

Circular Economy Statement

STOREX Cricklewood

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Executive Summary

This Circular Economy Statement outlines the circular economy commitments, targets and opportunities for the proposed development at Edgware Road, Cricklewood, demonstrating that the proposal will comply with the requirements of the London Plan Policy SI7: Reducing Waste and Supporting the Circular Economy.

Summary

This Circular Economy Statement (CES) has been prepared in response to Policy D3 and SI7 of the London Plan for the proposed scheme at Edgware Road, Cricklewood. This detailed statement presents the strategic approaches, commitments, opportunities and targets through which the scheme will retain its constituent materials at their highest value (throughout the design, build, operation, and disassembly), and how the materials will be reused and recycled to adhere to the principles of a circular economy.

The intended aim/outcome of this statement is to:

- Identify potential strategies and approaches that enable the scheme to be 'circular'
- Develop quantitative targets for material use, waste management, reuse and recycling to facilitate evidence-based performance
- Identify opportunities for the application of circular economy principles through the scheme's lifecycle promoting whole-life efficiencies in the scheme.

Key circular economy commitments, targets and opportunities for this scheme are:

- To divert 95% of non-hazardous excavation waste from landfill, with retention onsite where possible.
- To divert 95% of construction (new build) waste from landfill with an emphasis on reuse and high value recycling where possible
- Proportion of materials with a reused or recycled content to be at least 20%
- Other materials to be responsibly sourced as per the Sustainable Procurement Policy
- To maximise the recycling of operational waste from the residents and commercial activities through adequate bin provision and segregation of dry recyclables.

To address the wider sustainability issues, the development is targeting a BREEAM Excellent certification for the self-storage facility and Fab Labs against the BREEAM New Construction scheme for simple buildings. This includes achieving several material and waste credits, which are Mat06 (Material Efficiency), Wst01 (Construction Waste Management), Wst06 (Design for Disassembly and Adaptability); Man03 (Responsible Construction Practices) and Mat03 (Responsible Sourcing of Materials). Targets include achieving or 3.2 tonnes/100m² of internal floor area for construction waste arising for the development.

The scheme plans to accommodate a layered perspective of a building for a circular economy: site, structure, shell/skin, services, space and stuff.

Key processes include:

- Resource Management Plan: will be followed for the construction activities, which will identify and implement areas for reduction of waste, reuse and upcycling and diversion of waste material to recycling facilities, as well as ensuring the reporting of quantities and waste destinations and Duty of Care commitments.
- Specification of materials: the scheme will aim to source the main material from responsible sources including those from reused and recycled sources. Use of reused and recycled material will promote a circular economy approach to material management. All timber will be FSC.
- Adaptability and Flexibility: the scheme will be designed to include adaptability principles so that units can be readily adapted to different uses.
- End of life plan: as part of the O&M manual, an end-of-life plan will be written including relevant information on products and materials and construction details.

The strategies evaluated in this statement have been designed with the aim of instilling the principles of a circular economy into the scheme, which should help minimise the waste generated from the scheme and the materials used throughout its life cycle.

Based on the analysis the proposal will Building Circularity score of 28%.

Evidence will be required from the demolition and main contractor on waste management performance, as well as the specification of products and materials and will be reported to GLA in the post completion report.

Building Circularity, Greater London Authority ?

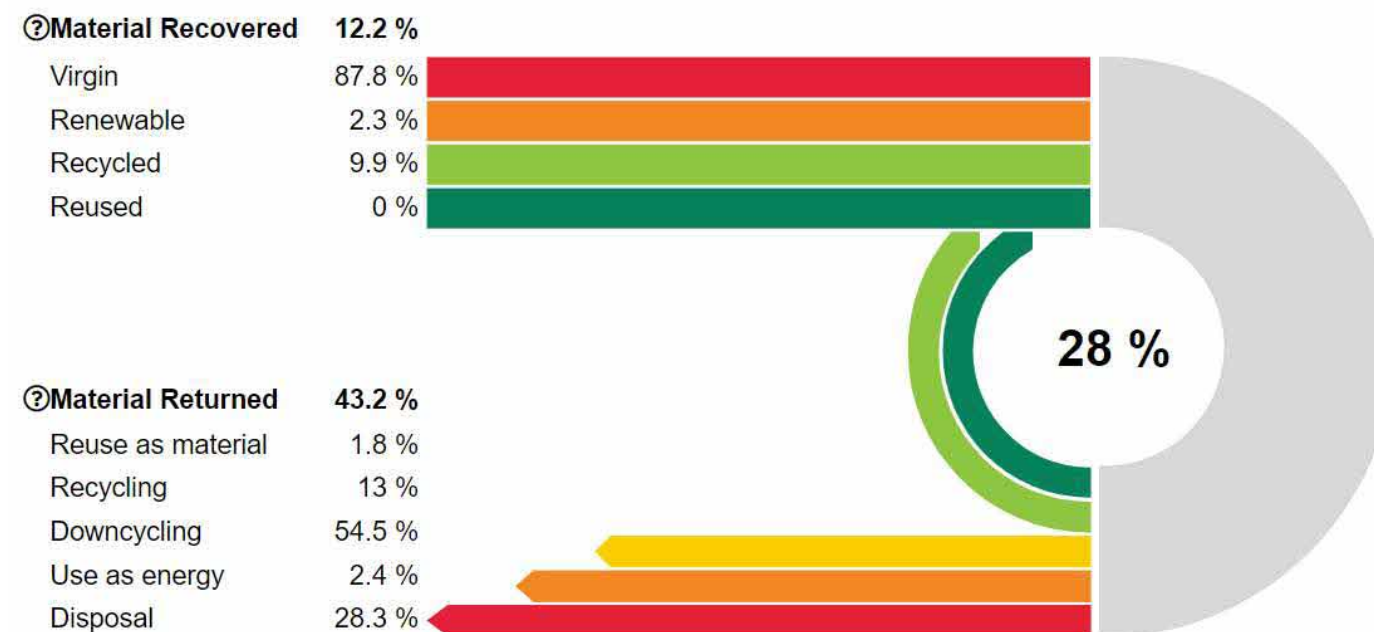


Figure 1.1 Building Circularity

1 Introduction

This Circular Economy Statement (CES) has been prepared in response to Policy D3 and SI7 of the London Plan for the proposed scheme at Edgware Road, Cricklewood. The proposed scheme includes erection of a mixed-use development a mixture of self-storage facilities (Use Class B8) and light industrial workspace (Use Class E(g) (iii)), landscaping and all associated works.

This detailed statement presents the approaches, strategies and opportunities through which the scheme will retain its constituent materials at their highest value (throughout design, build, operation, and disassembly), and how the materials can be reused and recycled to adhere to the principles of a circular economy.

The intended aim/outcome of this statement is to:

- Identify potential strategies and approaches that enable the development to be 'circular'.
- Provide quantitative targets for material use, recycled content, recycling and diversion of waste from landfill to facilitate evidence-based performance
- Identify opportunities for the application of circular economy principles, promoting whole-life efficiencies in the scheme.

This CES supports the detailed planning application, and as such is the 'detailed circular economy statement' in accordance with the GLA's Circular Economy Statement Guidance.

1.1 Development Site

1.1.1 Location

The site is located at 400 Edgware Road, Cricklewood, NW2 6ND. The site is approximately 0.5 hectares. The site is bounded by Edgware Road to the south-west and Thameslink railway line to the north-east, Ealing Road to the east.

1.1.2 Proposed Scheme

The proposal includes erection of rear extension to provide additional self-storage floorspace (Use Class B8) with associated car and cycle parking, landscaping and other works ancillary to the development.

The existing building of 4,515 sqm comprises a self-storage facility (Use Class B8) and light Industrial workspace / incubator units (Use Class E(g)(iii)).

The area summary for both the existing building and the proposed extension are provided in Tables below.

