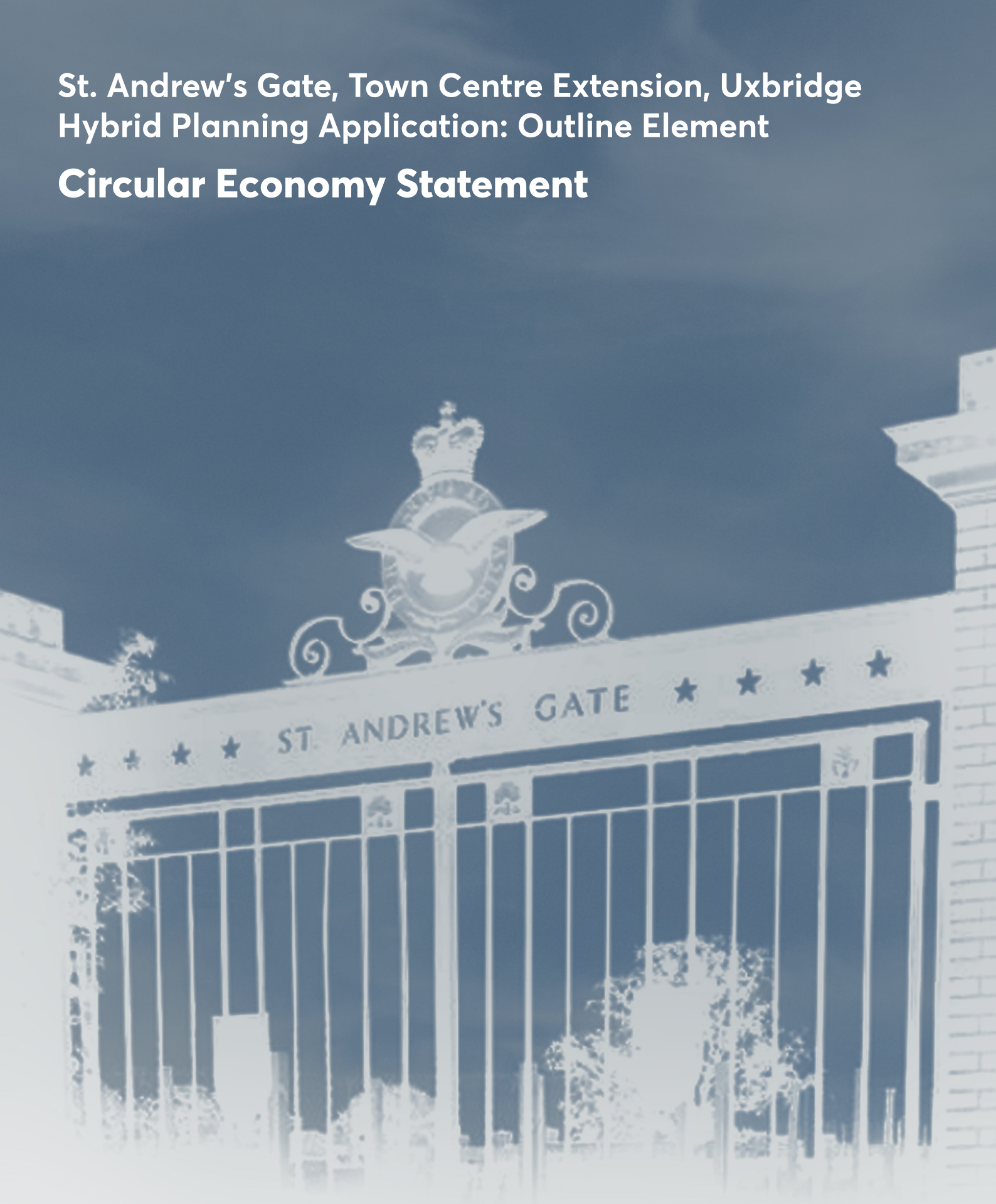
St. Andrew's Gate, Town Centre Extension, Uxbridge
Hybrid Planning Application: Outline Element

Circular Economy Statement



ST. ANDREW'S PARK
UXBRIDGE

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HODKINSON

Circular Economy Statement – Outline Element

Vinci St Modwen (VSM)

St. Andrew's Gate, Town Centre Extension, Uxbridge

Final

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ABOUT HODKINSON CONSULTANCY

Our team of technical specialists offer advanced levels of expertise and experience to our clients. We have a wide experience of the construction and development industry and tailor teams to suit each individual project.

We are able to advise at all stages of projects from planning applications to handover.

Our emphasis is to provide innovative and cost-effective solutions that respond to increasing demands for quality and construction efficiency.

Executive Summary

This Draft Circular Economy Statement has been prepared in support of the Outline Element of the Hybrid Planning Application for St Andrew's Gate, Town Centre Extension, Uxbridge in the London Borough of Hillingdon. The Statement is in draft form, in accordance with the London Plan Guidance (LPG), given the details are outline in nature. Future reserved matter application (RMAs) will be accompanied by an updated Circular Economy Statement. This statement has considered the following circular economy principles:

> Building in layers – ensuring that different parts of the building are accessible and can be maintained and replaced where necessary.

> 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.

> Designing for longevity.

> Designing for adaptability or flexibility.

> Designing for disassembly.

> Using systems, elements or materials that can be reused and recycled.

The commitments below have been set to ensure that changes are made at a strategic level in order to ensure that the core principles of Circular Economy are adopted for future RMAs.

> At least 20% of materials will include reused or recycled content by value, where feasible.

> The development will be designed to meet long-term resident needs, and to be robust, durable, and resilient to climate change.

> All residential units will be provided with access to a refuse store, supporting the separate collection of dry recyclables (mixed plastics, metals, glass, card and paper, and food waste).

> Municipal waste recycling target of 65% (residential) and 75% (commercial) by 2030.

> Monitor energy, water, and waste during construction.

