Virtus Data Centres – October 2026

REPORT
Savills Earth

Former Sipson Garden Centre Circular Economy Statement



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01. Executive summary

This Circular Economy Statement has been prepared by Savills Earth on behalf of Virtus Data Centres in support of an Outline Planning Application, with all matters reserved except for access, for the redevelopment of the Former Sipson Garden Centre, Sipson Road, Sipson, West Drayton, UB7 0HP. It reports the circular economy principles considered. GLA Guidance defines a circular economy as one where materials are retained in use at their highest value for as long as possible, then reused or recycled, leaving minimal residual waste.

The Site extends to approximately 6.9 hectares off Sipson Road/Sipson Lane in the London Borough of Hillingdon (LBH). The former garden centre building has already been demolished and does not form part of this application; the Site is currently in use as an Airside Support Vehicle servicing and repair centre (ref. 67666/APP/2023/3721).

The application seeks outline permission for demolition of the remaining timber frame buildings, porta cabins and areas of hardstanding, and the construction of a data centre facility of up to 54MW capacity, comprising a data centre building of up to c.25,000 sqm GFA, ancillary office, external plant, substation, parking, landscaping, attenuation and photovoltaic provision, up to 20m in height.

An early collaborative approach to circularity has considered the core circular economy principles in design, construction and operation. The Applicant brings an established corporate sustainability approach to the Site – 100% renewable energy since 2012, net zero on all reportable activities by 2030, Zero Waste to Landfill certification across all its sites, and ISO 14001 and ISO 50001 certified management systems – and the Proposed Development will be delivered in accordance with these commitments. As all matters are reserved, the commitments set out here are high-level and will be developed at Reserved Matters Application (RMA) stage, in line with GLA guidance.

Targets and options for reducing waste and material use are set out below and are indicative. Design workshops at RMA and detailed design stages will test and refine these principles. Wherever possible, the team will exceed the minimum targets in the GLA guidance and London Plan (2021) Policy SI 7.

Minimise material quantities

The Proposed Development adopts a design approach that focuses on material resource efficiency – a leaner concept with less material demand will also reduce the amount of waste produced in the construction process, without compromising operational performance. Structural efficiency will be confirmed at RMA stage.

For waste reduction, measures to minimise excavation, to simplify and standardise materials and components, and to apply dimensional coordination have all been considered at this outline stage.

Indicative massing and layout respond to the low-rise character of Sipson Road/Sipson Lane, with a 20m height limit and landscaping retaining most trees. Emerging RIBA Stage 2 design indicates a c.3,635 tonne hot-rolled steel frame, EAF steel intended, on a piled RC substructure with 50% cement replacement; quantities are indicative, the palette confirmed at RMA stage.

Minimise fuels, land & water

The Proposed Development will be designed for energy and water efficiency in operation, an important consideration for a data centre use. Construction processes will prioritise fuel and water conservation, including delivery and storage logistics, with detail secured at RMA stage.

The Proposed Development will largely reuse previously developed land and existing hardstanding, which will minimise disruption to the existing landscape and optimise use of London's limited resources, with the majority of existing trees and shrubs retained.

Specifying & sourcing materials

This involves designers and contractors collaborating for optimum results and includes reference to green sourcing guides like Greenspec and Green Guide. A Sustainable Procurement Plan will be prepared at RMA stage and can be secured by condition, giving a high priority to locally sourced materials with high recycled content and products with EPDs.

RIBA Stage 2 defines the structure, subject to change: piled foundations, ground beams and slab in C32/40 concrete with 35-50% GGBS/fly ash replacement, and a hot-rolled steel frame with composite metal-deck slabs, EAF steel intended. Architectural, façade, MEP and external works specifications are currently indicative until the design is further developed for RMA.

Design for longevity, adaptability / flexibility and reusability

The GLA strategic approach decision tree directed attention towards designing for adaptability for the data centre building, with flexibility for the ancillary office, plant and substation elements.

Key exposed building elements will be designed to limit degradation from environmental factors such as solar radiation, wind and temperature variations. A disassembly guide will be produced at RMA stage to indicate how deconstruction and recoverability of materials could be maximised at the end of their life.

Durable materials will be specified to optimise the lifespan of the building and mitigate against the need to replace materials. The structural frame will be designed for a design life of 60 years, with plant designed for replaceability. Generous floor to ceiling heights offer flexibility for future adaptation and for MEP and electrical plant refresh over the operational life.

The only structures remaining on the Site are timber frame buildings, porta cabins and areas of hardstanding. The timber frame buildings will be carefully soft-stripped and deconstructed rather than mechanically demolished where safe to do so, allowing sound timber sections to be reclaimed for re-use, with non-reusable timber chipped and recycled and treated timber segregated. The porta cabins are inherently relocatable and the first preference is their removal intact for re-use on other Virtus sites, resale, or donation to local community or charity uses; only if beyond economic repair will they be dismantled and their steel, timber and insulation recycled.

Recoverability

In a circular economy, the value of products, materials and resources is maintained for as long as possible, while waste generation is minimised. Hardstanding will be crushed on site where practicable, subject to contamination testing, and re-used as piling mat, sub-base and haul road material, reducing imported primary aggregate. Metals, WEEE and plastics will be segregated to appropriate recycling streams, and modular MEP and electrical plant will make use of manufacturer take-back where available.

At outline stage, the estimated circularity score is 39%.

Design out waste

Implementing the building in layers approach, the design objective for elements with longer life cycles (more than 25 years) is to design for longevity, adaptability and flexibility. Layers with shorter life expectancy (less than 25 years) will be designed for ease of maintenance, reuse and recoverability, reflecting IT and electrical equipment refresh cycles. Plant will be made accessible for replaceability and maintenance.

Manage waste sustainably and at the highest value

A detailed pre-demolition audit and pre-redevelopment audit will be undertaken post outline planning, prior to RMA, and the applicant accepts this being secured by planning condition. A Site Waste Management Plan and Resource Management Plan will follow at RMA stage, guided by the waste hierarchy and the West London Waste Plan (2015).

The operational waste strategy follows London Plan (2021) Policy SI 7, Hillingdon Local Plan policy and the waste hierarchy, and is high-level at this outline stage.

Segregated waste stores will be provided at ground level within the illustrative masterplan to accommodate waste in an organised manner, facilitating collection by the on-site facilities management team. Containers will be consolidated into a single managed location, making it more convenient and safer for collection vehicles to access the waste within a secure site.

Provision will meet the minimum requirement for at least three streams: general waste, dry mixed recycling and food waste from staff amenity areas, with additional segregation of cardboard, pallets, metals and WEEE reflecting data centre operations. Further breakdown of recyclable streams will be reviewed with the operator and facilities management team. Clear communication with staff will be key to facilitate recycling during operation. This will be in the form of non-technical building user guides, alongside dedicated facilities management personnel.

A detailed Operational Waste Management Plan will be prepared at RMA stage and secured by condition. In line with London Plan targets, it will target a minimum of 65% of municipal waste recycled offsite by 2030, with the remainder directed to other routes assuming an energy recovery contract is in place, and at least 75% of business waste recycled offsite.

Supporting information, including the Design & Access Statement and Planning Statement, notes that waste will be managed in accordance with relevant legislation. Volumes will be low given limited staff numbers (c.100 occupancy), predominantly packaging, cardboard, pallets, metals and WEEE. The Applicant's existing estate is certified Zero Waste to Landfill, and the operational waste strategy for the Proposed Development will be developed at RMA stage to carry that standard onto the Site, with waste sorted to recycling, reuse or energy recovery.

Next Steps

The design team will continue to optimise the design and make informed material specification decisions at RMA and detailed design stages, to further reduce whole life carbon emissions and ensure the circularity principles in this report are implemented. Demolition and construction are anticipated to commence in 2027/28, with completion in 2028/29.

Following completion, an update to the Detailed Circular Economy Statement will be prepared by the main contractor, detailing progress against the targets and commitments, outcomes and lessons learned.

The Post Completion CES report will be collated from data obtained during demolition and construction works, with final reporting within three months of handover. It will be submitted to circulareconomystatements@london.gov.uk as well as the London Borough of Hillingdon within 3 months of completion.

02. Introduction

This Circular Economy Statement (CES) has been prepared by Savills Earth for Virtus Data Centres to support an outline planning application, all matters reserved, to the London Borough of Hillingdon (LBH) for redevelopment of the Former Sipson Garden Centre, Sipson Road, Sipson, West Drayton UB7 0HP. The Proposed Development comprises a data centre facility with associated energy infrastructure, security measures and access arrangements on a 6.9 hectare site. There is no extant consent for the Site, and the application is accompanied by parameter plans and an illustrative masterplan only.

As the application is in outline, this CES sets out guiding principles, targets and commitments rather than fixed design solutions. Measures are indicative and will be confirmed at Reserved Matters Application (RMA) stage, with delivery secured by planning condition. For wider context, it should be read alongside the Whole Life-Cycle Carbon Assessment, Energy and Sustainability Statement, Design and Access Statement, Parameter Plans and Environmental Statement.

It focuses on high-level measures to reduce material consumption, minimise waste, extend asset life and support a resource-efficient data centre, consistent with the London Plan and Hillingdon's sustainability objectives.