Table 1.1 Existing Building Area Summary

Use	Use Class	Floorspace (Sqm GIA)
Self-Storage	Class B8	4,153
Fab Labs	Class E(g) (iii)	362
Total		4,515

Table 1.2 Planning Application Extension Area Summary

Use	Use Class	Floorspace (Sqm GIA)
Self-Storage	Class B8	2,143
Total		2,143

Self-storage floorspace capacity statement

The planning application seeks to deliver all non-mezzanine floorspace within the proposed warehouse extension. Built floorspace will comprise 2,143 sqm GIA. However, a maximum of 5,872 sqm GIA can be accommodated within the warehouse building through the use of demountable mezzanine floors.

In accordance with Section 55(2)(a) of the Town and Country Planning Act 1990, planning permission is not required for the carrying out of maintenance, improvement or other alteration to a building where works affect only the interior of the building and do not materially affect the external appearance of the building; this includes mezzanine floors for non-retail use. As such, additional floors can be installed at a later date through the use of demountable mezzanines, without requiring planning permission.

Therefore, this report assesses the maximum level of floorspace that can be accommodated within the building.



Figure 1.1 Proposed Development

2 Planning Policy

2.1 The London Plan (March 2021)

This Circular Economy Statement has been written in response to Policy D3 and SI7 of the London Plan (adopted March 2021), which focus on the design-led approach on reducing waste and supporting the circular economy.

2.1.1 Policy D3 Optimising site capacity through the design-led approach

To minimise the use of new materials, the following circular economy principles should be taken into account:

- 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 re-use of secondary products and materials
- designing for longevity
- designing for adaptability or flexibility
- designing for disassembly
- using systems, elements or materials that can be re-used and recycled.

2.1.2 Policy SI7 Reducing waste and supporting 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 % reuse/recycling/recovery
- excavation –95 % 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.

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

2.1.3 London Plan Guidance - Circular Economy Statements (March 2022)

The Circular Economy Statements LPG published in March 2022 has been considered when preparing this statement, which explains how to prepare the Circular Economy statement to comply with Policy SI7, including the information that must be submitted under Policy SI 7(B). It also includes guidance on how the design of new buildings, and prioritising the reuse and retrofit of existing structures, can promote CE outcomes.

3 Circular Economy Goals and Strategic Approach

3.1 Circular Economy Aspirations

The scheme will address circular economy principles, including the aspects of responsible sourcing and the environmental impact of construction materials. The scheme aspires to the adherence to the principles of circular economy through the reuse of materials and recycling of waste during construction and operation. The project team will work together to reduce waste, maximise material efficiency, design for longevity and flexibility and reuse and recycle material waste arising from all stages of the scheme.

The project team are committed to:

- Optimise design for longevity, flexibility, adaptability, standardisation.
- Ensure each building element is serviceable and maintainable
- Investigation of the leasing of products, especially fixtures and fittings
- Due consideration to disassembly, deconstruction and end of life recoverability
- Use durable materials and products
- Increase the use of reused and recycled content
- Use materials that can easily be reused or upcycled at the end of their life
- Use low carbon and non-toxic materials
- Maintain materials at their highest value.

The proposed development will be designed for disassembly and adaptability, with maximised material re-use and recycling on site, in line with the decision tree presented in Figure 3.1. The Table 3.1 presents the scheme's circular economy strategic approach.

Table 3.1 Strategic approach to circular economy

Aspect	Phase / Building / Area	Steering Approach	Explanation	Target	Supporting processes
Circular economy approach for the new development	All levels	Design for adaptability	The structural design will consider long term adaptability of the building's future use through the repeatability of unit types and standardisation and structural loading.		Design and specification stages
	All levels	Design for longevity	Long term maintenance, accessibility and durability are key aspects of the design.		Design and specification stages
	All levels	Sourcing or materials	Materials will be responsibly sourced using appropriate schemes.		Design and specification stages
	All levels	Flexibility	The development will be designed to allow for flexibility and potential change of use.		Design and specification stages
Circular economy approach for the existing site	Demolition	Disassemble and Reuse Demolish and Recycle	The existing building will be retained and extended. Partial demolition will be necessary to enable conversion and extension, but the foundation and the structural frame of the existing building will be retained. New cladding and roof will be installed to the existing section. This will be followed by the construction of the extension.	Divert 95% of waste from landfill	Pre-demolition audit Resource management plan
	Groundworks	Reuse	Beneficial reuse of excavation waste offsite.	Divert 95% of non-hazardous excavation waste from landfill	Materials management Plan/ Cut and fill assessment
Circular economy approach for municipal waste during operation	All areas	Minimise operational waste	Operational policies will include adequate space and handling of residential and commercial waste to enable segregation and recycling of waste where possible.	Divert 65% of municipal waste from landfill by 2030	Waste strategy

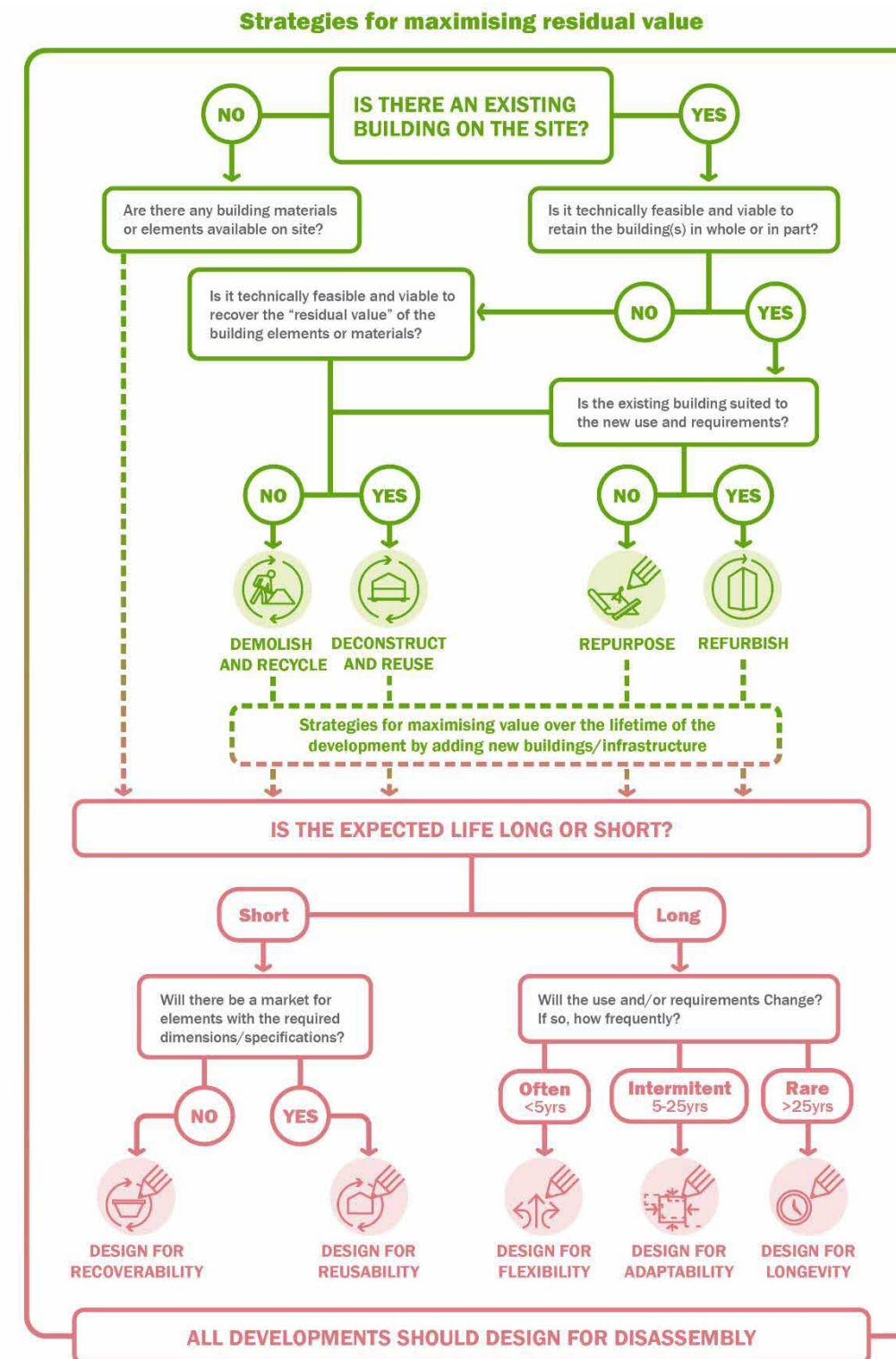


Figure 3.1 Decision tree for design approaches

4 Circular Economy Narrative

4.1 Addressing the 6 Circular Economy Principles

The Greater London Authority's Circular Economy Statement Guidance (published in March 2022) specifies 6 circular economy principles that should be followed as a best practice framework to accomplish a circular economy in a built scheme. Addressing these principles allows the project team to identify opportunities of circular economy and conceptualise potential solutions that would improve the performance of the scheme.