> A target of 95% non-hazardous construction waste is to be recycled or reused and reduce site waste by a third.

Further different strategic approaches that can be adopted and how they could be incorporated have also been outlined in the report and will support a circular economy approach for the development.

CONTENTS

Executive Summary 2

1. INTRODUCTION 4

2. DEVELOPMENT OVERVIEW 5

3. POLICY AND REGULATIONS 7

4. APPROACH TO CIRCULAR ECONOMY 9

Targets and Monitoring 9
Strategic Design Making 10
Conserve Resources 11
Designing for Longevity 14
Designing for Disassembly 15
Designing for Adaptability or Flexibility 16
Managing Waste 17
Operational Waste 18
Plans for Implementation 21
End of Life Strategy 23

5. CONCLUSION 25

6. APPENDICES 27

Appendix A Recycled Content Calculations 27

1. INTRODUCTION

1.1 This Circular Economy Statement has been prepared by Hodkinson Consultancy, a specialist energy and environmental consultancy for planning and development, appointed by Vinci St Modwen (VSM), hereafter referred to as 'the Applicant'.

1.2 This Statement sets out the circular economy measures included in the Outline element of the Hybrid planning application at St Andrew's Gate, Town Centre Extension, Uxbridge, hereafter referred to as 'the TCE Site', in the London Borough of Hillingdon. The measures consider the following principles:

> Building in layers – ensuring that different parts of the building are accessible and can be maintained and replaced where necessary.

> 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.

> Designing for longevity.

> Designing for adaptability or flexibility.

> Designing for disassembly.

> Using systems, elements or materials that can be reused and recycled.

1.3 The above has been undertaken throughout RIBA Stages 1/2 and this statement covers the outline element of the hybrid planning application that is being submitted to the London Borough of Hillingdon.

1.4 The aim of circular economy is to retain the value of materials and resources indefinitely, with no residual waste at all. This is possible but will require a fundamental change in the way that buildings are designed, built, operated, and deconstructed.

1.5 This report should be read in conjunction with the *GLA Circular Economy Spreadsheet* which will be submitted alongside this report.

2. DEVELOPMENT OVERVIEW

Site Location

2.1 The proposed development site at the TCE Site is located in London Borough of Hillingdon, as shown in Figure 1 below.

Figure 1: Site Location – Map data © 2023 Google

Proposed Development

2.2 The proposed development is described as follows:

"Hybrid planning permission comprising:

Outline planning permission (with all matters reserved) for residential development and commercial uses, to be occupied flexibly within Use Classes E(a), E(b), E(c), E(e), E(g)(i), E(g)(ii);and a convenience store (Use Class E(a)); plus car parking, hard and soft landscaping, and all other associated works.

Full planning permission for reinstatement of gym use (Use Class E(d)) and change of use to provide a café (Use Class E(b)) within the former cinema building; and external alterations; and associated car parking, hard and soft landscaping and all other associated works.

Masterplan to be delivered on a phased basis with Full proposals for the former cinema building to be delivered alongside Outline phases."

2.3 Figure 2 below illustrates the proposed site layout.

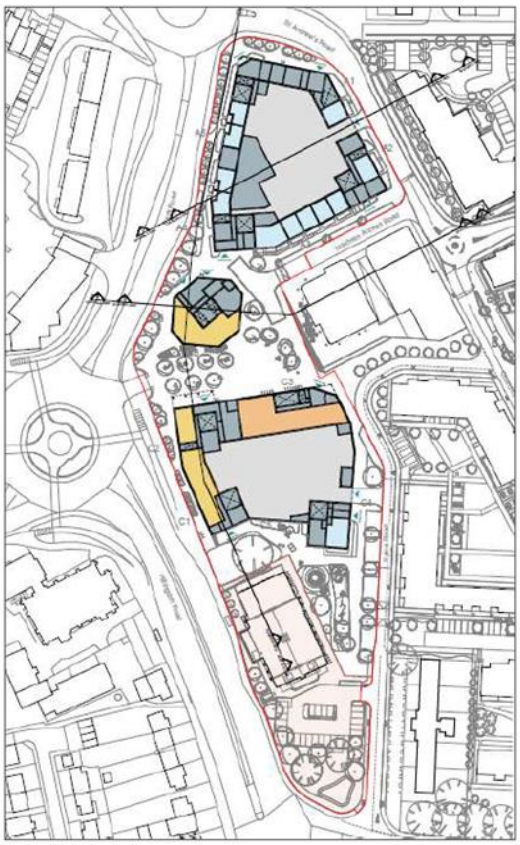

Figure 2: Proposed Site Layout

2.4 The illustrative total Gross Internal Floor Area (GIA) for the Outline Element of the scheme is as follows: follows:

> Total Residential GIA: 30,708 m^2

> Total Non-Residential GIA: 1,100 m^2

> **Total: 38,105 m^2**

3. POLICY AND REGULATIONS

3.1 This chapter highlights the policies and regulations which are relevant to the proposed development.

Strategic Policy: London Plan (2021)

3.2 The London Plan sets out an integrated economic, environmental, transport and social framework for the development of London. The following policies are considered relevant to the proposed development and this Statement:

Policy SI7 Reducing Waste and supporting the Circular Economy.

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

1. Promoting a more circular economy that improves resource efficiency and innovation to keep products and materials at their highest use for as long as possible;

2. Encouraging waste minimisation and waste avoidance through the reuse of materials and using fewer resources in the production and distribution of products;

3. Designing developments with adequate and easily accessible storage space that supports the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass, and food).

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

1. How all materials arising from demolition and remediation works will be re-used and/or recycled;

2. How the proposal's design and construction will enable building materials, components, and products to be disassembled and re-used at the end of their useful life;

3. Opportunities for managing as much waste as possible on site;

4. Adequate and easily accessible storage space to support recycling and re-use;

5. How much waste the proposal is expected to generate, and how and where the waste will be handled;

6. How performance will be monitored and reported.

Local Plan: London Borough of Hillingdon

Part 1

3.3 The London Borough of Hillingdon's Local Plan Part 1 was adopted in November 2012. It comprises a spatial vision and strategy, strategic objectives, and core policies for the Borough up to 2026. The following policy are considered relevant to this Statement.