Site location



The Site

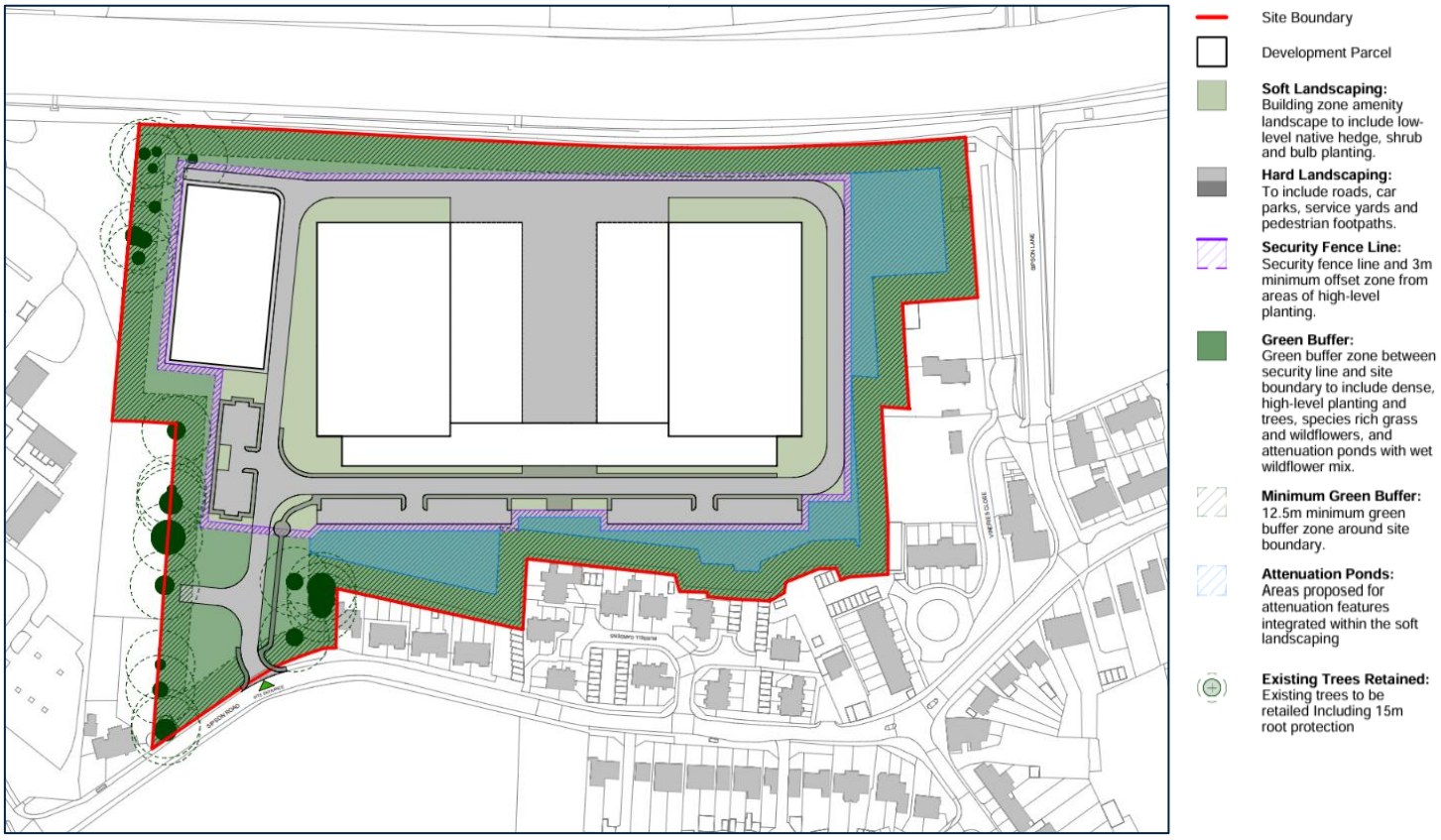
The application site comprises the Former Sipson Garden Centre, an area of approximately 6.9 hectares on the eastern side of Sipson Road, to the north-east of Sipson village. There is no extant planning consent for redevelopment of the Site, and the current application is submitted in outline with all matters reserved except for access.

The Site lies within the administrative boundary of the London Borough of Hillingdon (the Local Planning Authority (LPA)), approximately 1km north of Heathrow Airport and immediately adjacent to the M4 Spur Road (Junction 4). The Site has a PTAL rating of 1a/1b, with West Drayton station approximately 2.2km to the north-west. It falls within the Hillingdon Air Quality Management Area and the Sipson Air Quality Focus Area.

The Site is bounded by the Holiday Inn hotel to the north, the M4 Spur Road to the east, Sipson Lane and Lady Nafisa Secondary School for Girls to the south, and residential properties to the west. Vehicular access is taken from Sipson Lane.

The former garden centre building has already been demolished and does not form part of this application. Remaining on Site are timber frame buildings, a number of porta cabins and modular units, and areas of hardstanding, with an open field to the south. The Site is currently in use as an Airside Support Vehicle servicing and repair centre (ref. 67666/APP/2023/3721). Land is potentially contaminated from former nursery and orchard use.

Landscape & green infrastructure parameters plan



Description of the proposed development

The application is described as: "Outline application for redevelopment of the former Sipson Garden Centre site to provide a data centre facility including associated energy infrastructure, security measures and access arrangements." The Proposed Development would deliver an IT load of up to 54MW, with a data centre building of up to c.25,000 sqm GFA, ancillary office of c.5,250 sqm, external plant of c.6,500 sqm and a substation of c.3,250 sqm.

Maximum building height would be up to 20m, with c.100–112 car parking spaces including electric vehicle and accessible bays, and vehicular access from Sipson Lane. The Site would also include perimeter landscaping, attenuation ponds, an area of photovoltaic panels and 3m impact-rated security fencing. Demolition and construction are anticipated to commence in 2027/28, with completion in 2028/29.

As the application is made in outline with all matters reserved, consent is sought on the basis of parameter plans defining a maximum development envelope, supported by an illustrative masterplan. Detailed layout, appearance, scale and landscaping are reserved and will be fixed at Reserved Matters Application (RMA) stage.

This Circular Economy Statement therefore sets out how circular economy principles (material efficiency, design for adaptability, resource optimisation and end-of-life recovery) will be embedded within the Proposed Development, with detailed measures confirmed at RMA stage and secured by planning condition.



Structure and purpose of this report

This CES has been prepared to set out the circular economy strategic approach adopted by the Proposed Development and to give an overview of the interventions that will be applied to ensure circular economy principles are embedded within the scheme over its lifetime. As the application is made in outline with all matters reserved, the commitments are high level and will be developed, investigated and confirmed at Reserved Matters Application (RMA) stage. The CES provides a framework for the project team to operate consistently within the circular economy guidelines set out by the GLA and the London Borough of Hillingdon.

The following sections of this CES provide the following:

- Strategic Approach
- Key Circular Economy Commitments
- Circular Economy Targets
- Implementation Strategy
- End of Life Strategy
- Appendices

Development parcels parameters plan



Policy Framework

The London Plan sets out the spatial development strategy for Greater London. It is the overall strategic plan for London, defining an integrated economic, environmental, transport and social framework for how London will develop over the next 20 - 25 years. The London Plan includes the following policies in relation to the Circular Economy.

SI 7 Reducing waste and supporting the circular economy

Resource conservation, waste reduction, increases in material re-use and recycling, and reductions in waste going for disposal will be achieved by the Mayor, waste planning authorities and industry working in collaboration to:

- Promote a more circular economy that improves resource efficiency and innovation to keep products and materials at their highest use for as long as possible
- Encourage waste minimisation and waste prevention through the reuse of materials and using fewer resources in the production and distribution of products
- Ensure that there is zero biodegradable or recyclable waste to landfill by 2026
- Meet or exceed the municipal waste recycling target of 65 per cent by 2030
- Meet or exceed the targets for each of the following waste and material streams:
  - Construction and demolition – 95 per cent
  - Excavation – 95 per cent beneficial use
- Design developments with adequate, flexible, and easily accessible storage space and collection systems that support, as a minimum, the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food.

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

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

At the local level, the London Borough of Hillingdon Local Plan Part 1: Strategic Policies (2012) and Part 2: Development Management Policies (2020) support sustainable waste management and resource efficiency, together with the West London Waste Plan (2015). The GLA applies a three-stage approach to Circular Economy Statements: a draft CES at pre-application, a detailed CES at planning application, and an updated CES post-construction, upon commencement of RIBA Stage 6. The GLA circular economy template spreadsheet accompanies this submission to demonstrate and quantify the impact of circularity principles.

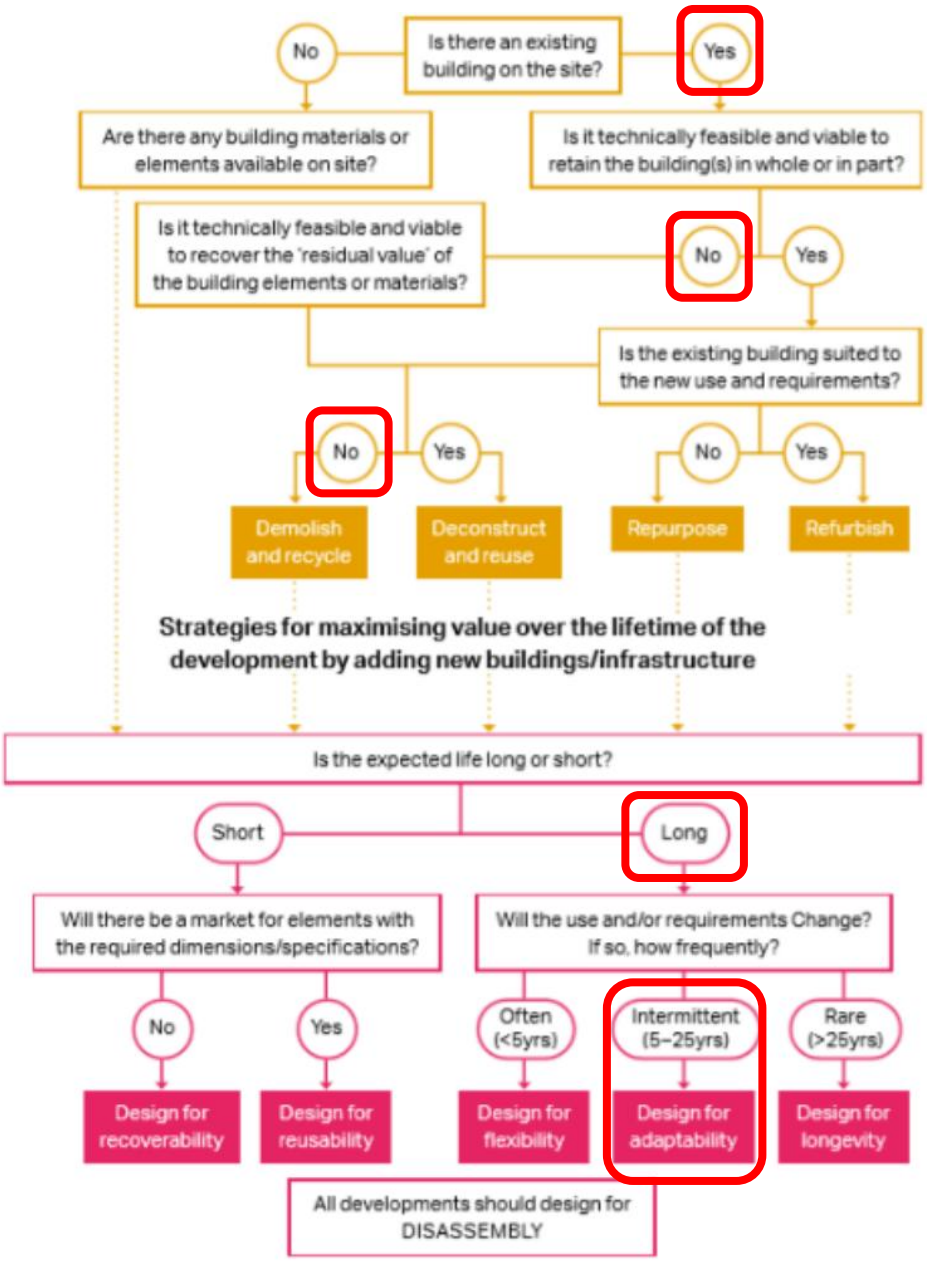
This CES is therefore based on the GLA's guidance document for Circular Economy Statements issued in March 2022, which interprets the policies set out above and describes what Circular Economy Statements should include.