These principles include:

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

4.2 Building in Layers

Building in layers has been implemented across the proposed development such that each layer has its own life cycle, life span and relevant circular economy approach. To support the reuse and recycling of materials, the different layers are independent, accessible and removable where possible. The key building in layers strategies applied for the proposed development include the following:

- The new structure will be designed for actual loads to minimise material use. The new structure will specify materials with high recycled content.
- The building envelope is designed independently of structure to allow for potential future changes and disassembly.
- The new façade has been designed such that it can be removed and replaced without negatively impacting the structural frame or any other finishes.
- The space is designed with durable and robust materials that help ensure longevity an increased life span, particularly in areas of significant use.

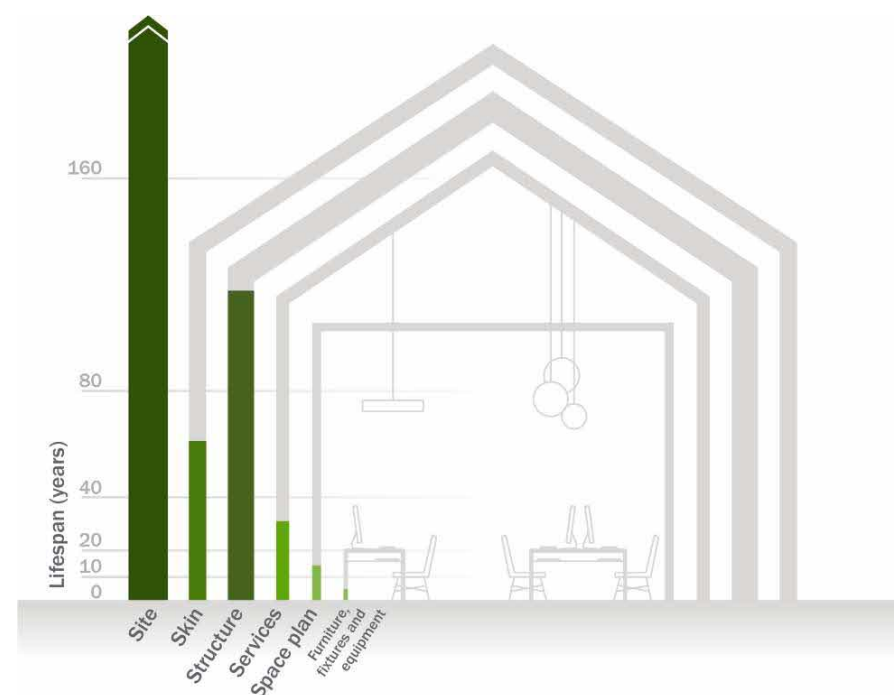


Figure 4.1 Building layers and their indicative lifespans

4.3 Designing Out Waste

Potential opportunities for design out waste include using offsite construction for some of the elements such as the precast concrete panels and for the façade; this will be fabricated offsite and assembled onsite. Design will consider standardised design to reduce waste. There is minimum excavation waste as there is no basement.

4.3.1 Minimising the quantities of material used

The quantities of materials used are being assessed in the various stages of the whole life carbon assessment. The current assessment states that the upfront carbon is 4,033,911 kg CO₂e, equivalent to 389 kg CO₂e/m² (modules A1-A5), and the embodied carbon for the scheme is estimated to be 6,120,001 kg CO₂e, equivalent to 590 kg CO₂e/m² (modules –A-C, excluding B6 and B7). The scheme is below the aspirational WLC benchmark of 550 kg CO₂e/m² GIA for modules A1-A5, as well as WLC benchmark of 690 kg CO₂e/m² for modules A-C (excluding B6 and B7), which is driven by the retention of the of the foundation and the structural frame of the existing building. The summary of the Whole Life Carbon Assessment results in provided in Table below.

Table 4.1 Whole Life Carbon Assessment Breakdown

Building Element Category	GWP	GWP/m ²
Upfront Carbon (A1-A5)	4,033,911 kg CO ₂ e	389 kg CO ₂ e/m ² GIA
In-Use and End-of-Life Carbon (B-C, excl. B6-B7)	2,086,252 kg CO ₂ e	201 kg CO ₂ e/m ² GIA
60 Years Embodied Carbon (A1-A5, B1-B5, C1-C4)	6,120,001 kg CO ₂ e	590 kg CO ₂ e/m ² GIA
60 Years Operation Energy Carbon (B6)	281,280 kg CO ₂ e	27 kg CO ₂ e/m ² GIA
60 Years Operation Water Carbon (B7)	32,274 kg CO ₂ e	3 kg CO ₂ e/m ² GIA
Total	6,433,555 kg CO ₂ e	620 kg CO ₂ e/m ² GIA

The assessment is being used to identify opportunities for reducing embodied carbon and as such the overall amount of materials used, with the focus on structural frame and façade materials. The design approach is encompassing lean design principles. Durability is a key consideration in the specification of materials and components especially in vulnerable/high trafficked areas.

4.3.2 Minimising the quantities of other resources used

The energy solution relies on the minimising the Electric panel heaters will be used to deliver space heating and cooling together with a fabric first approach to comply with Part L1A of the Building Regulations and the London Plan 2021. The majority of the building is largely unconditioned storage spaces. The circulation, ancillary spaces and Fab Labs are heated by electric panel heaters due to the high performance of fabric specification resulting in a low heating load.

Ventilation is provided to the WC, cleaners store and showers via extract ventilation. The Fab Labs are ventilated naturally and the reception area is served by high efficiency VRF.

Domestic hot water use is low in the development, and therefore will be provided by instantaneous point of use DHW. Water use will be minimised by incorporating water-efficient fixtures and fittings.

4.3.3 Manage excavation waste

There is likely to be some excavation waste arising from forming the piling mat, as well as excavation for the pile caps. There will also be some excavation waste related to the external works, though this is likely to be in low quantities. This includes from the pedestrian access works and from the road/paving areas. Other sources include digging trenches from the drainage works which has not as yet been quantified. There is little opportunity to reuse the excavation waste onsite; as such, it will be reused offsite using the CL:AIRE Definition of Waste Code of Practice (DoW CoP). Any hazardous soil is likely to be sent to an appropriate landfill site. The management of excavation waste will be included within the Resource Management Plan with the contractor expected to meet at least 95% diversion from landfill, via beneficial reuse for any excavation waste (non-hazardous). This meets the London Plan target of the beneficial use of at least 95% of excavation waste.

4.3.4 Manage Construction Waste

Construction waste will arise from the new construction elements and external works. The contractor will be responsible for developing and implementing a Resource Management Plan, which will outline clear reuse and recycling routes for the materials arising with the aim of waste being used at its highest value. This will include storage of materials and reusable packaging systems. Where possible, takeback schemes will be used for a) surplus materials and b) packaging. The targets of 95% diversion of non-hazardous waste from landfill will be included in the employer requirements for the contractor. For BREEAM requirements, there is the intention to obtain the waste arising benchmark of 3.2 tonnes/100m² for the scheme.