3.4 **Policy EM11 – Sustainable waste management** states that the Council will aim to reduce the amount of waste produced in the Borough. The Council will require all new development to address waste management at all stages of a development's life from design and construction through to the end use and activity on site, ensuring that all waste is managed towards the upper end of the hierarchy. The Council will promote using waste as a resource and encouraging the re-sure of materials and recycling.

Part 2

3.5 Part 2 of the Local Plan was adopted in January 2020 and provides further detail on the strategic policies set out in Part 1. The following policies are considered relevant to this Statement.

3.6 **Policy DMIN 4 – Re-use and recycling of aggregates** states that the Council will promote the recycling of construction, demolition, and excavation waste. All developments will be encouraged to:

> Recycle and re-use construction, demolition, and excavation waste as aggregates;

> Process and re-use the recyclable material on-site, and where this is not possible, the material should be re-used at another site or for land restoration; and

> Use substitute or recycled materials in new development in place of primary minerals.

Guidance Documents

3.7 Guidance has been released by the Greater London Authority "*Circular Economy Statements guidance – March 2022*". It outlines how to prepare a Circular Economy Statement which should accompany all referable Planning Applications in line with London Plan Policy SI7 '*Reducing waste and supporting the Circular Economy*.'

3.8 This guidance is accompanied by a Circular Economy spreadsheet, which provides separate tabs outlining the information that should be submitted at each stage. This spreadsheet has been provided as a standalone document which should be read in addition to this report.

3.9 The guidance notes that Circular Economy Statements should be submitted at three stages:

> **Outline/pre-application (RIBA Stage 1/2) -** Draft Circular Economy Statement with a focus on the strategic approach;

> **Full application (RIBA Stage 2/3) -** Detailed Circular Economy Statement outlining how the principles will be addressed through detailed design.

> **Post-completion stages (RIBA Stage 5/6)** - Post-Planning Updates should outline the progress in meeting the targets and commitment can be provided during the construction process.

3.10 As the proposed development is already at RIBA Stages 1/2 covering the outline element of the hybrid planning application, a Circular Economy Statement is required.

4. APPROACH TO CIRCULAR ECONOMY

Targets and Monitoring

4.1 Circular economy targets have been agreed with the design team and will be used to influence decisions and design as we progress through the project. These are outlined in Table 1 below:

4.2 An overview on how the Applicant will meet these targets is outlined in this report and in the accompanying GLA spreadsheet.

Table 1: Circular Economy Targets

Circular Economy Targets	Target aiming for (%)	Policy Compliant?
Demolition waste (where found)	Not applicable	-
Excavation waste materials	95%	✓
Construction waste materials	95%	✓
Municipal waste – residential (by 2030)	65%	✓
Municipal waste – non-residential (by 2030)	75%	✓
Recycled content	20%	✓

4.3 To monitor the targets, the Applicant will ensure that waste associated with the enabling works (demolition and excavation waste) and construction will be accurately recorded via a Site Waste Management Plan. Operational waste will be measured post-construction to ensure that the targets set are achieved. Finally, the recycled content will be monitored through the development of the actual Bill of Materials.

4.4 More detailed information on the monitoring process will be provided in subsequent Reserved Matters Applications.

Strategic Design Making

4.5 The GLA Decision Tree has been used to determine the most appropriate design approach for the site. Figure 3 below highlights how the design team have progressed through the decision gates regarding the proposed development.

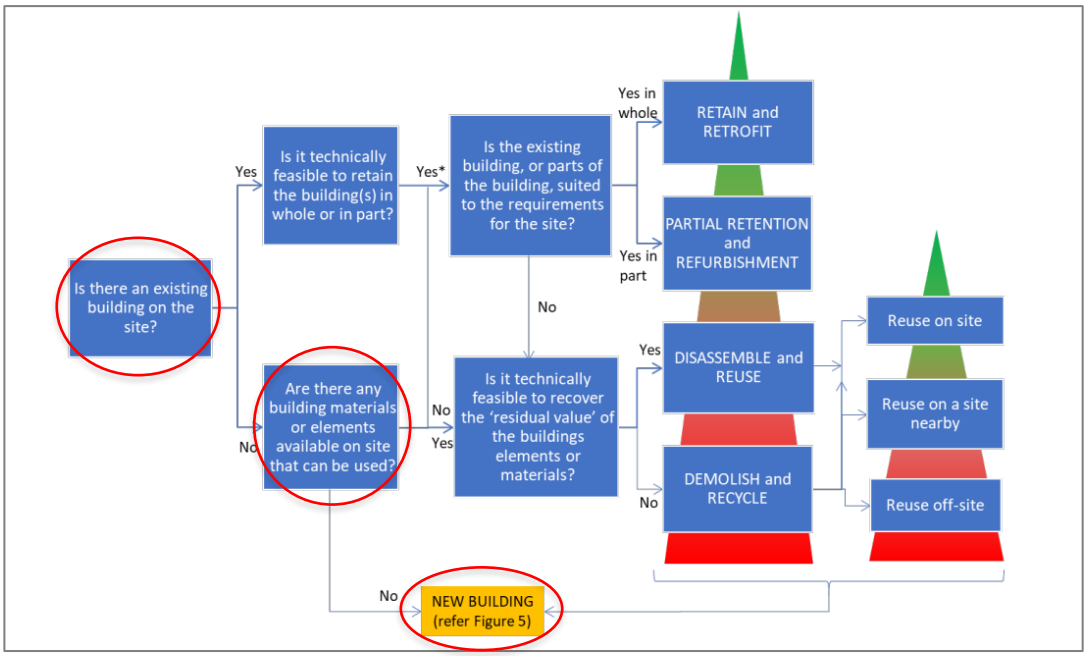

Figure 3: Decision tree for design approaches for existing structures/buildings (Circular Economy Statement guidance, GLA, March 2022)

4.6 This has determined to be a 'new building', as there are not existing buildings or material within the outline area of the proposed development site. The former Cinema building to the south of the site comprises the Full element of the proposed development, not assessed for the purposes of this report on the Outline element only. This is outlined in further detail in the accompanying GLA spreadsheet.