03. Strategic approach

A collaborative approach to circularity has underpinned the Proposed Development, testing design, construction and operation against designing out waste, keeping materials in use and resource efficiency.

The GLA's decision tree directs the scheme towards longevity, adaptability and disassembly, recognising the 60-year design life and standardised nature of data centre buildings. Large clear-span halls, a steel frame with precast panels suited to bolted, reversible connections, and modular plant give flexibility. The decision tree also prompted standardisation, demountable internal arrangements and future adaptation and disassembly without significant structural intervention.

The former garden centre building has already been demolished and forms no part of this application. As illustrated in the following photographs, the Site today comprises some timber frame buildings, a number of porta cabins and modular units, and areas of hardstanding, together with an open field to the south,



Strategic approach decision tree

currently in use as an Airside Support Vehicle servicing and repair centre. No permanent buildings of structural value remain, so retention or retrofit of a building is not feasible.

A detailed pre-demolition and pre-redevelopment audit will be undertaken post outline planning for reserved matters application, and the Applicant accepts this being secured by planning condition. The circular strategy instead targets maximum material recovery from what remains, noting that the land is potentially contaminated from its former nursery and orchard use.

A clear reuse hierarchy will be applied. The timber frame buildings will be carefully soft-stripped and deconstructed in preference to mechanical demolition where safe, so that sound timber can be reclaimed for re-use, with remaining timber chipped and recycled and treated timber segregated for appropriate disposal. The porta cabins and modular units are inherently relocatable, and the first preference is removal intact for re-use elsewhere, whether at other Virtus sites, through resale into the second-hand cabin market, or by donation to local community or charitable uses; only where beyond economic repair will they be dismantled and their steel, timber and insulation recycled.

Hardstanding will be crushed on site where practicable, subject to contamination testing, and re-used as piling mat, sub-base and haul road material, displacing imported primary aggregate. Metals, WEEE and plastics will be segregated to appropriate recycling streams, with supplier take-back schemes used where available.



Existing site opportunities

The Site at Sipson Road extends to approximately 6.9 hectares and is in use as an Airside Support Vehicle servicing and repair centre. The former garden centre building has already been demolished. What remains is limited to some timber frame buildings, a number of porta cabins and modular units, and areas of hardstanding, with an open field to the south. There are therefore no permanent buildings of structural value capable of retention or retrofit, and the land is potentially contaminated from its former nursery and orchard use.

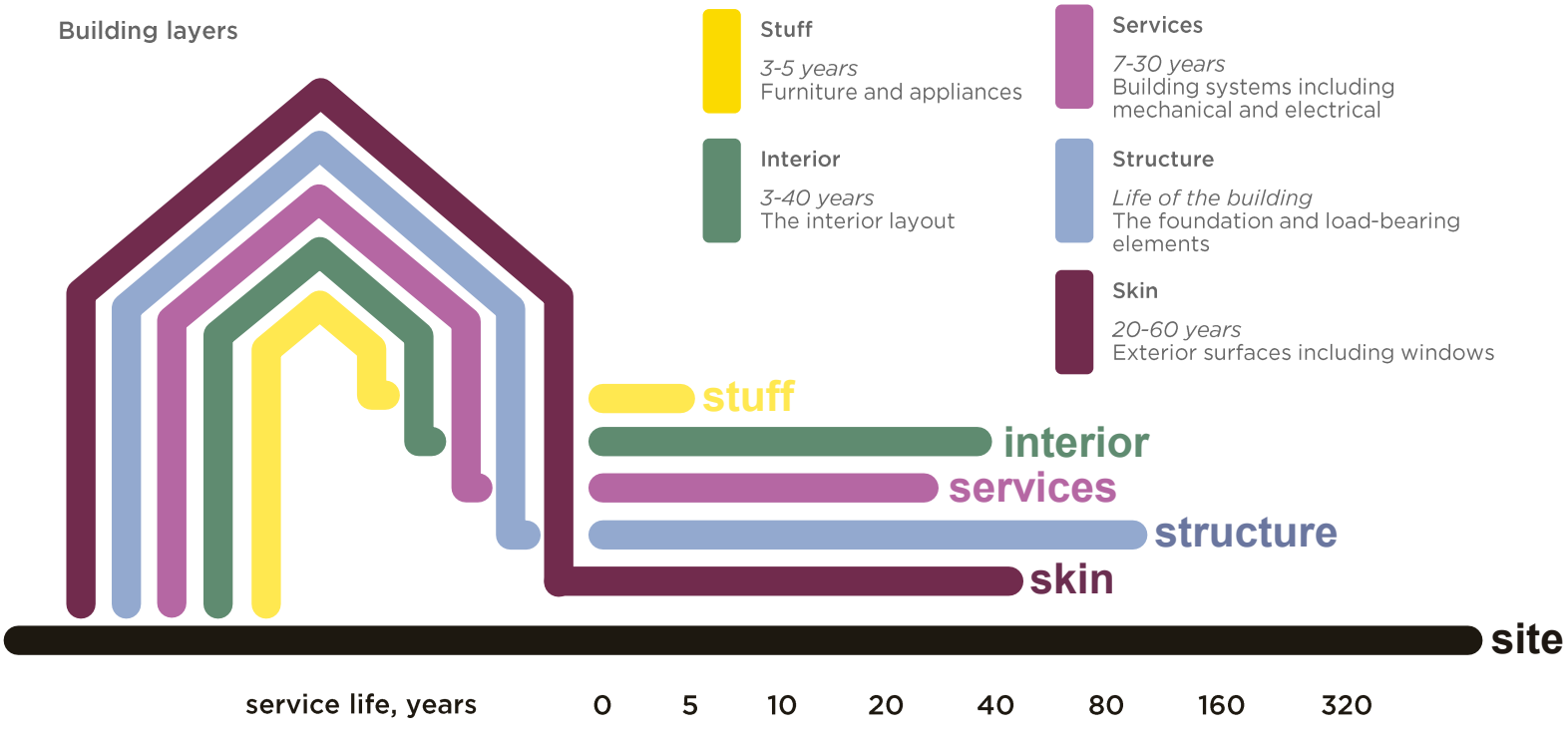
The circular strategy therefore targets maximum material recovery from what remains. Timber frame buildings will be soft-stripped and deconstructed in preference to mechanical demolition where safe, allowing sound timber to be reclaimed, with the remainder chipped and recycled and treated timber segregated for appropriate disposal. Porta cabins and modular units are relocatable, and will preferably be removed intact for re-use elsewhere, including at other Virtus sites, through resale or by donation to local community or charitable uses. Hardstanding will be crushed on site where practicable, subject to contamination testing, and re-used as piling mat, sub-base and haul road material.

As the application is in outline with all matters reserved, a detailed pre-demolition audit and pre-redevelopment audit will be undertaken as the design progresses. The Applicant accepts these being secured by planning condition, with the resulting material inventories informing the Site Waste Management Plan prepared at Reserved Matters Application (RMA) stage.

Proposed design considerations

Building in Layers

The Proposed Development applies a "building in layers" methodology, separating long-life elements such as the structural frame from shorter-life layers such as services, fit-out and components. This is particularly well suited to a data centre, where short IT and plant refresh cycles sit within a building envelope designed for a 60-year life. The approach facilitates easier maintenance, replacement, reconfiguration and, ultimately, disassembly.



Stage 2 design indicates a hot-rolled steel frame, composite MD51/MD60 metal-deck slabs and cold-rolled purlins and roof deck, demountable and recoverable on a rationalised grid. Shorter-life layers are designed for accessibility and recoverability, ensuring that plant refresh cycles generate minimal waste.

All materials removed during site preparation that cannot be reused on site will be directed to appropriate off-site reuse or recycling routes. Opportunities will also be explored for reusing temporary site logistics materials, such as hoarding or modular components, within the construction programme. BIM will be used to improve material quantification and reduce over-ordering, to be developed further at RMA stage.

The scheme's overall design approach is consistent throughout — a simplified, efficient and robust building that minimises waste, maximises durability, and supports long-term operational performance.

Design Optimisation

As the application is in outline with all matters reserved, design optimisation is expressed at parameter plan and illustrative masterplan level and will be developed at RMA stage. The focus is on minimising material demand in the data centre envelope and structure, including a simple, repeatable façade, an efficient clear-span structural grid, and reduced façade perimeter and embodied carbon.

Increased use of recycled content, including cement replacements such as GGBS and high recycled steel content, together with ongoing assessment of supply chain constraints, will shape the material strategy. Specification targets will be confirmed at RMA stage as the detailed design is developed.

Demolition and Construction waste

A detailed pre-demolition audit and pre-redevelopment audit will be undertaken in the next design stage, and the Applicant accepts these being secured by planning condition. The materials remaining on Site are timber frame buildings, porta cabins and modular units, and hardstanding.

Accordingly, the demolition and construction waste strategy for the Proposed Development will follow the hierarchy below.

- removal of porta cabins intact for re-use, or recycling of their materials;
- soft-strip and deconstruction of timber buildings to reclaim sound timber;
- crushing of hardstanding on site for re-use as piling mat and sub-base;
- segregation of metals, WEEE and plastics, with supplier take-back schemes; and high diversion rates from landfill in line with GLA benchmarks.

A Site Waste Management Plan, or Resource Management Plan, will be prepared at RMA stage by the appointed contractor and can be secured by planning condition.

Operational Waste

The operational waste strategy has been developed with reference to the Hillingdon Local Plan and the West London Waste Plan (2015). A data centre generates low volumes of operational waste, and the strategy adopts a managed segregation and collection approach appropriate to this typology, with a detailed Operational Waste Management Plan to be prepared at RMA stage.

Waste will be predominantly packaging, cardboard, timber pallets, metals and WEEE arising from equipment installation and refresh, alongside small quantities of general waste, dry mixed recycling and food waste from the ancillary office and staff amenity, reflecting a low operational occupancy of around 100 staff. The scheme will target a minimum 65% municipal recycling rate by 2030 and at least 75% business waste recycling.