4.3.5 Manage Operational Waste

Operational waste generation by types and volumes has been established which will influence the number, type and location of bins for storage and safe routes for collection. An operation waste strategy has been created by the Architect, indicating the storage space needed and the number of bins required for both the reception area of the self-storage and the Fab Labs.

As stated in the Design and Access Statement:

Self-storage customers are prohibited from leaving their waste on site. Therefore, the only waste generated from the Site is from the front desk and Fab Labs in the building. Working on the assumption that circa two employees are present on site on an ongoing basis, and based on the BS 5906:2005 weekly arisings for offices, an estimated 100 litres / week is predicted. Using the WRAP conversion factor for co-mingled (plastic bottles, news & prams, cardboard, mixed cans and glass) of 84kg/m³ (as measured from samples taken from 240 litres wheeled bins); the total weekly arisings are estimated to be 8.4kg; equating to 0.4 tonnes over the course of the year.

Please Consideration has been given to anticipated waste arising, associated with the operation of the Fab-Labs. Working on the designated area of 469.3sqm for the Fab-labs and based on the BS 5906:2005 weekly arisings for industrial use the volume per m² of floor area [5 l] x floor area of 362sqm would equal 1810 litres. As such 2 x 1100l bins provide a total allowance of 2,200 litres.

Based on the above, the total weekly arisings for Fab Labs are estimated to be 152 kg, equating to 7.9 tonnes over the course of the year.

4.4 Design for Longevity

Durability and resilience have been a key feature in the design of the proposed development. Specific design considerations are presented below.

In general, low-maintenance and highly durable materials are proposed. This is considered particularly important for the areas with high pedestrian traffic. Suitable durability and protection measures will be adopted for such parts of the building vulnerable to damage due to high usage. Potential measures to be considered include:

- Hard-wearing and easily washable floor finishes in heavily used circulation areas (i.e. main entrance, corridors etc.). Robust finishes, such as polished concrete are currently proposed for the floors and walls to high traffic areas.
- Wall protection will be provided to circulation areas and other similar service areas.
- Existing roads and parking bays adjacent to the building have raised kerbs and planters which provide protection and separation from the façade. These measures are being retained or being replicated.

4.5 Designing for Adaptability or Flexibility

The new building will be designed to have a long design life. The structural elements have a stated design life of 60 years before first maintenance. The design will aim to implement the 'building in layers' approach, to allow different elements to be removable from the main structure. There is some limitation in the disassembly of the reinforced concrete frame at the end of life.

In the future the building could be adapted to an alternative use; the column layout allows for future flexibility. Some areas have been developed to be Fab Lab and shared spaces allowing for future flexibility in their usage. Consideration will be given to the future service provision and the access to these areas.

4.6 Designing for Disassembly

Where building materials are not to be reused (simply recycled or sent to landfill), they are to be taken down without consideration for damaging building elements.

Disassembling a building to allow reuse of certain materials will require several changes to this typical methodology. The frame elements would need to be carefully removed and lifted to the ground (rather than demolishing).

The deconstruction sequence is outlined below.

- Finishes, fittings, services, and the façade are to be removed.
- Concrete slabs and columns can be saw cut outside beam lines and either subsequently demolished and taken for recycling or lifted down with a crane for reuse in other applications.
- Steel connections are bolted and therefore reversible. They can then be dismantled, and beams lifted out by cranes or mobile plant. The beams will still have an element of concrete attached to the top flange due to the existing shear studs and precast planks.
- Concrete slabs will have mesh reinforcement in the top layer with little other reinforcement. Remaining concrete located on top of the beams will need to be carefully demolished, and the shear studs should be ground flush with the top flange.
- The paint finishes and any residue left on the top flange of the beams can be stripped leaving the beam ready for reuse.
- The capacity and properties of all steelworks will be recorded on record drawings so future users of the elements can understand how that element will perform in their new building.

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

All materials will be responsibly sourced and will be chosen and specified through appropriate schemes. This includes potentially using reclaimed products and those with higher recycled content, using products which have EPDs, or other labels such as Cradle to Cradle, using materials that are locally sourced. The Sustainable Procurement Policy will be applied for materials and products as part of the specification process. Requirements will be put in place to monitor the supply chain in terms of responsible sourcing. All timber will be from FSC sources.

Materials and products will be sourced according to the following principles:

- Appropriate for their intended use
- Endeavour to have relatively low operational costs and energy consumption
- Longer service life components
- Ease and low cost of maintenance, replacement, and repair
- Materials to be specified from standard ranges to minimise risk of obsolescence.

There is the aim of ensuring that recycled content by value for the project is at 20%; though it is likely that for certain elements that will be higher. This includes the use of GGBS in the concrete (in a range of 20-35%) and recycled content in the plasterboard, board products, windows (glass and aluminium) and steel.

4.8 End-of-Life Strategy

4.8.1 End-of-Life Scenarios

The proposed development will be designed for disassembly and adaptability, with maximised material re-use and recycling on site. Where feasible, the materials will be recovered and reused (e.g. brickwork, steel partitions, paving and kerbs), retaining the maximum value. If re-use cannot be implemented, recycling should be used. Elements such as steel reinforcement bars, aluminium frames and metal equipment should be fully recycled. Glass and gypsum should also be recycled. Re-use/recycling option assessment in lien with resource value retention hierarchy should be carried out before sending any resources for disposal or incineration.

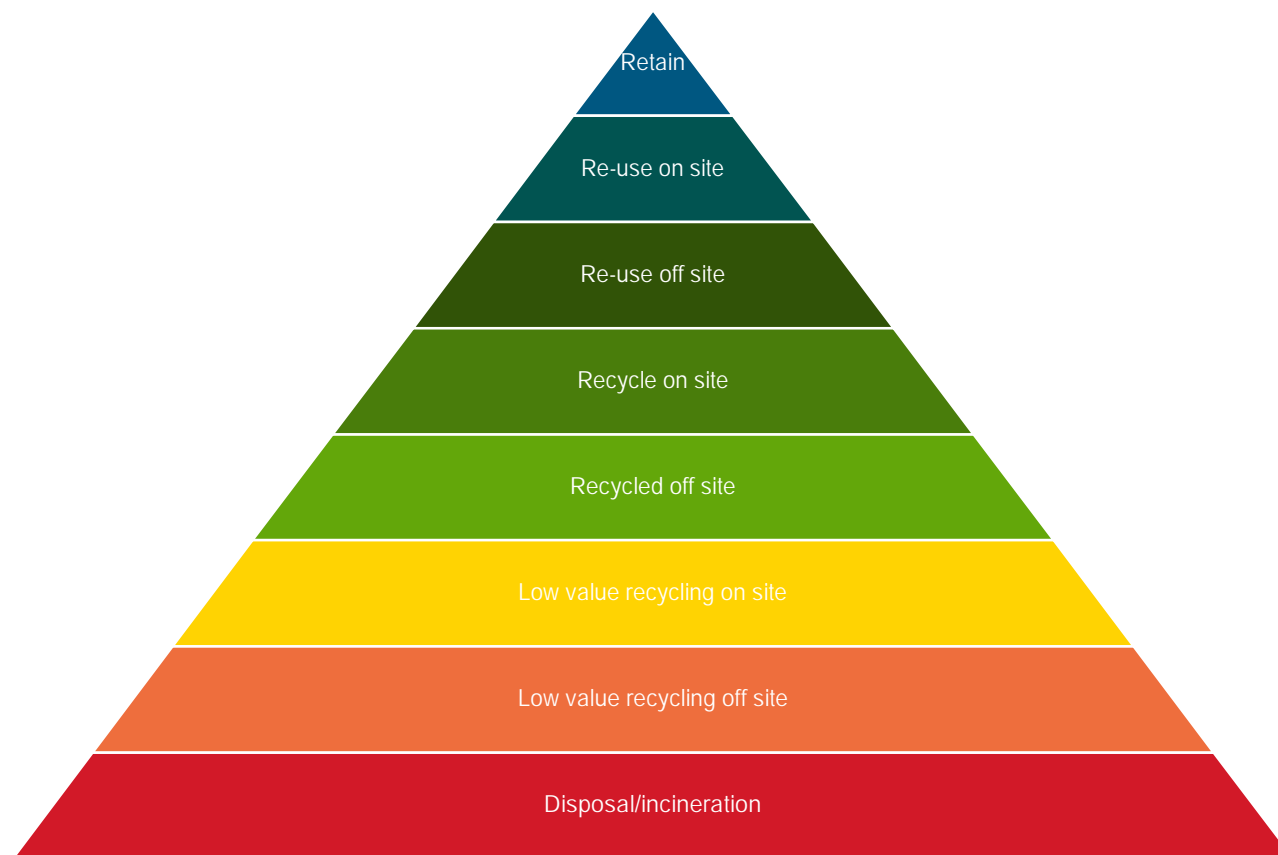


Figure 4.2 Resource Value Retention Hierarchy

The end-of life scenarios considered in the Whole Life Carbon Assessment and the Circular Economy Statement are outlined in the Table 4.3 below.