4.7 The proposed development is aiming to make changes at a strategic level to ensure that the core principles of a circular economy are adopted where feasible.

4.8 A rationale of the strategic approach is summarised in the GLA spreadsheet submitted with this report, a more detailed overview of these is provided below.

Conserve Resources

Sustainable Procurement

4.9 When appointed, the principal contractor will seek to implement a sustainable procurement plan for the proposed development. The responsible sourcing of materials will be a key consideration in the selection of suppliers and the sustainable procurement plan will support new building materials being selected to minimise environmental impact and have low embodied energy – from manufacture, transportation, and operational stages, through to eventual demolition and disposal.

4.10 Materials will be sourced in accordance with the following guidance:

> 100% of concrete will be BES 6001 certified (Responsible Sourcing of Construction Products).

> Where possible steel will be sourced from suppliers rated under the CARES Sustainable Constructional Steel Scheme.

> Other major construction materials will be certified under an Environmental Management System (EMS) such as ISO 14001.

4.11 In addition, products with a recognised environmental product declaration (EPD) will be targeted where possible.

4.12 All timber specified will be legally harvested and traded timber and should be sourced from schemes supported by the Central Point of Expertise for Timber Procurement such as Forest Stewardship Council (FSC) accreditation – which ensures that the harvest of timber and non-timber products maintains the forest's ecology and its long-term viability.

Minimised Material Use

4.13 Adopting a design approach that focuses on material resource efficiency so that less material is used in the design (e.g., lean design), and / or less waste is produced in the construction process, without compromising the design concept.

4.14 The design team will regularly review material efficiency strategies to ensure a lean design that reduces material quantities without inhibiting future flexibility. Engagement with the design team has been undertaken to address the end-of-life strategy for the material.

4.15 The development has also taken steps to ensure other resource use will be kept to a minimum. Examples include:

> The development will achieve a total reduction in regulated CO_2 emissions of more than 67.6% over the Building Regulations Part L baseline through be lean, be clean and be green on-site measures and will provide homes that are energy efficient and incorporate Low and Zero Carbon technologies, including the connection to a District Heat Network, solar PV, and Air Source Heat Pumps.

> All new dwellings will target a minimum internal water efficiency standard of 105 litres/person/day in accordance with the recently adopted London Plan Policy SI5 and the optional tighter Building Regulations Approved Document G requirement (110 litres/person/day).

> Built on a brownfield site which prevents the development of virgin land.

> Site set up will consist of temporary modular welfare cabins sized adequately for the predicted number of operatives and management on site during the enabling works, remediation and piling phases. These welfare modules are not new and have been re-used on construction sites before and will be re-used on different sites once construction is complete. This re-use is facilitated by the modular nature of the welfare compounds.

> A 'just-in-time' delivery system will be used onsite to minimise an excess amount of material on site at any one time, which reduces the chance of damage to materials. Protective coverings will be left on products for as long as possible to reduce the risk of any damage or degradation during the construction process.

4.16 For waste reduction, minimisation of excavation, simplification and standardisation of materials and components of choice, and dimensional coordination have been considered.

Recycled Content of Materials

4.17 The Applicant is committed to target a benchmark of 20% reused or recycled content by value., where feasible. Please see **Appendix A** for the recycled content calculations from One Click (Hodkinson Consultancy, June 2024). It is acknowledged that the current 14.49% is below the 20% however, through focus and inclusion of materials in the below bullet points, the 20% could be met. The design team will seek to improve upon the current 14.49% recycled content by value as the design progresses and more detail on materials will be provided during the detailed design.

4.18 A brief bill of materials summary table has been provided in the GLA Circular Economy spreadsheet, submitted alongside this application. This bill of materials has been created using the inputs provided in the Whole Life Carbon Assessment (Hodkinson Consultancy, June 2024)) and will need to be updated as the project progresses.

4.19 With regards to contributing towards circularity the recycled content within the construction elements will be maximised as much as possible, 20% is the current target. The list below indicates a way this target could be met:

> Reinforced steel: 97% share of recycled material in the product by mass

> Gypsum: minimum 30% share of recycled material in the product by mass

> Aluminium: 35% share of recycled material in the product by mass

> Insulation: 20% share of recycled material in the product by mass

> Ready mix concrete: Up to 5% of recycled material in the product by mass

> Concrete, gravel and aggregates in hard landscaping: 50% share of recycled materials in the product by mass

4.20 The monitoring of the recycled content in materials will be done throughout design by all members of the design team via a 'live' bill of materials. The final bill of materials (to be provided post construction) will verify the implementation of this target.

Material Intensity

4.21 The Bill of Materials provided in the Circular Economy spreadsheet were taken from the Whole Life Carbon Assessment (Hodkinson Consultancy, June 2024).

4.22 The spreadsheet has taken this information and automatically calculated the material and waste quantities throughout the building's life cycle, and the intensity of these indices.

Cut and Fill

4.23 Cut and fill calculations will be undertaken at subsequent Reserved Matters Applications.

Lean Design

4.24 As this is an outline application, the design is still subject to change. As the design progresses, the design team will ensure that a lean design approach is prioritised.

4.25 The lean design approach will ensure that material use is minimised through efficient design. This will be expanded upon in future Reserved Matters Applications.

Standardisation

4.26 The proposed development will consider designing and construction methods by applying, where feasible, standardised elements for materials and products that enable a reduction in construction waste and easier reuse in next life.