Dedicated, segregated internal and external waste stores will be provided at ground level, with separate provision for office and amenity waste and for operational and technical waste, reflecting the independence of these streams and avoiding cross-contamination of waste streams. The sizing and layout of the stores will be confirmed at RMA stage in accordance with Hillingdon's

storage standards and the West London Waste Plan (2015). Provision is anticipated to combine 1,100-litre wheeled bins for general waste and dry mixed recycling with smaller containers for food waste, alongside secure areas for metals and WEEE.

On collection days, a managed system will move bins from the ground-level stores to agreed collection points served by the internal estate road, with vehicles accessing the Site from Sipson Lane. Collection points will be positioned to ensure safe access for refuse vehicles, minimise movement across pedestrian routes, and avoid conflict with technical servicing and plant deliveries. Detailed collection arrangements will be confirmed at RMA stage.

To support long-term operational efficiency, the scheme will incorporate the following.

- clear spatial separation between office and amenity waste and operational or technical waste;
- internal management arrangements enabling staff to consolidate waste before collection;
- secure stores designed to facilitate regular cleaning, good ventilation and pest management; and
- the ability to adapt bin layouts over time as recycling rates or operational practices evolve.

The operational waste strategy prioritises waste reduction, segregation and recovery, with waste diverted from landfill through established borough and regional collection systems and manufacturer take-back arrangements for plant and IT equipment. A detailed Operational Waste Management Plan will be prepared at RMA stage, securing compliance with Hillingdon's waste standards and the circular economy objectives of the London Plan.



Table 1: Circular economy strategic approach – existing buildings

Circular Economy Design Approach	Phase / Building / Area / Layer	Strategic Response
Retain and Retrofit	Existing site	No permanent buildings of structural or functional value remain on the site. The remaining timber frame buildings and porta cabins are lightweight, temporary-standard structures that cannot meet the security, resilience, structural or servicing requirements of a data centre, so retention or retrofit is not feasible. Retention of existing boundary trees, shrubs and hedgerows is proposed. A pre-demolition and pre-redevelopment audit will be undertaken post outline planning, secured by planning condition
Repurpose	Cabins / hardstanding	Porta cabins and modular units are inherently relocatable and will, wherever practicable, be removed intact for re-use elsewhere, including other Virtus sites, resale into the second-hand cabin market or donation to local community use. Re-use of sound reclaimed timber in site hoarding, landscape structures or biodiversity features will be investigated at RMA stage. Hardstanding will be crushed for re-use as piling mat and sub-base, subject to contamination testing.
Disassembly/ Deconstruct and Reuse	Existing hardscape	Careful soft-strip and deconstruction of the timber frame buildings will be undertaken in preference to mechanical demolition wherever safe to do so, maximising recovery of sound timber, metals and fixtures for reuse or recycling. Scope and quantities will be confirmed by the pre-demolition audit, to be undertaken in the next design stage.
Demolish/ Deconstruct and Reuse	Existing hardscape	Remaining arisings, including concrete and other hardstanding, metals, timber, plastics and waste electrical and electronic equipment (WEEE), will be segregated on site and diverted to reuse or recycling, targeting a minimum 95% diversion from landfill. Quantities will be established by detailed pre-demolition and pre-redevelopment audits, undertaken as part of the next design stage; the Applicant accepts these being secured by planning condition, with a Site Waste Management Plan to follow at RMA stage.

Table 2: Circular economy strategic approach – new buildings

Circular Economy Design Approach	Phase / Building / Area / Layer	Strategic Response
Building relocation	Proposed buildings	The proposed data centre is a permanent, purpose-built facility of significant scale and is not intended for relocation during its lifetime; relocation is neither technically nor environmentally justified. The design focuses instead on durability, long-term functionality and the ability to evolve through internal reconfiguration and plant replacement.
Component or material reuse	Internal partitions / building systems / skin / interiors Site materials Structure, skin and interiors	The scheme will support reuse of components wherever practicable. Internal partitions will be non-loadbearing and demountable, MEP and electrical plant standardised, modular and interchangeable, and clear-span technical halls allow reconfiguration as IT equipment evolves; detail to be confirmed at RMA stage. The principal material with reuse potential is the existing hardstanding, which may be crushed and reused as piling mat or sub-base within the new development, subject to contamination testing. Other site-won materials that cannot be reused in situ will be segregated and recycled off-site through appropriate waste streams. Structural, envelope and internal systems will be developed with future disassembly in mind, using bolted, reversible connections to ease recovery of materials at end of life. Material passports or equivalent digital tracking will be investigated at RMA stage to support identification and retrieval of reusable materials.
Adaptability	Structure Interiors	The structure will use large clear-span technical halls and generous floor-to-floor heights on an efficient grid able to accommodate successive generations of IT equipment. These parameters allow internal layouts to be reconfigured without structural intervention. External plant, generators and substation will be arranged for removal and upgrade using standard lifting equipment without disturbing the building fabric, to be confirmed at RMA stage.
Flexibility	Internal layout Utilities infrastructure	Internal layouts can be reconfigured to suit changing operational needs through simple re-planning of non-loadbearing partitions. Space that may need to expand or contract, such as office, storage or plant areas, can be adjusted with minimal material impact. Utility routes will be designed with flexibility for future upgrades or replacement, and to allow potential heat offtake or district heat network connection, confirmed at RMA stage.

Table 2: Circular economy strategic approach – new buildings (cont.)

Circular Economy Design Approach	Phase / Building / Area / Layer	Strategic Response
Replaceability	Standardised components Skin Services	Standardised, modular and widely available MEP and electrical plant will be prioritised to ensure ease of replacement and sourcing from multiple suppliers, with manufacturer take-back sought where available. Envelope and interior materials will be selected for durability and ease of removal at end of life. External plant, generators and substation can be removed or upgraded using standard lifting equipment without disturbing the building fabric.
Disassembly	Structure Skin Interiors	The facility will be designed to support future disassembly and material recovery. A steel frame and precast concrete panel construction using bolted, reversible connections in preference to welded or adhesive joints will enable elements to be separated without damage, and modular, prefabricated components will further support ease of disassembly during refurbishment or end-of-life works. Material passports or equivalent digital material tracking will be investigated at RMA stage to record components, materials and their specifications, assisting end-of-life sorting and reuse. Recyclable and recoverable materials will be prioritised to enable efficient separation during future deconstruction.
Longevity	Structure Skin All building layers	A durable, low-maintenance envelope of insulated metal panels, precast concrete panels and aluminium mesh screens will be specified to withstand weathering, wear and ageing over a 60-year design life, with protective finishes and coatings against corrosion. A proactive planned maintenance regime will address issues across all building layers before they become major problems. Flexible and adaptable design features will allow for future changes in use or upgrade, supporting adaptive reuse rather than complete redevelopment. Structural elements will be designed for longevity, surpassing the 60 year life cycle assessed in this report.

04. Circular economy commitments

Circular economy design principles by building layer

Designing out waste	Module A – Product sourcing and construction stage
Site	Prioritise careful deconstruction of the remaining timber frame buildings and removal intact of porta cabins/modular units for re-use elsewhere. Detailed Pre-Demolition and Pre-Redevelopment audits will be undertaken post-planning and prior to commencement in line with GLA guidance, secured by planning condition A Site Waste Management Plan/Resource Management Plan will be prepared at RMA stage by the appointed contractor, maximising re-use and recycling and applying the waste hierarchy, with a target minimum 95% diversion from landfill. The following waste minimisation practices will be adopted: • Crushing hardstanding on site, subject to contamination testing, for re-use as piling mat, sub-base and haul roads; • Sound timber reclaimed, residual timber chipped and treated timber segregated; • Careful scheduling of materials to prevent spoilage; • Ordering material in bulk where appropriate; • Segregating metals, WEEE and plastics and recording all waste; • Packaging kept until the last moment, with supplier take-back schemes used for packaging re-use.
Substructure	Emerging RIBA Stage 2 design is a piled RC substructure with ground beams and suspended slab in C32/40 with 35-50% GGBS/fly ash cement replacement; quantities are indicative and confirmed at RMA stage. Excavation waste and recycled aggregate will be re-used on site.
Superstructure	A hot-rolled steel frame with composite metal-deck slabs, bolted reversible connections and clear-span technical halls is anticipated, supporting future adaptation and disassembly. EAF steel is intended, to be confirmed at RMA stage.
Shell/Skin	Select robust, long-lasting finishes suited to a 60-year design life, reducing maintenance and replacement. Consideration of materials with high recycled content such as aluminium, steel and precast concrete. Specify drainage and soil pipes made using recycled plastic. Recycle materials such as cladding, insulation or metal into new products. Supplier take-back schemes will be used; details confirmed at RMA stage.

Section A: Conserve resources	Minimising the quantities of materials used (cont.)
Services	The emerging MEP specification comprises 64 no. chillers (c.1,274 kW cooling / c.359 kW electrical each), 10 no. air-source VRF units (50 kW heating), 2 no. AHUs with heat recovery serving the admin area (c.4,080 l/s each), 32 no. generators with belly-tank fuel storage, c.345 sqm of photovoltaic panels and 8 no. passenger and 2 no. goods lifts. Quantities are emerging Stage 2 figures and will be confirmed at RMA stage. An efficient building envelope and indirect evaporative cooling strategy will reduce energy demand and avoid unnecessary MEP components, with rationalisation of plant counts reviewed as the design develops. Standardised, modular, factory-assembled MEP and electrical plant of the repeated unit types above will reduce custom fabrication and enable efficient disassembly and reassembly, minimising waste during installation and future plant refresh. Salvage and re-use mechanical, electrical and cooling equipment at other Virtus sites where practicable. Metals and electronic components recycled under WEEE contracts and manufacturer take-back.
Space	Standardisation across the facility will allow offsite manufacture of external and internal component parts, including cladding panels, doors and external metalwork. Repeatable technical hall and plant modules reduce waste and time to construct. Large clear-span technical halls and standardised non-structural partitions allow flexible reconfiguration with minimal waste. Layouts to be coordinated at RMA stage to minimise spatial wastage.
Stuff	Engage with equipment suppliers on fit-out materials and embed circular economy principles in operational management procedures. Office and amenity layouts and furniture to be standardised to avoid unnecessary waste. Just in time deliveries will be used to reduce waste created by improper storage and weather damage. Salvage and re-use interior fixtures, furniture or finishes in other projects. Provide adequate, segregated recycling within the building to encourage responsible disposal of unwanted items.
Construction stuff	Use of demountable and reusable scaffolding. All waste will be segregated into separate streams using skips or containers for both hazardous and non-hazardous use, as set out in the Resource Management Plan at RMA stage. It is encouraged that suppliers and sub-contractors offer a take-back and collection services for material and packaging. Suppliers and sub-contractors will make sure all packaging is in accordance with Packaging Waste Regulations. If any non-compliancy is found or there is an unnecessary amount of packaging, supplier and sub-contractors will take back the packaging at their own expense. Avoid stockpiling to reduce spoilage potential.