Table 4.2 Summary of end-of-life scenarios for main building materials

Material	End-of-life scenario	Details	Comment
Concrete	Downcycling	Crushed to use as aggregate	Potential for cutting out the elements and re-use
Reinforcement bars	Recycling	Separated from concrete and recycled	
Bricks	Downcycling	Crushed to use as aggregate	Potential for recovery and re-use
Steel partitions	Recycling	Recycled	Potential for recovery and re-use
Aluminium	Recycling	Separated out and sent to aluminium recycling.	
Glass	Recycling	Separated out and sent for glass recycling.	
Gypsum	Recycling	Recycled	
Insulation	Landfill	Separated out and sent for disposal	Potential for recycling depending on the condition and the development in insulation recycling technologies
Paving and kerbs	Downcycling	Crushed to use as aggregate	Potential for recovery and re-use

4.8.2 End-of-Life Scenarios

The drawings will be detailed with deconstruction information and the Operation and Maintenance manual shall include details of the materials to aid with the ability for each material to be repurposed for reuse in future applications. This will include material quantities, certificates of responsible sourcing, any treatments used, strength/tolerance information, predicted lifespan, links to EPDs and carbon/LCA information, instructions for design for disassembly and recommended routes at end of life. Incorporation of material passports will also be considered.

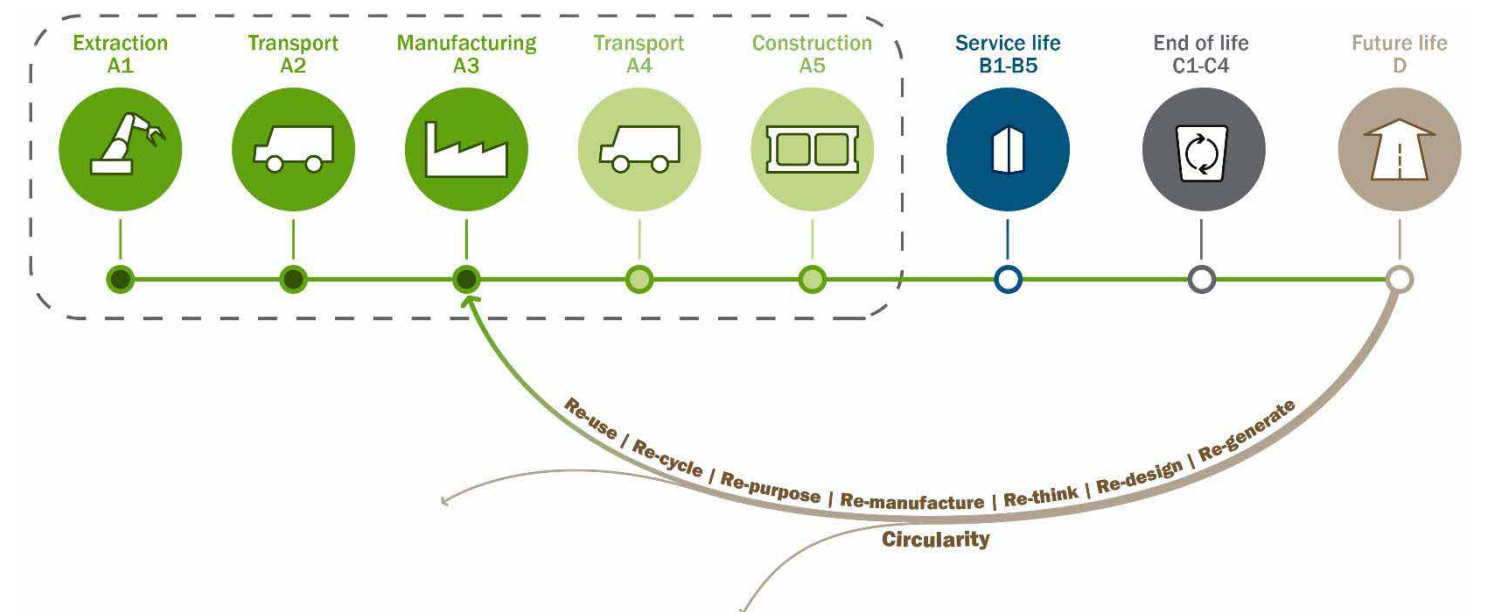


Figure 4.3 Building Circularity

5 Circular Economy Design Principles by Building Layer

Table 5.1 Circular Economy Commitments

	Site	Substructure	Superstructure	Shell/Skin	Services	Space	Stuff	Construction Stuff
Designing out waste	Module A - Product Sourcing and Construction Stage	Use of site won materials for fill purposes and improvement of grounds. Use of GGBS in concrete and asphalt with recycled content	No basement; use of GGBS as recycled content	Efficient design; Use of GGBS and recycled aggregates; high % of recycled content in rebar	Look at minimising construction waste from plasterboard and cladding	Use of higher recycled content - carpet tiles and metal doors (look at reused carpet tiles)		
	Module B - In-Use Stage				High wearing durability on cladding and internal walls	Information captured within material passport		
	Module C - End-of-Life Stage	Elements can be recycled at end of life; foundations can be reused insitu		Steel elements can be re-used; concrete frame can be crushed and used as fill	Some limitations with gypsum	Reuse preferred		
	Module D - Benefits and Loads Beyond the System Boundary	Concrete paving can be reused as can other elements such as fencing and security areas				Reuse preferred		
Designing for longevity	All external elements to be specified to meet durability needs (long lasting) and highly durable due to the needs of the development	Designed for long life - concrete piles	Use of long lasting concrete frame (60+ years)	Long lasting materials; Coating and painting for external elements		Use of long lasting metal doors	Hard wearing items for FFE	Hiring of cabins
Designing for adaptability or flexibility			Flexible open spaces; structural grids allow for bigger bedrooms and coliving	Walls unlikely to be flexible	Designed for modularity	Doors can be removed easily; as can carpet tiles and metal ceiling tiles (to look at bonding to substrate)	Room spaces allow for some change in pattern and openings longer term	
Designing for disassembly	Gates, bin stores, fencing and concrete/stone paving can be disassembled		Use of bolted connections prioritised; limitations with pre-cast concrete stairs	Limited re internal walls; look at cladding fixing details and windows.	Designed to be dissembled	Doors can be deconstructed	Use of bolted and screwed connections; avoid adhesive for items to be replaced more frequently.	Use of mobile and rented equipment
Using systems, elements or materials that can be re-used and recycled	Concrete and recycled asphalt for roads and surfaces allows for recycling at end of life	Concrete elements can be cut and reused or recycled	Ability for it to be reused (around 30%); remainder for recycling for steel; concrete can be recycled	Metal frames, roof sheets, rolling shutters, wooden doors, glass window panels/frames and bricks have potential for reuse.	Most items can be recycled; potential reuse dependant on condition and usage	Doors suitable for reuse (dependant upon condition and warranties); carpet tiles and ceiling tiles also suitable fort reuse (condition dependant)	Investiagte potential to reuse unwanted FFE; leasing of internal furniture; avoidance of composite materials	

6 Reporting forms

Table 6.1 below shows the material quantities for the scheme, based on the Whole Life Carbon Assessment. Table 6.2 shows the estimated waste arising and how it will be managed. The material quantities have been provided by the design team for the purpose of Whole Life Carbon Assessment. The analysis has been carried out using Building Circularity tool available within One Click LCA software. Refer to Appendix B - Materials Resource Efficiency, as well as the Circular Economy Reporting Template for a detailed breakdown.