4.27 The development will aim to use standardised design formats to enable future reuse, e.g., no bespoke cutting of materials as this can make replacements difficult to obtain.

4.28 The layout of the flats between floors can be standardised in order to ensure the most efficient arrangement of plant work throughout the entirety of the building. By stacking rooms that require significant pipe work, such as bathrooms, this will ensure a reduction in material use.

Off-Site Manufacturing

4.29 Modern methods of construction are characterised by offsite manufacturing. Benefits commonly attributed to this include:

> Greater quality control and consistency in a factory environment.

> Materials can be delivered to site once complete, so storage requirements are minimal.

> Reduced waste.

4.30 The following elements will be considered during detailed design:

> Bolt-on balconies.

> Internal door sets.

> Precast stairs.

> Prefabricated utility cupboards.

> Precast columns

Designing for Longevity

4.31 The proposed development will seek to design with longevity in mind. Examples include protecting materials from degradation due to environmental conditions, adopting passive design strategies to provide resilience, and sizing systems to cope with future climate scenarios.

4.32 The frame of the building will likely consist of reinforced concrete – a durable material that can be separated and recycled in its constituent parts at the end of its life. In addition, the external façade will likely comprise of brickwork which can also be reused and recycled at the end of its life. These materials provide a highly durable super structure.

4.33 Appropriate durability measures will be incorporated in vulnerable parts of the internal building (both residential and non-residential) so as to minimise the frequency of replacing materials and therefore optimising material use. Examples of such measures could include hard-wearing floor finishes and bollards and kerbs in servicing/vehicle areas.

4.34 External materials will also suffer from environmental degradation. Material finishes on the external elevations will be selected based on their hardiness in addition to their architectural and construction qualities.

4.35 The feasibility of producing an Operational and Maintenance Plan can be explored at detailed design stage. If produced, this would outline how on-site systems will be monitored and maintained during the expected life of the development, including parties responsible for maintenance and management of the systems, onsite operations and maintenance, and resident engagement.

4.36 Various energy saving sustainable initiatives will be included in the design, such as highly insulated external fabric and walls, and low-energy lighting throughout.

Designing for Disassembly

4.37 A materials inventory will be created for the entire building that includes a detailed breakdown of all building elements that sets out the constituents of each product and material, the structural loadings, and the ability for each material to be reused and/or recycled.

4.38 Where possible, materials will have the option to be taken apart through mechanical and reversable fixing to allow for future reuse. Permanent fixing of products, such as by glue and cement mortar, will be minimised where feasible, to enable end of life deconstruction and salvage of building elements. Fixings will be easily accessible, where possible, for disassembly.

4.39 Mechanical and electrical unit sizes and components should be reviewed to allow for a replacement strategy avoiding the use of cranes where possible. Larger equipment, where installed, will be located on buildings provided with accessible road frontage.

4.40 The Applicant will select materials and systems that are designed to ensure safe disassembly and removed at the end of their service life, this increasing the amount of material which might be recycled or reused.

Designing for Adaptability or Flexibility

4.41 To avoid unnecessary material use, cost and disruption arising from the need for future adaptation works the designs will look to incorporate functional adaptability. These changes could be required as a result of changing functional demands and to maximise the ability to reclaim and reuse materials at final demolition in line with the principles of a Circular Economy.

4.42 The proposed development can consider the following adaptability measures during detailed design:

> Structural and spatial futureproofing to anticipate for conversion of communal areas into additional rooms;

> Reconfigurable furniture that can be repurposed to allow for easy reconfiguration of rooms for other purposes, such as small office units;

> Circulation / fire strategy incorporation to anticipate future adaptation, such as locating corridors that can be extended at a later stage.

> The ability to remove and replace all major items of plant within the building without needed to demolish sections of wall or floor. Lifting beams and hoists can be incorporated into the design where necessary.

> The development will be designed for accessibility and there will be a variety of apartment sizes, catering for individuals and family living with adequate storage for buggies and wheelchairs (Part M).

4.43 The frames are likely to be made of reinforced concrete frames designed by the structural engineers. The construction is likely to comprise flat slabs and minimal internal columns and no load bearing partitions. These two features mean that future layout changes are likely to be relatively simple.

4.44 Infrastructure and hard landscaping are typically less adaptable than other elements of the built environment. The detailed design of the site layout should include opportunities to make it adaptable, this could include the use of moveable planters and limiting the use of adhesives and fixings.

Using Systems, Materials that can be Reused and Recycled

Material Reclamation

4.45 Some service components will be designed for disassembly, allowing for material reclamation at end-of-life. These include water tanks, water pumps, heating plant ancillaries, plastic and metal pipe work, ductwork, ventilation fans, air handling units and MVHRs, heating & cooling VRF equipment, air source heat pumps, electricity and telecoms containment and wiring, emergency generator, substation, electrical distribution boards, ventilation grilles, photovoltaic panels, lighting fittings, electrical accessories, lifts' cars, motors, counterweights and railing, access control systems, CCTV and security systems

Managing Waste

Site Waste Management

4.46 Prior to any Enabling works beginning on site, a Project Waste Management Plan will be drafted. The plan will include details on waste minimisation strategies incorporated in design and procurement stages. It will also include information on how waste will be managed during the construction phase, along with predictions for various waste streams.

4.47 The location of the waste handling site that materials will be taken to, will vary dependent upon their specific make up, of which is yet to be confirmed (on appointment of Principal Contractor). Notification of the likely destination of all waste streams (incl. beyond the Materials Recycling Facility) will be provided, including confirmation that the destination landfill(s) has/have the capacity to receive waste.

4.48 Waste facility sites in the London Borough of Hillingdon may be used amongst others as appropriate. Wherever possible, materials will be recycled and re-used either onsite, or provided for use elsewhere. Waste segregation will take place during construction as far as the site allows logistically to give the highest possible recycling rates.