Section A: Conserve resources	Minimising the quantities of materials used (cont.)
Summary	The design team will minimise waste, optimise resource use and promote sustainable practices throughout the project lifecycle, with detail confirmed at RMA stage.
Challenges	There may be supply chain issues when sourcing steel with high recycled content or concrete with high cement replacement; availability to be confirmed at RMA stage. EPDs are not available for all building materials or technical plant. Access to appropriate recycling and disposal facilities, especially for treated timber, WEEE and potentially contaminated material, may be limited. As all matters are reserved, material and plant specifications are not yet fixed; commitments will be developed and confirmed at RMA stage.
Who and when	Structural Engineer, Architect, MEP Engineer and Sustainability Consultant during RMA and detailed design stages; demolition and construction contractors thereafter
Plan to prove and quantify	Standard impact avoidance measures will reduce waste from demolition and construction activities, secured through the DCEMP/CEMP and planning conditions. The appointed contractor will be required to prepare a Resource Management Plan at RMA stage to estimate anticipated demolition and construction waste and identify opportunities for minimising waste generation. The Resource Management Plan will also identify opportunities for maximising material recovery in line with the waste hierarchy. The contractor will keep waste records to demonstrate targets are achieved, with a sustainability champion appointed to monitor progress and identify areas for improvement. A post-construction Circular Economy Statement will be submitted to circulareconomystatements@london.gov.uk and the London Borough of Hillingdon within 3 months of completion.

Designing out waste	Module B – In-use stage
Site	Landscaping will prioritise low-maintenance, low-water planting. Attenuation ponds, rainwater management and water-efficient cooling, with efficient fittings, will cut water use; detail at RMA stage. The Applicant's sites are certified Zero Waste to Landfill and the scheme will be operated to that standard, targeting 65% municipal and 75% business waste recycling
Substructure	N/A
Superstructure	Large clear-span technical halls and a bolted, reversible structural approach will allow adaptability over a 60-year design life without major renovation or demolition.
Shell/Skin	Air-flooded halls with hot aisle containment and an efficient envelope will cut cooling losses; confirmed at RMA stage. Passive measures, including shading and free cooling opportunities, will be explored at RMA stage to reduce demand for artificial lighting and mechanical cooling. Roof-mounted PV is proposed.
Services	Indirect evaporative (adiabatic) cooling with minimal mechanical cooling supports low PUE, with 100% renewable energy; detail at RMA stage. A surface water strategy, including attenuation ponds, will be developed in response to the London Plan SuDS hierarchy at RMA stage.
Space	Uses will be grouped to provide efficient technical, plant and ancillary office space, with flexible halls able to be reconfigured as equipment changes. Occupancy is low, at around 100 staff. Metering and monitoring will be installed so the operator can track energy and water use.
Stuff	Segregated internal and external waste stores at ground level will provide separation for general waste, dry mixed recycling, food waste, packaging, metals and WEEE Stores will be sized and located at RMA stage under Hillingdon's standards and the West London Waste Plan (2015). Operational waste will be sorted by facilities management to recycling, reuse or energy recovery.
Construction stuff	The contractor will segregate and monitor waste generated during demolition and construction.

Designing out waste	Module B – In-use stage
Summary	Minimising the quantities of other resources used (energy, water, land) Waste will be managed in accordance with all relevant legislation and within the Applicant's ISO 14001 and ISO 50001 certified management systems and its net zero by 2030 commitment. Operational waste will be low in volume and predominantly packaging, cardboard, timber pallets, metals and WEEE from equipment delivery, installation and refresh, plus office general waste.
Challenges	Successful waste management relies on collaboration among multiple stakeholders, including facilities managers, waste management providers, equipment suppliers and staff.
Who and when	Waste consultant, operator and contractor at RMA stage and thereafter
Plan to prove and quantify	A detailed Operational Waste Management Plan will be prepared at RMA stage, secured by planning condition. Non-technical user manuals will help facilities management track waste against targets and report within the Applicant's ISO 14001 and ISO 50001 systems, supported by take-back and WEEE contracts. Waste provision across the building will include at least three streams: general waste, dry mixed recycling and food waste, plus segregated packaging, metals and WEEE.

Designing out waste	Module C – End-of-life stage
Site	The waste hierarchy will be followed for all aspects : Reuse in-situ> Reuse on site> Reuse off-site> Recycling> Other recovery (with energy recovery)> Disposal Implement deconstruction and demolition plans that prioritise salvageable materials.
Substructure	Steel frame and precast concrete substructure elements are recyclable and recoverable in the future. Design foundations and footings for easy disassembly and reuse.
Superstructure	The steel frame and precast concrete panel superstructure uses bolted, reversible connections. Large clear-span halls provide inherent adaptability for future changes in use. A Whole Life Carbon Assessment has been undertaken by Savills Earth, detailing a holistic view to reducing embodied and operational carbon emissions; recycled content of steel to be confirmed at RMA stage.
Shell/Skin	Insulated metal panels, screens and glazing are recoverable as metals. The durable, low-maintenance envelope reduces the need for replacement over its life.
Services	MEP, generators, switchgear, UPS and cooling plant are modular, accessible and replaceable. Plant is recovered under manufacturer take-back and WEEE routes at end of life.
Space	Large clear-span technical halls allow flexibility for future changes in use. Internal finishes prioritise materials that are easy to remove and recycle.
Stuff	IT equipment refresh is managed under WEEE contracts throughout operation. Segregated routes will be provided for metals, WEEE and plastics arising on site. Disassembly guide and material passports to be investigated at RMA stage.

Designing out waste	Module C – End-of-life stage
Construction stuff	Partner with waste management companies to ensure proper sorting and disposal of construction waste. Prioritise reuse of surplus materials, targeting a minimum 95% diversion from landfill. Implement deconstruction techniques that preserve the integrity of materials for potential reuse.
Summary	An end-of-life strategy will be investigated further at Reserved Matters Application (RMA) stage.
Challenges	As no detailed design is available at outline stage; end-of-life measures will be confirmed at RMA stage.
Who and when	Demolition contractor and Sustainability Consultant during proposed development's end of life
Plan to prove and quantify	Post-construction Circular Economy Statement detailing the end-of-life strategy, submitted to the GLA and LB Hillingdon within 3 months of completion.

Designing out waste	Module D – Benefits and Loads Beyond the System Boundary
Site	The site is previously developed in part, with boundary vegetation retained. The site sits in a highly accessible employment context adjacent to the M4 Spur and Heathrow, reducing transport-related emissions. SuDS and attenuation ponds will manage surface water effectively on site.
Substructure	Foundation design will minimise excavation and material use. No basement is proposed, minimising excavation required.
Superstructure	A Whole Life Carbon Assessment by Savills Earth takes a holistic view to reducing embodied and operational carbon, whilst maximising circularity. Clear-span technical halls allow future modification or additions without significant demolition or waste generation.
Shell/Skin	High performing fabric and material specifications will minimise heating and cooling loads, to be confirmed at RMA stage. Envelope materials will be durable and low-maintenance to extend the lifespan of the building envelope.
Services	On-site PV generation and efficient cooling plant will reduce operational energy use.
Space	Flexible clear-span spaces are proposed to accommodate changing needs over time. Waste heat recovery and connection to a local heat network will be investigated at RMA stage.
Stuff	Durable, long-lasting materials will be specified for internal finishes to reduce the need for frequent replacement. Bolted, reversible connections facilitate recycling or reuse of components at end of life. IT equipment will be refreshed under WEEE and take-back contracts in operation.
Construction stuff	Site-won crushed hardstanding will displace primary aggregate, with a Site Waste Management Plan to be prepared at RMA stage. Construction methods that minimise disruption and energy use will be prioritised, secured by planning condition.
Summary	Circularity strategy to communicate the potential benefits from reuse, recycling and recovery of materials, will be further developed at RMA stage
Challenges	All matters are reserved, so benefits beyond the boundary can only be confirmed at RMA stage
Who and when	All parties during the RMA and detailed design stages, and at end of life
Plan to prove and quantify	Post-construction Circular Economy Statement to detail the circularity strategy

Designing for longevity	
Site	The proposed development is intended to serve its purpose beyond the 60-year assessment period
Substructure	Structural elements will prioritise longevity and efficient design, with cement replacement (GGBS or fly ash) to be confirmed at RMA stage. Drainage and SuDS will prevent water damage, prolonging the lifespan of the substructure.
Superstructure	Steel frame and precast concrete panels specified for durability and longevity. Insulation and moisture control will prevent deterioration of the structure. Large clear-span technical halls give inherent adaptability for future changes in use, to be developed at RMA stage.
Shell/Skin	Insulated metal panels, mesh screens and powder-coated steel doors will be durable, weather-resistant and low-maintenance. A planned preventative maintenance regime will address deterioration promptly.
Services	High-quality MEP systems will minimise the risk of leaks, failures and repairs. Building management and monitoring systems will optimise resource use and prolong the lifespan of service components. Modular, accessible plant will facilitate repair and replacement as needed.
Space	Flexible clear-span halls will accommodate changing technical needs over time. Inclusive design principles will ensure accessibility for all staff and visitors.
Stuff	Circular economy principles will be encouraged with the incoming operator. IT and plant equipment will be managed under take-back and WEEE contracts.
Construction stuff	Skilled contractors adhering to high-quality construction standards will be employed. Quality control measures will ensure the longevity of the structure and components, secured by planning condition.
Summary	Longevity and adaptability will be developed further at Reserved Matters Application stage
Challenges	All matters are reserved, so detailed longevity measures can only be confirmed at RMA stage, alongside a planned preventative maintenance regime.
Who and when	All parties during the RMA and detailed design stages
Plan to prove and quantify	A planned preventative maintenance regime will monitor performance and address issues early. Track key performance indicators such as energy efficiency and plant condition over time. A post-construction Circular Economy Statement will be submitted to the GLA and LB Hillingdon within 3 months of completion.