Table 6.1 Material quantities

Result category	Material quantity kg	Material intensity/ Gross Internal Area kg/ m2	Recycled content by value %	Reused content by value %	Estimated reusable materials kg/m2	Estimated recyclable materials kg/m2
1 Substructure	3 792 173,12	365,48	31,53	0		333,56
2.1 Superstructure: Frame	353 176,41	34,04	78,13	0		33,56
2.2 Superstructure: Upper Floors	264 700,33	25,51	5,08	0		8,49
2.3 Superstructure: Roof	196 267,88	18,92	0	0		3,86
2.4 Superstructure: Stairs and Ramps	6 593,42	0,64	0	0		0,64
2.5 Superstructure: External Walls	151 266,43	14,58	2,86	0		14,58
2.6 Superstructure: Windows and External doors	1 728,06	0,17	0	0		0,17
2.7 Superstructure: Internal Walls and Partitions	18 695,49	1,8	37,19	0		1,75
2.8 Superstructure: Internal doors	321,05	0,03	0	0		0,03
3 Finishes	91 473,15	8,82	43,22	0		4,24
4 Fittings, furnishings & equipments						
5 Services (MEP)	118 996,77	11,47	60,43	0		9,81
6 Prefabricated buildings and building units						
7 Work to existing building						
8 External works	1 655 210,12	159,52	1,15	0	10,89	24,39
Total	6 650 602,23	640,96	24,81	0	10,89	435,06

Table 6.2 Waste reporting

Category	Total estimate tonnes	Of which...			Sources of information
		% reused or recycled onsite	% reused or recycled off site	% not reused or recycled Max 5%	
				% to landfill % to other management	
Excavation waste	1,412.5 tonnes		95% beneficially reused	5%	Excavation waste - 1130m3 - quantity provided by the Structural Engineers. Converted to tonnage using the conversion rate of 1.25; 1130 x 1.25 = 1,412.5 tonnes
Construction waste	332 tonnes		95-100% recycled	5%	Based on BREEAM Wst 01benchmark of 3.2 tonnes/100m². Based on a GIA 10,376m²
Municipal waste	8.3 tonnes		75% of business waste (by weight); 65% of municipal waste (by weight)	35%	Waste Strategy section in Design Statement by ThreeSixty Architecture. Refer to Appendix C for the relevant extract from the Design Statement. Self-storage: 0.4 tonnes over the course of the year Fab Labs: 7.9 tonnes over the course of the year

7 Conclusions and Recommendations

This Circular Economy Statement (CES) has been prepared in response to Policy D3 and SI7 of the London Plan for the proposed development at Edgware Road, Cricklewood. This detailed statement presents the strategic approaches, commitments, opportunities and targets through which the scheme will retain its constituent materials at their highest value (throughout the design, build, operation, and disassembly), and how the materials will be reused and recycled to adhere to the principles of a circular economy.

Key circular economy commitments, targets and opportunities for this scheme are:

- To divert 95% of non-hazardous excavation waste from landfill, with retention onsite where possible.
- To divert 95% of construction (new build) waste from landfill with an emphasis on reuse and high value recycling where possible
- Proportion of materials with a reused or recycled content to be at least 20%
- Other materials to be responsibly sourced as per the Sustainable Procurement Policy
- To maximise the recycling of operational waste from the residents and commercial activities through adequate bin provision and segregation of dry recyclables.

Key processes include:

- Resource Management Plan: will be followed for the construction activities, which will identify and implement areas for reduction of waste, reuse and upcycling and diversion of waste material to recycling facilities, as well as ensuring the reporting of quantities and waste destinations and Duty of Care commitments.
- Specification of materials: the scheme will aim to source the main material from responsible sources including those from reused and recycled sources. Use of reused and recycled material will promote a circular economy approach to material management. All timber will be FSC.
- Soil (materials) management plan: as part of the management of soils on site a materials management plan will be written to assure the adequate management of contaminated and non-contaminated soils and retention on site where possible.
- Adaptability and Flexibility: the scheme will be designed to include adaptability principles so that units can be readily adapted to meet the needs of those with disabilities and the elderly. Building for Life guidance will be followed.
- Operational Waste Management Plan: a plan has been generated with the amounts of waste likely to be generated by types from the commercial and residential activities including recyclables and the need for bin types, segregation, storage and collection.
- End of life plan: as part of the O&M manual, an end-of-life plan will be written including relevant information on products and materials and construction details.

Based on the analysis the proposal will have a predicted Building Circularity score of 28%.

Short to medium term actions include:

- Requirements for the main contractor are included in the employer requirements
- Ensure that information is provided by the contractor on any landfills that are to be used and that they have sufficient capacity, as well as destinations of waste materials and the related quantities
- Ensure that a minimum of 20% of recycled content for the materials (and reinforcement steel with minimum 97% recycled content) is specified for the main elements and wherever possible maximise this
- Investigate percentage GGBS cement replacement.

Evidence will be required from the main contractor on waste management performance, as well as the specification of products and materials and will be reported to GLA in the post completion report.

Building Circularity, Greater London Authority ?

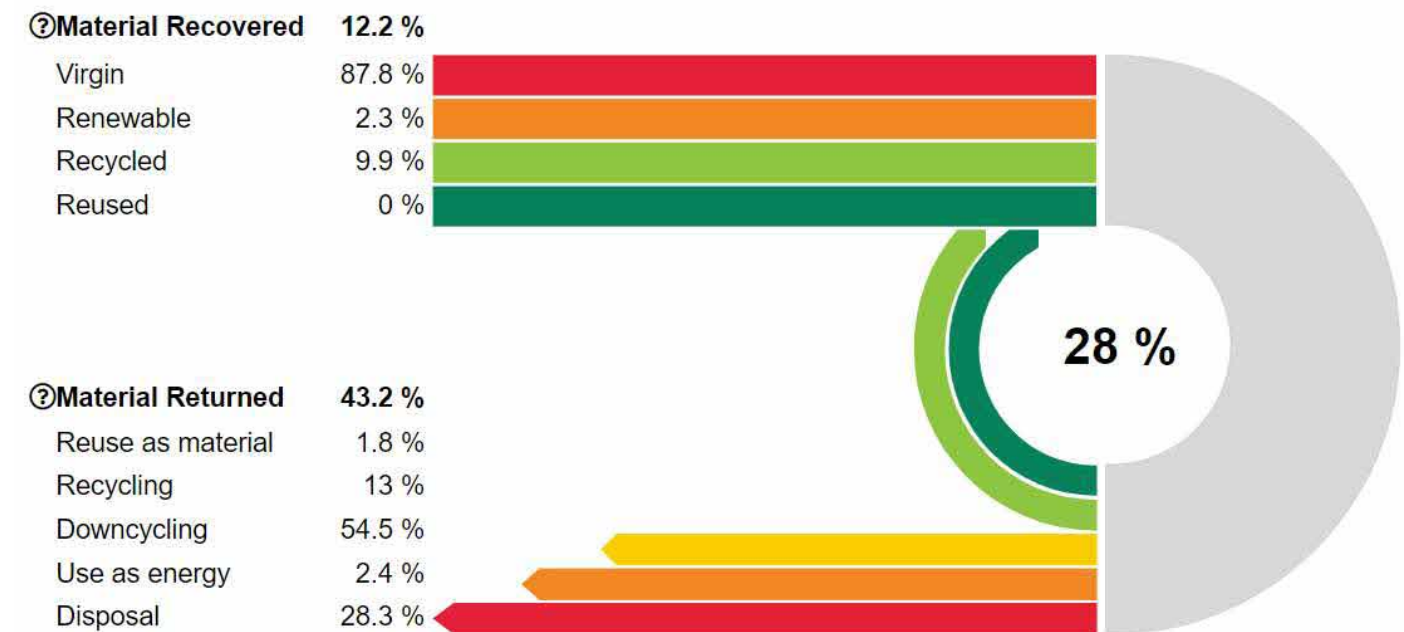


Figure 7.1 Building Circularity

Appendices

Appendix A Building Circularity: Materials Recovered and Returned,
Key Material Groups