4.49 A strategy will be put in place to minimise the space taken by storage of new materials. Frequently used items will be placed in easy to access areas. This will increase efficiency and minimise wastage due to damage. Prolonged storage of materials on site will be avoided, where possible, and implementation of 'just in time' deliveries will be encouraged.

4.50 As part of their commitment to divert construction waste from landfill, the contractor will be required to regularly monitor and record the site's waste reduction performance. This will be compared against a target benchmark where at least 95% (by volume) of non-hazardous

construction and demolition waste is to be reused or recycled. A benchmark of 95% for potential excavation waste put to beneficial use will also be set.

4.51 The energy and water consumptions of the project will be monitored, either through sub-metering or reading utility bills, to allow comparison against best practice benchmarks and improvements made.

Construction Waste Monitoring

4.52 The applicant is committed to reducing construction waste from landfill and they will be required to regularly monitor and record the site's waste reduction performance. A weekly progress report will be produced once construction works begin and will contain data for waste movements. This will be assembled by senior contract managers who shall review the previous week's activity during report compilation.

4.53 Workshops at RIBA Stages 3/4 will track the development of potential waste opportunities and identify additional measures to ensure these targets are met.

Operational Waste

4.54 Waste reduction during the operational phase is also being considered for opportunities in implementing waste mitigation measures for the potential impacts arising during the operation of the development to ensure that such measures are consistent with both national and local waste policies and targets.

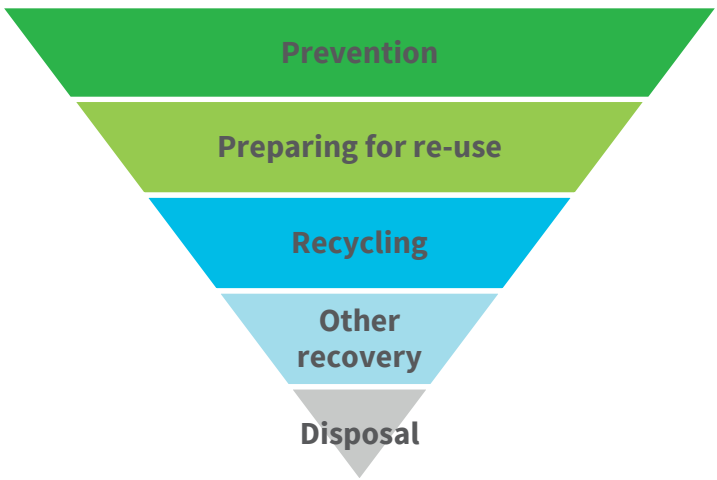

Figure 4: Waste Hierarchy

4.55 The Waste Hierarchy strategy in accordance with the London Plan will be used to ensure that waste is reduced or reused prior to being put out for recycling or refuse collection. The waste hierarchy, as shown in Figure 4 above, establishes waste management options according to what is best for the environment. It places great importance on preventing waste in the first place. When waste is created it prioritises preparing if for re-use, then recycling, recovery and lastly disposal (e.g., landfill).

Waste Arising & Storage

4.56 The waste store will be clearly labelled to ensure accurate segregation of refuse, mixed recycling, and food waste.

4.57 At detailed design, further information will be provided on the location of the refuse stores.

4.58 During future reserved matters applications, the waste generation benchmarks detailed in Table 2 below will be used for estimation of residential waste generation. These are derived from BS 5906:2005 which estimates 30 litres per dwelling plus 70 litres per bedroom. These are considered to provide a reasonable estimate for the calculation of storage requirements, given the scale of the development and the extensive provision of facilities management support.

Table 2: Estimated waste arising by unit type

Apartment type	Waste generation (litres/week)	Estimated Waste composition (litres/week)			
		Residual	Organic	Plastic, glass and metals	Paper and cardboard
1 Bed	100	35	15	25	25
2 Bed	170	65	25	40	40
3 Bed	240	105	35	50	50
4 Bed	310	150	40	60	60

4.59 At present, the level of detail required to complete these calculations is not yet known due to the outline nature of the application. In the absence of this, waste generation estimates have been taken from similar sized schemes. These assume the following weekly waste estimates:

> General waste: 35,333 litres

> Recycling: 27,500 litres

> Organic: 4,000 litres

4.60 This would result in the following total waste arisings for the proposed development:

> Total waste generated per week = 66,833 (8.35 tonnes)

> Total waste generated per annum = 3,475,316 (434 tonnes)

Operational Waste Monitoring

4.61 The development is committed to meet the Mayor's 65% target for municipal waste (residential) recycling by 2030 and will strive to ensure no biodegradable or recyclable waste is sent to landfill by 2026, once the proposed development, is operational. The development will also meet the Mayor's 75% target for municipal waste (commercial) recycling by 2030.

4.62 Waste monitoring will consist of the collection of waste reporting data by Facilities Management, such as the volumes of various waste streams and tracking of the percentage of waste recycled. This information will be used to monitor progress towards achieving waste avoidance targets.

4.63 New residents and property occupants will be encouraged to reduce and prevent waste through good practice measures such as providing information packs to residents about how the waste segregation and recycling scheme operates. The information will also include details on waste prevention schemes within the London Borough of Hillingdon such as:

> **Love Food Hate Waste** – aims to raise awareness of the need to reduce food waste and ways to take action;

> **Community RePaint** – UK wide paint reuse network that aims to collect leftover paint and redistribute it to benefit individuals, families, charities and communities in need at an affordable cost;

> **Hillingdon Council Reuse and Recycling Centres** - Reuse and recycling centres allow residents to dispose of a wide range of reusable and recyclable items for free; and,

> **Freecycle Network; and Freegle** – are networks that aims to increase reuse and reduce landfill by offering a free online based service where people can give away and ask for things that would otherwise be thrown away.

Recycling Waste Reporting Form

4.64 The recycling and waste metrics reporting will be provided by the main contractor, once appointed as is standard practice. This will be agreed with the project manager and a site waste management plan, which will contain improved estimates for figures shown in Table 3.