Designing for adaptability or flexibility	
Site	The application is in outline with all matters reserved, and the parameter plans set a maximum development envelope that allows considerable layout flexibility to be resolved at RMA stage. The data centre halls, external plant yard and substation compound will be arranged so that equipment can be expanded, replaced or reconfigured over the 60-year design life without altering the overall envelope. Massing is capped at a maximum height of 20m, with the ancillary office element detailed at RMA stage to optimise long-term energy efficiency and comfort for the c.100 staff. Solar gain and overheating risk under a changing climate will be managed through orientation, glazing ratios and shading, to be confirmed at RMA stage. Landscaping, attenuation ponds and the PV area have been located with future flexibility in mind, as these can be reconfigured or repurposed as needs change.
Substructure	Foundation and slab loadings will be developed at RMA stage with capacity for successive generations of IT and cooling equipment, offering flexibility for future adaptation
Superstructure	Large clear-span technical halls with generous floor-to-floor heights allow internal reconfiguration without structural intervention. Structural systems and materials will be selected at RMA stage so they can be modified or extended to accommodate future upgrades.
Shell/Skin	Insulated metal wall panels, aluminium mesh screens and glazing can be replaced or upgraded without significant structural modifications. Waterproofing detailing, profiling, drainage details, fixings and general geometry will be assessed at RMA stage.
Services	Utility routes, risers and containment will be designed to allow rerouting or expansion of power, water and cooling distribution up to the 54MW capacity. Modular, plug-and-play MEP components, generators, UPS, switchgear and cooling plant will be specified to facilitate future upgrades or replacement. Connection points will be designed for future upgrade, including potential waste heat offtake or connection to a local heat network, to be investigated further at RMA stage.
Space	Technical halls, ancillary office and welfare areas will be planned as adaptable spaces able to serve changing operational requirements. Provide adequate storage and spare capacity within plant and equipment areas that can be reconfigured as needs change over time.
Stuff	Engage with the operator and tenants to prioritise quality and longevity over quantity in fit-out and equipment choices. Specify durable, standardised office furniture and finishes that can be reused across different layouts or relocated to other facilities. Circular economy principles will be encouraged with the incoming operator and tenants.
Construction stuff	Site cabins, welfare facilities and hoarding to be specified as reusable, modular units to enable easy disassembly and reassembly, promoting reuse on future projects. Utilise demountable, reusable scaffolding and formwork systems, reducing waste generated during the concrete casting process. Opt for equipment hire rather than purchase, with just-in-time deliveries, to provide flexibility and reduce the need for long-term storage.

Designing for adaptability or flexibility	
Summary	Adaptability and flexibility have been considered at each layer of the outline proposals, so that the facility can accommodate successive generations of IT and cooling equipment over its 60-year design life. Detailed measures will be confirmed at RMA stage.
Challenges	Incorporating adaptability features during detailed design and construction may require additional upfront cost and embodied carbon. As all matters are reserved, the extent of adaptability can only be fixed at RMA stage, and rapidly evolving data centre technology makes long-term requirements uncertain.
Who and when	Structural Engineer, Architect, MEP Engineer and Sustainability Consultant during RMA and detailed design stages; contractor thereafter
Plan to prove and quantify	Adaptability measures will be secured through planning conditions and reported in the post-construction Circular Economy Statement submitted to circulareconomystatements@london.gov.uk and the London Borough of Hillingdon within 3 months of completion. A Post Occupancy Evaluation with the operator will identify areas for improvement and inform future design decisions.

Designing for disassembly	
Site	The c.6.9 ha site on Sipson Road is well connected and largely level, allowing ready access and egress for construction equipment and materials and facilitating both assembly and future disassembly.
Substructure Superstructure	The concrete substructure will be difficult to design for disassembly, so will prioritise longevity, efficient design and maximising cement replacement, with percentages confirmed at RMA stage.
Shell/Skin	Insulated metal wall panels, aluminium mesh screens and glazing to be demountable, using mechanical fixings. Facade elements to be fixed back with reversible connections to allow panel-by-panel removal and replacement Avoid adhesives or irreversible attachment methods that make disassembly more challenging, subject to confirmation at RMA stage.
Services	Modular MEP, generators, UPS, switchgear and cooling plant to be designed so they can be disconnected and removed under manufacturer take-back arrangements.
Space	Investigate demountable partitions instead of fixed walls within the ancillary office to allow flexibility in space allocation. Prioritise modular components, including a steel frame and precast concrete panels with bolted, reversible fixings rather than welded or adhesive joints wherever feasible, to enable future expansion or modification without major disruption.
Stuff	Provide storage for disassembled components, spares and equipment held for future use or recycling. Circular economy principles will be encouraged with the operator and tenants.
Construction stuff	A disassembly guide and material passports or digital material tracking will be investigated further at RMA stage to aid future disassembly and salvage. Circular economy requirements will be a fundamental criterion in the contractor's tender
Summary	By considering disassembly at all building layers, elements of the facility can be more easily adapted, relocated or recycled at the end of their life, reducing environmental impact and promoting resource efficiency.
Challenges	All matters are reserved, so connection details can only be fixed at RMA stage, and continuity between design intent and end of life measures is difficult to guarantee
Who and when	Structural Engineer, Architect, MEP Engineer and Sustainability Consultant during RMA and detailed design stages; contractor thereafter
Plan to prove and quantify	Disassembly measures to be secured by planning condition and reported through the Site Waste Management Plan and the post-construction Circular Economy Statement. Assess the potential salvage value of materials and building components for reuse or recycling at RMA stage.

Using systems, elements or materials that can be re-used and recycled	
Site	Resource efficiency benchmarks will be set in the Site Waste Management Plan (SWMP) at RMA stage and adhered to by the Site Project Manager, targeting a minimum 95% diversion from landfill. Boundary trees, shrubs and hedgerows will be retained where practicable and habitats protected during site preparation.
Substructure	Cement replacement using GGBS or fly ash will be maximised in substructure elements such as piles, pile caps and ground slabs, with percentages confirmed at RMA stage.
Superstructure	Cement replacement using GGBS or fly ash will be applied to the frame and floors, with percentages confirmed at RMA stage. High recycled-content structural steel and reinforcement will be specified for beams, columns and other load-bearing components.
Shell/Skin	Insulated metal panels, aluminium mesh screens and window frames can be recovered and recycled or reused. Investigate recycled-content insulation and hard landscaping, including recycled aggregate and site-won crushed hardstanding, at RMA stage.
Services	MEP equipment, metals and WEEE to be recovered under manufacturer take-back and licensed recycling routes. Pipework, containment and fixtures to use recycled metals or plastic composites where available.
Space	Investigate recycled-content flooring and finishes in the ancillary office, such as carpet tiles with recyclable backing. Use low-VOC paints and finishes to improve indoor air quality and facilitate future refurbishment without harmful off-gassing.
Stuff	Recycling and reuse strategies will be agreed with the operator, with adequate segregated recycling provision, packaging reduction and equipment take-back, and on repurposing surplus items.
Construction stuff	Source materials from manufacturers with established recycling or take-back schemes, with segregated skips for hazardous and non-hazardous streams. Circular economy principles will be a fundamental criterion in the contractor's tender.
Summary	The potential for reuse and recycling will be considered in all material choices and specifications at RMA stage.
Challenges	As all matters are reserved, recycled content can only be fixed at RMA stage, and continuity with end of life measures is difficult to guarantee.
Who and when	Structural Engineer, Architect, MEP Engineer and Sustainability Consultant during RMA and detailed design stages; contractor thereafter.
Plan to prove and quantify	A Sustainable Procurement Plan will be developed at RMA stage and reviewed with the contractor during pre-construction supply chain engagement. Records of materials used, including recycled content, certifications such as FSC, and sustainability attributes, will be reported in the post-construction Circular Economy Statement submitted to circulareconomystatements@london.gov.uk and the London Borough of Hillingdon within 3 months of completion. Environmental Product Declarations (EPDs) and Safety Data Sheets will provide quantitative data on the environmental impacts and recyclability of materials, secured by planning condition.

Reporting forms

Structural, roofing, MEP and external works information has now been provided by AECOM to support the Embodied Carbon modelling and a preliminary Bill of Materials is summarised in Appendix 1. This covers substructure and frame, roof structure and coverings, the MEP and standby power plant schedule, and hard landscape areas, all as emerging Stage 2 figures subject to confirmation at RMA stage.

An indicative Whole Life Carbon Assessment has been prepared to support this outline application. At RMA, the GLA Waste & Recycling Reporting Form and circular economy template spreadsheet will be completed and updated once further design detail becomes available, and again post-construction.

The WLCA will be updated at Reserved Matters stage in line with London Plan Policy SI2, informing the circularity figures reported below. The Operational and Site Waste Management Plans will follow at that stage, secured by planning condition.

Result category	Total quantity (kg)	Virgin %	Materials Recovered %	Disposal %	Downcycling and use as energy %	Recycling and reuse as material %	Materials returned %	Circularity %
Concrete	31,475,098.62	93.75	6.25	-	100	-	50	28.13
Metal	4,893,416.88	20.42	79.58	-	-	100	100	89.79
Bricks and ceramics	-	-	-	-	-	-	-	-
Gypsum-based	1,049,012.88	98.84	1.16	-	92.51	7.49	53.74	27.45
Insulation	30,266.65	38.75	61.25	100	-	-	-	30.62
Glass	77,059.6	100	0	-	-	100	100	50
Wood and biogenic	-	-	-	-	-	-	-	-
Earth masses and asphalt	3,148,745	82.01	17.99	-	-	100	100	58.99
Other materials	2,864,462.87	98.31	1.69	0.55	1.58	97.87	98.66	50.17

Indicative circularity reporting format – structural, roof, MEP and external works quantities at RIBA Stage 2, remainder at RMA stage

Circular economy narrative

Minimise material quantities

The proposed data centre adopts a lean, material-efficient approach, reducing resource consumption while maintaining performance. An efficient, repeatable structural grid serving a large clear-span data hall, with a rationalised envelope and simple massing, minimises construction materials and reduces waste from procurement, cutting and installation.

As the application is in outline, a parameter-plan maximum-envelope approach has been taken. Early dimensional coordination between architecture, structure and MEP will follow at RMA stage so components align with standard product sizes, reducing bespoke or cut-to-fit elements and structural redundancy.

The remaining site fabric comprises timber frame buildings, porta cabins and hardstanding. Sound timber will be reclaimed through careful deconstruction, porta cabins removed intact for re-use where practicable, and hardstanding crushed on site (subject to contamination testing) for re-use as piling mat, sub-base and haul roads, displacing primary aggregate.

The overall form, with a maximum height of 20m, avoids unnecessary articulation, giving a more efficient envelope that reduces embodied carbon and construction waste. Envelope quantities will be confirmed at RMA stage.

Minimise fuels, land & water

Circular economy principles have informed construction and operational performance. Construction logistics will prioritise reduced plant usage, optimised deliveries and consolidated storage to minimise vehicle movements and fuel use. Prefabrication and modularity will further reduce on-site resource demands and shorten installation times.

Operationally, the facility will support low-energy, water-efficient use, with water-efficient cooling and low PUE and WUE ambitions confirmed at RMA stage. On-site photovoltaics, SuDS and attenuation ponds, flow restrictors, efficient sanitaryware and metering will reduce consumption across the c.100 staff.