Appendix B Materials Efficiency Report

Appendix A Building Circularity: Materials Recovered and Returned, Key Material Groups

Table A.1 Building Circularity - Materials Recovered

Result category	Total kg	Virgin kg	Renewable kg	Recycled kg	Reused kg
Construction Materials	4 684 106,73	3 923 984,05	148 851,34	611 271,35	0
Earth masses, asphalt and stones	1 748 624,4	1 726 026	0	22 598,4	0
Construction site - material wastage	217 871,1	166 873,89	24 795,02	26 202,19	0
Material replacement and refurbishment	547 472,92	389 790,47	149 097,81	8 584,65	0
Total	7 198 075,16	6 206 674,41	322 744,16	668 656,59	0

Table A.2 Building Circularity - Materials Returned

Result category	Reuse as material kg	Recycling kg	Downcycling kg	Use as energy kg	Disposal kg
Construction Materials		833 728,19	3 485 803,7	156 740,71	207 834,13
Earth masses, asphalt and stones	112 992		20 815		1 614 817,4
Construction site - material wastage	0	41 559,93	132 253,11	25 515,4	18 542,67
Material replacement and refurbishment		156 430,8	3 424,74	151 596,47	236 020,91
Total	112 992	1 031 718,92	3 642 296,55	333 852,58	2 077 215,11

Table A.3 Building Circularity - Key Material Groups

Result category	Total kg	Virgin %	Materials Recovered %	Disposal %	Downcycling and use as energy %	Recycling and reuse as material %	Materials returned %	Circularity %
Concrete	3 451 632	97,25	2,75		100		50	26,37
Metal	717 914,26	31,15	68,85			100	100	84,43
Bricks and ceramics	34 171,7	100	0		100		50	25
Gypsum-based	16 470,96	77,46	22,54	9,84		90,16	90,16	56,35
Insulation	41 579,55	58,17	41,83	88,29	11,71		5,86	23,84
Glass	3 800	100	0			100	100	50
Wood and biogenic	151 298	2	98		100		50	74
Earth masses and asphalt	1 748 624,4	98,71	1,29	92,35	1,19	6,46	7,06	4,17
Other materials	267 240,27	99,4	0,6	63,43	0,21	36,36	36,47	18,53

Appendix B Materials Efficiency Report

Table B.1 Material Efficiency Report

RICS category	Resource	User input	Unit	Total kg	Waste factor	Material quantity (Module A) kg	Renewable kg	Non-renewable materials kg	Recycled kg	Reused kg	Recycled content by value %	Recycling %	Reusing %	Downcycling kg	Use as energy kg	Disposal kg	Comment	Service life	EOL Process	Resource type
1.Substructure	Sand, compacted dry density, 1682 kg/m3	53.2	m3	89482.4	0	89482.4	0	89482.4	0	0	0					89482.4	Ground floor RC slab, waterproofing; allowance for 50mm sand blinding	As building		Sand, soil and gravel
1.Substructure	XPS insulation boards, L = 0.035 W/mK, 100 mm, 3.3 kg/m2, 33 kg/m3, Lambda=0.035 W/(m.K) (EXIBA)	147.6	m3	4870.8	0.04	5065.63	0	4870.8	0	0	0				4870.8		Ground floor RC slab, waterproofing; allowance 150mm XPS insulation	As building	Plastic-based material incineration	XPS (extruded polystyrene) insulation
1.Substructure	Aggregate (crushed gravel), generic, dry bulk density, 1600 kg/m3	147.6	m3	236160	0	236160	0	236160	0	0	0					236160	Ground floor RC slab, waterproofing; allowance for 150mm hardcore	As building		Sand, soil and gravel
1.Substructure	Radon and moisture membrane for site construction, PE, 0.4 mm (Icopal)	1064	m2	436.24	0.1	479.86	0	436.24	0	0	0				436.24		Ground floor RC slab, waterproofing; allowance for gas membrane and DPM	As building	Plastic-based material incineration	Plastic membranes
1.Substructure	Ready-mix concrete, normal strength, generic, C28/35 (4000/5000 PSI) with CEM II/B-V, 20% fly ash content (300 kg/m3; 18.7 lbs/ft3 total cement)	1317	m3	316080	0.04	328723	0	316080	94824	0	0.32					316080	Allowance for C28/35 concrete to piles, pile caps, ground beams and slabs; piles - 654m3; pile caps and ground beams - 450m3; slabs based on the area in the cost plan, 200mm thick	As building	Concrete crushed to aggregate (for sub-base layers), Portland Cement 300 kg / m3	Ready-mix concrete for external walls and floors
1.Substructure	Reinforcement steel (rebar), generic, 97% recycled content (typical), A615 (One Click LCA)	165716	kg	165716	0.048	173753	0	165716	160744	0	5.91	100					Allowance for rebar to piles, pile caps, ground beams and slabs; 80kg/m3 to piles, 200 kg/m3 to pile caps and ground beams; 110 kg/m3 to ground floor slabs	As building	Steel recycling	Reinforcement for concrete (rebar)
2.1. Frame	Hot rolled steel sections, steel rails for railway and rolled billet (Tata Steel)	309	ton	309000	0.033	319197	0	309000	278100	0	15.74	100					HR Columns & beams, CR cladding rails & roof purlins - 309 tonnes	As building	Steel recycling	Structural steel and steel profiles
2.1. Frame	Epoxy intumescent coating, 1.47 g/cm3, dry film thickness 0.5-3 mm, SteelMaster 1200HPE (Jotun, plant United Kingdom)	6180	m2	4542.3	0.1	4996.53	0	4542.3	0	0	0					4542.3	HR Columns & beams, CR cladding rails & roof purlins - 309 tonnes; allowance for intumescent paint 20m2/tonne	10	Landfilling (for inert materials)	Paints, coatings and lacquers
2.1. Frame	Steel purlins and framing, 7850 kg/m3 (Voestalpine Metsec plc)	28057	kg	28057	0.033	28982.8	0	28057	3591.3	0	0.2	100					Additional CR cladding rails & roof purlins to existing section - 295m2; assumed 10kg/m2	As building	Steel recycling	Structural steel and steel profiles
2.2.Upper floor	Chipboard (generic), 700 kg/m3, EN15804+A2	216.14	m3	151298	0.17	176564	148272	3025.96	0	0	0				151298		Allowance for chipboard boards and joists to infill 1st floor - 720m2 and 4968m2; 5,688 m2 in total; 39mm chipboard	30	Wood incineration	Particleboard
2.2.Upper floor	Steel purlins and framing, 7850 kg/m3 (Voestalpine Metsec plc)	85320	kg	85320	0.033	88135.5	0	85320	10920.9	0	0.62	100					Allowance for chipboard boards and joists to infill 1st floor - 720m2 and 4968m2; 5,688 m2 in total; allowance with 15kg/m2	As building	Steel recycling	Structural steel and steel profiles
2.3.Roofs	Green roof system, ≥140mm, dry weight 103 kg/m2, saturated weight 163 kg/m2, Heather with Lavender (ZinCo)	1379	m2	142037	0.1	156240	0	142037	0	0	0					142037	Allowance for biodiverse roof system - 1379m2	30	Landfilling (for inert materials)	Bitumen and other roofing