Table 3: Recycling and Waste Reporting – Construction and Municipal Waste

	Excavation Waste	Demolition Waste	Construction Waste	Municipal Waste
Total Estimate (t/m^2 GIA)	To be confirmed	Not applicable	0.065	0.018
Reuse Onsite (%)	-	-	-	-
Reuse Offsite (%)	-	-	-	-
Recycle Onsite (%)	-	-	-	-
Recycle Offsite (%)	-	-	95%	65%
Landfill (%)	-	-	Max 5%	35%
Other management (%)	-	-	-	-

4.65 Given the outline nature of the scheme, the above will need to be updated during the Reserved Matters Application once sufficient detail is known on the accommodation mix. In the interim, the high level estimates are considered appropriate on the basis of similar sized developments.

Plans for Implementation

4.66 Considerations for circular economy implementation will be required through active engagement with key stakeholders at each stage, of which include (but not limited to):

> Principal Contractor and Sub-contractors (when appointed).

> Project Architect.

> Structural Engineers.

> Transport Consultants; and

> Client.

4.67 A brief plan of implementation (short, medium, and long term) and action list has been compiled. Key actions of which included:

- Review and confirm the decision to use GGBS and reinforced concrete frames with 97% recycled steel as sustainable materials.
- Consider how flexibility and adaptability can be considered in the design process, particularly within the non-residential spaces.
- Consider how the principles of lean design can be implemented as the development progresses into the detailed design stage.

4.68 Such requirements, along with the projects strategic approach to implementing circular economy principles, will be included in tendering specifications to contractors, ensuring responsibilities in line with these aspirations are embedded from the earliest opportunity.

4.69 Waste is a key performance indicator included in project performance dashboards, allowing for the ongoing monitoring of construction waste by site managers. This will help to ensure that construction waste targets are met.

4.70 Maintenance of all plant items will need to be implemented utilising the appropriate equipment and platforms, by appropriately trained engineers in accordance with relevant regulations. Prior to any of these tasks being implemented, method statements and risk assessments will need to be produced and issued to the building management team.

4.71 The Principal Contractor (once appointed) will be required to continue the work done by the design team to identify and provide solutions on key challenges with material use with the aim to reduce this even further.

4.72 It is proposed the following actions are taken to implement and monitor the actions included in this Circular Economy Statement:

- Ensure SWMP is created and populated with the targets and actual waste data.
- Provide an updated bill of materials.
- Update recycling and waste forms.
- Provide cut and fill calculations.
- Provide reused or recycled content calculations and building weight calculations.
- Undertake scenario modelling and lean design options appraisal.
- Undertake a lesson learned workshop at the end of the project.

End of Life Strategy

4.73 Although the proposed development is still at an early design phase, the end-of-life strategy for the building should be considered.

4.74 Once the principal contractor is appointed, and the design is progressed and develops to specify exact materials and products, the end-of-life scenarios for the building will become more detailed as a result. The main aim is to extend the lifetime of the building through careful design and specification through the measures listed herein.

4.75 Where individual elements have shorter design life periods, the development seeks to design for the repurpose and independent replacement of these individual elements.

4.76 Exact materials and products will be selected and designed to allow for disassembly and reuse at the end of their useful life.

4.77 Building Information can be stored for the entire duration of the building's lifetime to facilitate end of life strategy, disassembly, future reuse, waste avoidance, and waste reduction. The material specification and manufacturers data sheets can be stored and updated as and when additional works are undertaken. This information can be used towards the end of life to inform the end of life strategy, disassembly, future reuse, waste avoidance, waste reduction.

4.78 Once appointed, the contractor will also be required to produce a disassembly manual that provides guidance on which materials, elements or components can be reused, recycled, or composted. Where possible, the disassembly manual will include a Building Information Model (BIM) to ensure information can be easily accessible and updated where relevant. The manual will act as a guide for disassembly for those elements that have been designed to be disassembled at the end of their life within the building.

4.79 The project has been assessed on the assumption of a 60 year design life, at which point material reuse and recycling technologies are expected to be more advanced than today.

4.80 Assumptions made with respect to maintenance, repair and replacement cycles and the material ''end of life'' scenarios have been included within the GLA Spreadsheet that accompanies the Whole Life Cycle Carbon assessment (Hodkinson Consultancy, June 2024).

4.81 Although the proposed development is still at an early design phase, engagement with the design team has been undertaken to address the end-of-life strategy for the building materials and components.

4.82 The One Click Building Circularity tool has been used to estimate opportunities for the materials at the end of their life. The results are based on inputs used for the Whole Life Cycle Carbon Emissions Assessment (Hodkinson Consultancy, June 2024).