Re-developing previously developed land and retaining boundary vegetation safeguards greenfield resources and makes effective use of existing infrastructure.

Specifying & sourcing materials

Materials will be selected at RMA stage using a circularity-led approach informed by recognised green sourcing guidance and a Sustainable Procurement Plan, focusing on:

- high recycled-content steel and cement replacement,
- products with Environmental Product Declarations (EPDs),
- robust supplier transparency, and
- locally sourced materials where feasible to reduce transportation impacts.

The indicative palette is restrained, combining insulated metal panels, precast concrete panels and aluminium mesh screens with durable internal finishes. The structural palette is now defined: an RC piled substructure in C32/40 with 35–50% cement replacement and a hot-rolled steel frame with composite metal-deck slabs, using EAF steel.

Few material types make future repair and recycling more achievable.

Design for Longevity, Adaptability, Flexibility and Reusability

The design follows the GLA's circularity decision tree, emphasising longevity, adaptability and replacement rather than demolition. The facility is planned around a 60-year design life, with a durable, low-maintenance envelope and a structural frame sized for future load adjustments, services upgrades or layout changes.

Internally, generous clear heights and a regular grid allow the data hall and ancillary office to evolve with future operational needs as IT technology and cooling requirements change. MEP plant, generators, UPS and cooling equipment will be modular and replaceable, and non-loadbearing partitions can be repositioned or removed with minimal material waste.

A disassembly guide will be investigated at RMA stage, outlining how components can be accessed, removed and separated at end of life. This supports recoverability by ensuring that structural elements, envelope materials, internal components and services can be removed without undue damage, extending the useful life of components.

Durability will guide material choice, with a low-maintenance, exposure-resistant envelope and robust detailing mitigating degradation from weathering, pollution and temperature change over the 60-year design life. This reduces the frequency of refurbishment and preserves material value for longer.

Recoverability

Recoverability is embedded through bolted, reversible connections, standardised fixings and materials sorted into distinct recycling streams.

Steelwork, insulated metal panels, precast panels, mesh screens and MEP components can be separated with minimal contamination, improving recyclability or reuse potential. Manufacturer take-back arrangements and WEEE routes will be pursued for IT and plant equipment.

Design out waste

Consistent with the "building in layers" approach, long-life elements will be durable and adaptable, while short-life systems are configured for accessibility, maintainability and replacement. Risers, plant areas and service routes will allow equipment replacement without major deconstruction. Prefabrication and modularity will be incorporated wherever feasible, reducing installation waste and vehicle movements.

Pre-demolition and pre-redevelopment audits will be undertaken post outline planning, alongside a Site Waste Management Plan following at RMA stage. Waste streams will be segregated, targeting a minimum 95% diversion from landfill.

Manage waste sustainably and at the highest value

The operational waste profile will comprise packaging, cardboard, pallets, metals and WEEE, plus office and amenity waste from c.100 staff. The Applicant certifies all its sites Zero Waste to Landfill and the Proposed Development will be operated to achieve the same, with segregated ground-level stores for general waste, dry mixed recycling and food waste.

An Operational Waste Management Plan will be prepared at RMA stage and secured by planning condition, targeting 65% municipal and 75% business recycling in line with the London Plan. Waste types are compatible with existing collection systems, with no unusual waste streams anticipated.

The Applicant has procured 100% renewable wind, hydro and solar energy since 2012 and is committed to net zero by 2030; hot aisle containment and indirect evaporative (adiabatic) cooling minimise energy and water use.

05. Circular economy targets

Circular economy targets for existing and new development	Policy Requirement	Target Aiming For (%)	Policy Met?	Explanation (How will performance against this metric be secured through design, implementation and monitoring?)
Demolition waste materials (non-hazardous)	Minimum of 95% diverted from landfill for reuse, recycling or recovery.	95%	Yes	As an outline application, quantities will be established by the pre-demolition, pre-redevelopment audits and the SWMP prepared at RMA stage. The Applicant commits to meeting or exceeding the GLA target. Remaining structures comprise timber frame buildings, porta cabins and hardstanding. Timber frame buildings will be carefully deconstructed to reclaim sound timber; porta cabins will be removed intact for re-use elsewhere wherever practicable, otherwise dismantled and recycled; hardstanding will be crushed on site (subject to contamination testing) for re-use as piling mat, sub-base and haul roads, with metals, WEEE and plastics segregated for recycling.
Excavation waste materials	Minimum of 95% diverted from landfill for beneficial reuse.	95%	Yes	No basement is proposed and excavation will be limited to foundations, drainage and attenuation, so volumes are expected to be modest. Arisings will be re-used on site for levelling and landscaping where ground conditions and contamination testing allow. As an outline application, quantities will be established by the pre-redevelopment audit and the SWMP at RMA stage, and the Applicant commits to meeting or exceeding the GLA target.
Construction waste materials	Minimum of 95% diverted from landfill for reuse, recycling or recovery.	95%	Yes	As an outline application, quantities will be established by the SWMP prepared at RMA stage by the appointed contractor, and the Applicant commits to meeting or exceeding the GLA target. The contractor will segregate waste into defined streams on or off site, use supplier take-back schemes for packaging and surplus materials, and monitor and report performance through the SWMP and the CEMP, secured by planning condition.
Municipal waste	Minimum 65% recycling rate by 2030.	65%	Yes	Operational waste from a data centre is low in volume and predominantly packaging, cardboard, pallets, metals and WEEE, plus small quantities of office and amenity waste from c.100 staff. A detailed Operational Waste Management Plan will be prepared at RMA stage, once waste contracts are known, and a business waste recycling target of at least 75% is committed to, meeting or exceeding the GLA target.
Recycled content	Minimum 20% of the building material elements to be comprised of recycled or reused content.	20%	Yes	An updated Bill of Materials and WLCA will follow at RMA stage. Emerging Stage 2 design sets 50% cement replacement to piles, pile caps and ground beams and 35% to the ground slab, EAF steel is intended for the c.3,635t frame, and site-won crushed hardstanding gives recycled aggregate. The 20% target will be met or exceeded, confirmed at RMA stage.

Additional requirements	Policy Requirement	Please acknowledge acceptance for a planning condition	Please set out an indicative timescale and responsible party for the provision of this information
Post-Construction Report	A CE Statement is required at post-construction (i.e. upon commencement of RIBA Stage 6 and prior to the building being handed over, if applicable. Generally, it would be expected that the assessment would be received no more than three months post-construction)	It is accepted that the Post Construction Reporting will be conditioned	The post-construction CES will be submitted to circulareconomystatements@london.gov.uk and the London Borough of Hillingdon no later than three months post-construction.

06. Implementation strategy

Post-planning, at Reserved Matters and pre-commencement stage

A Site Waste and Resource Management Plan (SWMP/RMP) will be prepared and implemented by the appointed contractor at RMA / pre-commencement stage, secured by planning condition, including procedures and commitments to sort and divert waste from landfill, through either;

- Reusing the material on site (in-situ or for new applications)
- Reusing the material on other sites
- Salvaging or reclaiming the material for reuse
- Returning material to the supplier via a 'take-back' scheme
- Recovery of the material from site by an approved waste management contractor and recycled or sent for energy recovery.

Waste materials will be sorted into separate key waste groups, such as bricks, concrete, insulation, packaging, timber, electricals, plastics, glass, etc., according to the waste streams generated by the scope of the works either onsite or offsite through a licensed contractor for recovery.

Further details of the SWMP will be produced by the appointed contractor at RMA stage and will include the target benchmark for resource efficiency. It should also cover the following:

- Procedures and commitments for minimising non-hazardous waste in line with the benchmark
- Procedures for minimising hazardous waste
- Procedures for monitoring, measuring and reporting hazardous and non-hazardous site waste
- Procedures for sorting, reusing and recycling construction waste into defined waste groups, either on site or through a licensed external contractor
- The name or job title of the individual responsible for implementing the above

The plan should be in line with guidance provided by DEFRA, Building Research Establishment (BRE) and Waste & Resources Action Programme (WRAP). Where materials cannot be reused or recycled on-site, the contractor will identify opportunities for potential reuse off-site. Material and waste generated through construction will be stored safely and efficiently, either for reuse on site or removal. Any materials to be reclaimed / reused will be done so in accordance with the WRAP protocol.

Waste reports will be reviewed and audited by an appointed Sustainability Champion on site. The Applicant operates ISO 14001 and ISO 50001 certified management systems and will require the same of the appointed contractor and supply chain.

Relevant members of the team will report on their respective targets, with performance reported within the Applicant's corporate net zero by 2030 and Zero Waste to Landfill commitments. The engineering team will continue to fine-tune the energy strategy,

including potential waste heat recovery and heat network connection, at RMA stage. Designing out waste will be monitored by the design team and registered within RIBA stage reports.

A few other elements that will be reviewed and fine-tuned at Reserved Matters stage include:

- Confirm the final concrete mix and cement replacement, including fly ash and GGBS percentages and recycled content, detailed within specifications;
- Further analysis to guide structural material efficiency across the data centre building and plant structures;
- Higher recycled content in hard landscaping, including site-won crushed hardstanding;
- Specification of high recycled content for finishes, fittings and plant;

Construction

The appointed construction Contractor will take appropriate measures on site to further reduce the environmental impact of the construction. They will adopt the following:

- The contractor will register with the Considerate Constructors Scheme and aim to attain a high score in all categories
- Energy efficient equipment, services and construction methods will be adopted to reduce energy consumption.
- Water use will be minimised during operation, installation and construction processes
- Energy including fuel and water use will be recorded on site during the construction process
- Measures will be put in place to mitigate the potential for pollution from the Site to land, air or water including noise and dust
- The main contractor will operate as per the guidelines set by ISO 14001 Environmental Management System (or an equivalent standard) and encourage the same throughout the supply chain
- Strategic planning will be done in advance to minimise transport to and from the Site to reduce greenhouse gas emissions
- Carbon footprint of material transportation should be recorded through Key Performance Indicator (KPI) sheet provided by the Sustainability Consultant.

A sustainable procurement plan will be produced to ensure the sustainability requirements are captured within the material specification.

Within the inclusion of performance requirements, any deviation from the design that will impact material quantities will need to be approved by the relevant design consultant.

Post-completion

Following project completion, an update to the Circular Economy Statement will be prepared by the main contractor. This updated statement will detail progress against the targets and commitments, reporting on the outcomes and lessons learned.

Targets will be confirmed at Reserved Matters stage and the Post Completion report will be collated from data obtained during demolition and construction works, with final reporting within three months of completion. The report will be submitted to circulareconomystatements@london.gov.uk as well as the London Borough of Hillingdon within 3 months of completion.