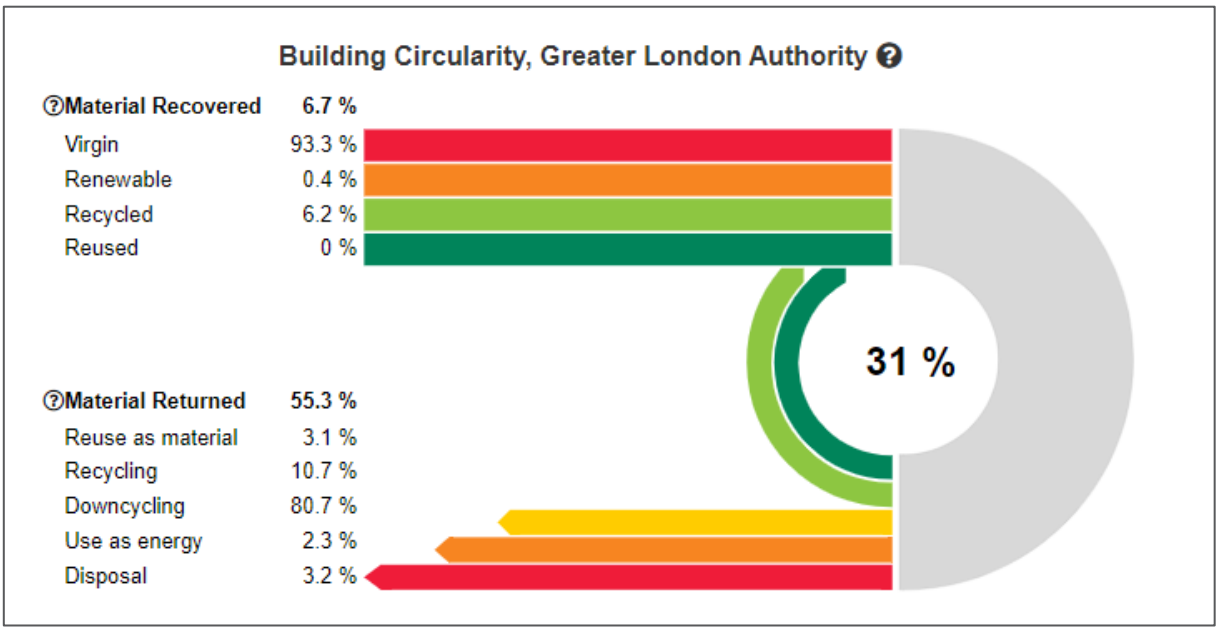

Figure 5: Building Circularity Tool

4.83 This building's circularity is evaluated in terms of the mass of the recovered building material as compared to virgin material likely to be used in the building construction and the percentage of the material that can be returned to building construction at the end of life of the building.

4.84 'Materials Recovered' (6.7%) represents the use of circular materials in the project. It is the mass-based share of recycled, reused or renewable materials of the total materials used.

4.85 'Materials Returned' (55.3%) represents the end-of-life handling of materials that were used in the project. It is the mass-based share of materials that are either recycled or reused as material, added with 50% of the materials that are either downcycled (with value loss, such as reuse of concrete aggregates) or used as energy (such as wood or plastic product incineration).

4.86 Once the principal contractor is appointed, and the design is progressed and develops to specify exact materials and products, the end-of-life scenarios for the building will become more detailed as a result. The main aim is to extend the lifetime of the building through careful design and specification through the measures listed herein.

4.87 Where individual elements have shorter design life periods, the development seeks to design for the repurpose and independent replacement of these individual elements.

4.88 Exact materials and products will be selected and designed to allow for disassembly and reuse at the end of their useful life.

4.89 Building Information will be stored for the entire duration of the building's lifetime to facilitate end of life strategy, disassembly, future reuse, waste avoidance, and waste reduction. The material

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

4.90 Once appointed, the contractor will also be required to produce a disassembly manual that provides guidance on which materials, elements or components can be reused, recycled, or composted. Where possible, the disassembly manual will include a Building Information Model (BIM) to ensure information can be easily accessible and updated where relevant. The manual will act as a guide for disassembly for those elements that have been designed to be disassembled at the end of their life within the building.

4.91 The project has been assessed on the assumption of a 60 year design life, at which point material reuse and recycling technologies are expected to be more advanced than today.

4.92 Assumptions made with respect to maintenance, repair and replacement cycles and the material ''end of life'' scenarios have been included within the GLA Spreadsheet that accompanies the Whole Life Cycle Carbon assessment (Hodkinson Consultancy, June 2024).

5. CONCLUSION

5.1 This Circular Economy Statement has been prepared by Hodkinson Consultancy, a specialist energy and environmental consultancy for planning and development, appointed by Vinci St Modwen (VSM). It has been produced for the outline element of the planning application at the TCE Site located in the London Borough of Hillingdon.

5.2 The aim of circular economy is to retain the value of materials and resources indefinitely, with no residual waste at all. This is possible but will require a fundamental change in the way that buildings are designed, built, operated, and deconstructed. The following measures have been considered:

> Building in layers – ensuring that different parts of the building are accessible and can be maintained and replaced where necessary.

> 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.

> Designing for longevity.

> Designing for adaptability or flexibility.

> Designing for disassembly.

> Using systems, elements or materials that can be reused and recycled.

5.3 The above has been undertaken throughout RIBA Stages 1/2 and this statement covers the outline element of the hybrid planning application that is being submitted to the London Borough of Hillingdon.

5.4 This report should be read in conjunction with the *GLA Circular Economy Spreadsheet* which will be submitted alongside this report.

5.5 A series of targets have been proposed in this Circular Economy Statement, identifying and applying these approaches during concept design will enable them to be incorporated as part of the development brief and will help facilitate a circular economy approach to future Reserve Matter Applications.

5.6 Following Reserved Matters Application stage, a Post Construction Completion Report is to be provided at project completion in line with GLA guidance. This will seek to set out the predicted and actual performance against all numerical targets and provide updated versions of the items noted in this report.

6. APPENDICES

Appendix A

Recycled Content Calculations

REUSED AND RECYCLED CONTENT CALCULATIONS

	Material quantity (kg)	Material intensity (kg/m²)	Recycled content by value
Substructure	8,770,355	230	42.82%
Superstructure: Frame	7,320,809	192	42.71
Superstructure: Upper Floors	4,165,770	109	40
Superstructure: Roof	28,795	0.8	0
Superstructure: Stairs and Ramps	1,402,262	37	36.8
Superstructure: External Walls	22,188,789	582	566
Superstructure: Windows and External Doors	191,034	5	5.01
Superstructure: Internal Walls and Partitions	1,901,682	50	16
Superstructure: Internal Doors	495,945	13	0
Finishes	1,282,830	34	28.4
Fittings, furnishes, and equipment	388,344	10.1	0
Services (MEP)	446,199	12	9.9
External works	1,077,974	28	0.5

	Material quantity (kg)	Material intensity (kg/m^2)	Recycled content by value
Total	**49,660,790**	**1,303**	**1,205**