Next Steps

The design team will continue to optimise circularity and make informed material specification decisions through the Reserved Matters Application for the Former Sipson Garden Centre data centre, further reducing whole life carbon emissions.

07. End of life strategy

The final circular economy principle is focusing on the end of the development's lifetime. Using systems, elements or materials that can be reused and recycled will ultimately help in ensuring that waste is avoided, or at least reduced.

Emerging RIBA Stage 2 design is a hot-rolled steel frame with composite metal-deck slabs on a piled RC substructure, designed for longevity with a rationalised grid supporting future flexibility. Quantities are indicative and confirmed at RMA stage.

As the application is in outline with all matters reserved, only emerging RIBA Stage 2 quantities are available. The high-level end of life commitments below will be developed and confirmed at RMA stage and can be secured by planning condition.

Substructure and superstructure

Designed for a 60-year life, the hot-rolled steel frame, composite metal deck, cold-rolled purlins and roof deck, open-mesh gantry steelwork and RC substructure are recoverable at end of life for reuse and/or recycling.

The structure will be robust and will permit future interventions to be considered without the need for demolition.

Façade

Insulated metal wall panels, precast panels, glazing, aluminium mesh screens and powder-coated steel doors are all recoverable as metals and aggregate.

Standardised design and mechanical fixings will be preferred where possible to enable disassembly. Details will follow at RMA stage.

Interior fit-out

The interior fit-out of the ancillary office will be specified as durable and demountable, allowing components and materials to be recovered and reused. The option to share reusable materials with other buildings through web-based material platforms can also be explored.

Building services and technical plant

The emerging MEP specification comprises 64 no. chillers (c.1,274 kW cooling each), 10 no. air-source VRF units, 2 no. heat-recovery AHUs serving the admin area, 32 no. generators with associated belly-tank fuel storage, c.345 m^2 of photovoltaic panels and 10 no. lifts. All are modular, individually replaceable units that can be disconnected and removed without disturbing the building fabric, and recovered via manufacturer take-back and WEEE routes. Replacement and recovery over the operational life will be managed within the Applicant's ISO 14001 environmental management system and Zero Waste to Landfill standard, keeping materials in recycling, reuse or recovery.

Building circularity score

The OneClick LCA Building Circularity tool will be used to estimate opportunities for materials at end of life, based on inputs used for the Whole Life Carbon Assessment. It is impossible to predict construction processes, reusable and recycled value in 60(+) years; however, based on current practices and industry benchmarks applied by the OneClick tool, an estimation is produced in the format shown on the following page.

Building circularity is evaluated in terms of the mass of 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.

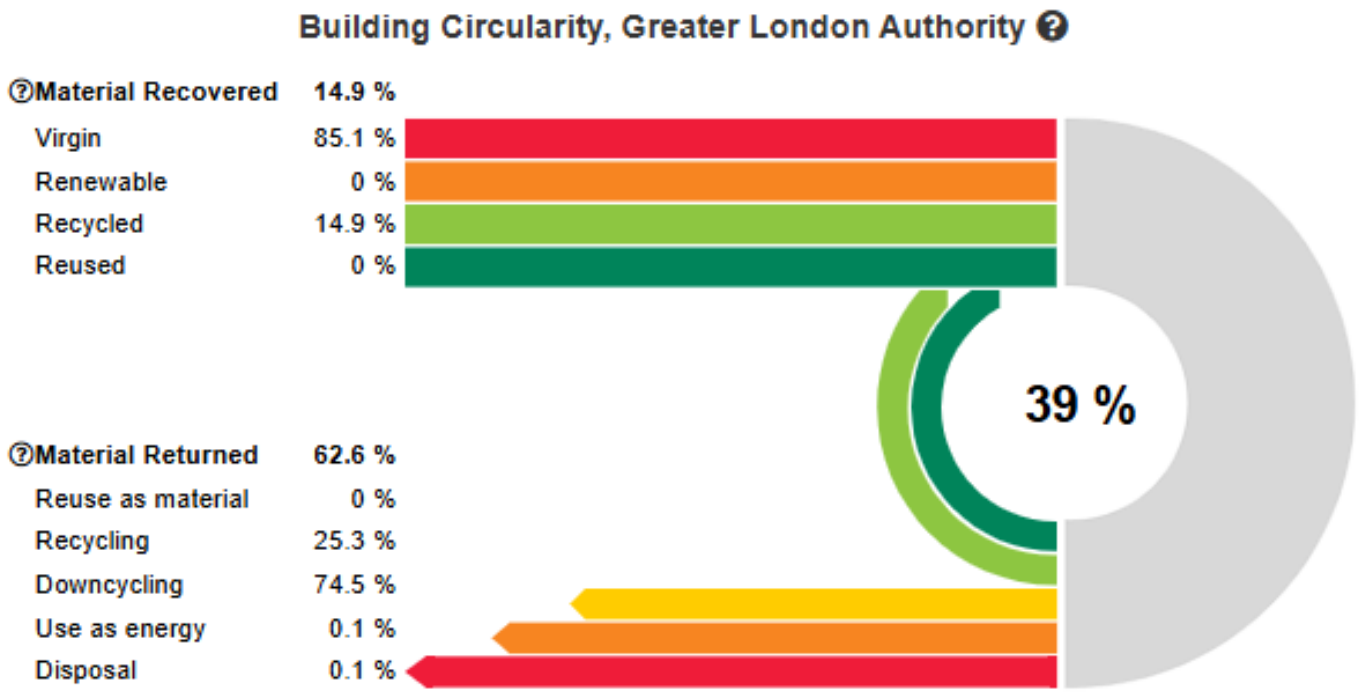
Materials recovered represents the use of circular materials in the project. It is the mass-based share of recycled, reused or renewable materials of the total materials used.

Materials returned 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 products) incineration.

The Building Circularity score, shown in the centre of the output, is the average of the materials recovered and materials returned figures (i.e. (materials recovered % + materials returned %)/2).

A preliminary circularity assessment has been undertaken alongside the Whole Life Carbon Assessment, and will be updated at RMA, once further detail to material quantities and specification becomes available.

Cataloguing of materials and building elements, including the use of material passports, will be investigated at RMA stage and kept in digital form to assist with disassembly at the end of life. Demolition contractors at the end of life of the scheme will be responsible for disassembling the buildings and redirecting materials for reuse, recycling, downcycling or disposal.



Building Circularity – illustrative format

08. Appendix 1

Bill of materials

Result category	Material quantity	Material intensity kg/m² GIA	Estimated recyclable materials kg/m²
1 Substructure	23,408,400.75	1,047.97	1,047.97
2.1 Superstructure: Frame	3,671,350	164.36	164.36
2.2 Superstructure: Upper Floors	4,816,330.32	215.62	214.9
2.3 Superstructure: Roof	2,084,052.06	93.3	93.3
2.4 Superstructure: Stairs and Ramps	1,154,544.12	51.69	51.69
2.5 Superstructure: External Walls	2,087,472.81	93.45	93.45
2.6 Superstructure: Windows and External doors	12,377.58	0.55	0.55
2.7 Superstructure: Internal Walls and Partitions	110,180.78	4.93	4.1
2.8 Superstructure: Internal doors	6,125.39	0.27	0.27
3 Finishes	1,064,424.75	47.65	46.28
4 Fittings, furnishings & equipments	-	-	-
5 Services (MEP)*	3,312,168.66	148.28	146.9
6 Prefabricated buildings and building units	-	-	-
7 Work to existing building	-	-	-
8 External works	3,685,486	164.99	164.99
0 Unclassified / Other	-	-	-
Total	45,412,913.22	2,033.08	2,028.77

Materials quantities are emerging RIBA Stage 2 figures, subject to change.

*Please note that due to the quantity of services and the constraints of the GLA spreadsheet, the result in the spreadsheet is slightly lower as it is not possible to add all services in. Key contributors are represented in the spreadsheet.

09. Appendix 2

Recycling and Waste Reporting table

	Total Estimates of Waste			Waste Management Routes						Summary			
				Reuse		Recycle		Other disposal					
Type of Waste	Overall Waste (tonnes)	Overall Waste (tonnes /m2 GIA)	Performance Indicator (Planning Stage Estimate)	Reuse Onsite (%)	Reuse Offsite (%)	Recycle Onsite(%)	Recycle Offsite (%)	To Landfill (%)	To Other Management (%)	Total Reuse (%)	Total Recycle (%)	Total Reuse and Recycle (%)	Total Waste Reported (%)
	PRODUCT AND CONSTRUCTION STAGE (MODULE A)												
Demolition Waste	10721.76	0.480	0	0%	40%	0%	55%	0%	5%	0%	95%	95%	100%
Excavation Waste	3350.55	0.150	0	95%	0%	0%	0%	0%	5%	95%	0%	95%	100%
Construction Waste	2,077	0.093	0	0%	0%	0%	95%	0%	5%	0%	95%	95%	100%
	USE STAGE (MODULE B)												
Demolition / Strip-out Waste	5,664	0.254	-	0%	0%	0%	95%	0%	5%	0%	95%	95%	100%
Construction Waste	177	0.008	-	0%	0%	0%	95%	0%	5%	0%	95%	95%	100%
	Overall Waste (tonnes /annum)	Overall Waste (tonnes /annum /m2)	Performance Indicator (LPG Appendix 1)	Reuse Onsite (%)	Reuse Offsite (%)	Recycle Offsite(%)	Recycle Offsite (%)	To Landfill (%)	To Other Management (%)	Total Reuse (%)	Total Recycle (%)	Total Reuse and Recycle (%)	Total Waste Reported (%)
Municipal Waste	171.523	0.008	0.000676 78874	0%	0%	0%	65%	0%	35%	0%	65%	65%	100%
Industrial Waste (if applicable)	-	-	-	-	-	-	-	-	-	-	-	-	-
	MODULE A - MODULE C												
	Overall Materials (tonnes)	Overall Materials (Modules A-C) (tonnes /m2)	-	Reuse Onsite (%)	Reuse Offsite (%)	Recycle Offsite(%)	Recycle Offsite (%)	To Landfill (%)	To Other Management (%)	Total Reuse (%)	Total Recycle (%)	Total Reuse and Recycle (%)	Total Waste Reported (%)
Total Materials	52,386	2.345	-							0%	0%	0%	0%

Savills Earth

Savills Earth provides a full suite of energy and sustainability services across both the built and natural environments. Savills Earth consolidates our established lines of business and expertise to deliver the very best sustainability, energy and carbon strategies on behalf of our clients. With over 100 specialists in the team, Savills Earth turns client sustainability and energy aspirations into a reality.

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