RICS category	Resource	User input	Unit	Total kg	Waste factor	Material quantity (Module A) kg	Renewable kg	Non-renewable materials kg	Recycled kg	Reused kg	Recycled content by value %	Recycling %	Reusing %	Downcycling kg	Use as energy kg	Disposal kg	Comment	Service life	EOL Process	Resource type
2.3.Roofs	Galvanized steel framed smoke vents, skylights, 88 kg/unit, PROLIGHT (Mercor)	1497	kg	1497	0	1497	0	1497	0	0	0	100					Allowance for smoke vents; scaled using data in EPD (88kg/unit, size 1.2 x 1.2m)	30	Glass - containing product recycling (80 % glass)	Aluminium frame windows
2.3.Roofs	Sandwich panel with insulation foam core and double steel siding, L = 0.18 W/m2k, 100 mm, 11.3 kg/m2, QuadCore KS1000RW Wall Panel (Kingspan Insulated Panels)	2965	m2	33504.5	0.15	38530.18	0	33504.5	0	0	0	100					Allowance for roof composite panels; Kingspan KS 1000 RW	As building	Recycling sandwich panel metals (20% metal)	Sandwich panels, metal
2.4.Stairs and ramps	Galvanized steel staircase, straight, 207.21 kg/m (UNION DES METALLIERS)	29.6	m	6133.42	0.075	6593.42	0	6133.42	4293.39	0	0	100					Allowance for steel staircase - assumed 4 staircases between 2 floors, assumed 3.7m floor to floor	As building	Steel recycling	Hot-dip galvanized/ zinc coated steel
2.5.External walls	Red brick, average production, UK, 215 mm x 102.5 mm x 65 mm, 2.13 kg/unit, 1485 kg/m3 (Brick Development Association (BDA) Ltd (2019))	220	m2	33486.75	0.05	35161.09	0	33486.75	0	0	0			33486.75			Allowance for block wall, assumed 140mm block, 102.5mm brick	As building	Brick/ stone crushed to aggregate (for sub-base layers)	Brick, common clay brick
2.5.External walls	Concrete block wall, with high density solid blocks, per m2 of wall including mortar, 140 mm thickness wall	220	m2	62832	0.05	65973.6	0	62832	0	0	0			62832			Allowance for block wall, assumed 140mm block, 102.5mm brick	As building	Concrete crushed to aggregate (for sub-base layers), Portland Cement 200 kg / m3	Concrete masonry units (CMU)
2.5.External walls	Sandwich panel with insulation foam core and double steel siding, L = 0.18 W/m2k, 100 mm, 11.3 kg/m2, QuadCore KS1000RW Wall Panel (Kingspan Insulated Panels)	3251	m2	36736.3	0.15	42246.75	0	36736.3	0	0	0	100					Allowance for cladding to elevations; Kingspan KS 1000 RW	As building	Recycling sandwich panel metals (20% metal)	Sandwich panels, metal
2.5.External walls	Aluminium curtain wall frame, glazing excluded, 4.62 kg/m (Kawneer)	3800	kg	3800	0.075	4085	0	3800	2365.5	0	0.42	100					Allowance for curtain wall - aluminium frame; assumed 10kg/ m2	As building	Aluminium recycling	Aluminium
2.5.External walls	Insulating glass unit with laminated glass and argon cavity, double glazed, 35 mm, 45 kg/m2, CLIMPAPLUS PROTECT CLIMPAPLUS PROTECT SILENCE PLANITHERM, ECLAZ, PLANISTAR SUN, COOL-LITE SKN, COOL-LITE XTREME (SAINT-GOBAIN GLASS FRANCE)	3800	kg	3800	0	3800	0	3800	0	0	0	100					Allowance for curtain wall - aluminium frame; assumed 10kg/ m2	35	Glass recycling	Glass facades and glazing
2.6.Windows and external doors	Aluminium door system, per m2, 1100 x 2200 mm, 100.59 kg/unit, 41.56 kg/m2, ADS 90.SI/ADS 90 PL.SI (Schüco)	41.58	m2	1728.06	0	1728.06	0	1728.06	691.23	0	0	100					Allowance for external doors - assumed glazed double doors (1.8x2.1m)	30	Glass - containing product recycling (80 % glass)	Glass doors

RICS category	Resource	User input	Unit	Total kg	Waste factor	Material quantity (Module A) kg	Renewable kg	Non-renewable materials kg	Recycled kg	Reused kg	Recycled content by value %	Recycling %	Reusing %	Downcycling kg	Use as energy kg	Disposal kg	Comment	Service life	EOL Process	Resource type
2.7.Internal walls and partitions	Acoustic partition roll insulation, unfaced, L = 0.039 W/mK, R = 1.25 m2K/W, 50 mm, 1.2 kg/m2, 24 kg/m3, (APR 1200) 50mm (Saint-Gobain ISOVER UK)	440	m2	528	0.08	570.24	2.64	525.36	300.96	0	0					528	Allowance for internal walls; allowance for 50mm insulation	As building	Landfilling (for inert materials)	Acoustic insulation panels
2.7.Internal walls and partitions	Metal framing components for gypsum plasterboard, 0.4-1.0 mm, 7750 kg/m3, Gyproframe (British Gypsum Saint Gobain (2021))	1320	kg	1320	0.075	1419	0	1320	924	0	0.068	100					Allowance for internal walls; allowance metal studs, assumed 3 kg/m2	As building	Steel recycling	Hot-dip galvanized/zinc coated steel
2.7.Internal walls and partitions	Gypsum plasterboard, tapered or square edges, 12.5 mm, 8.44 kg/m2, 675 kg/m3, 10µ water vapour resistance, Gyproc WallBoard (British Gypsum (2019))	1760	m2	14850	0.13	16706.25	0	14850	3712.5	0	0.062	100					Allowance for internal walls; allowance 2 layers of 12.5mm plasterboard to both sides	30	Gypsum recycling	Regular gypsum board
2.8.Internal doors	Multifunctional steel door, 1.236 mx 2.141 m. 25.48 kg/m2 (Teckentrup GmbH & Co. KG)	12.6	m2	321.05	0	321.05	0	321.05	0	0	0	100					Allowance for internal doors; assumed single steel door (1x2.1m)	30	Metal-containing product recycling (90 % metal)	Metal and industrial doors
3.Internal finishes	Ceramic tiles for floors and walls, 20.756 kg/m2 (Marazzi Group, plant Finale Emilia)	33	m2	684.95	0.1	753.44	0	684.95	0	0	0			684.95			Allowance for tiling	10	Brick/stone crushed to aggregate (for sub-base layers)	Wall and floor tiles
3.Internal finishes	Finish plaster, 2 mm, 921 kg/m3, Skimcoat, Skimcoat Short Set, Carlite, Carlite Ultra (Gyproc (2021))	880	m2	1620.96	0.13	1831.68	0	1620.96	0	0	0				1620.96		Allowance for plaster to walls	30	Landfilling (for inert materials)	Gypsum plaster (interior applications)
3.Internal finishes	Matt emulsion for interior use, 0.174 kg/m2, 16 m2/l, 1.391 kg/l, Dulux Trade Diamond Matt Light Base, Dulux Trade Diamond Matt Medium Base, Dulux Trade Diamond Matt Extra Deep Base, Dulux Trade Diamond Matt Pure Brilliant White, Dulux Trade Diamond Matt Magnolia, Dulux Trade Diamond Matt Light & Space Lumitec base, Dulux Trade Diamond Matt Light & Space Absolute White Diamond Matt (AkzoNobel)	880	m2	153.12	0.1	168.43	0	153.12	0	0	0				153.12		Allowance for paint to walls	10	Landfilling (for inert materials)	Paints, coatings and lacquers
3.Internal finishes	Epoxy intumescent coating, 1.47 g/cm3, dry film thickness 0.5-3 mm, SteelMaster 1200HPE (Jotun, plant United Kingdom)	7919	m2	5820.47	0.1	6402.51	0	5820.47	0	0	0				5820.47		Allowance for intumescent paint to ceilings	10	Landfilling (for inert materials)	Paints, coatings and lacquers
3.Internal finishes	Acoustic partition roll insulation, unfaced, L = 0.043 W/mK, R = 2.3 m2K/W, 100 mm, 1.2 kg/m2, 12 kg/m3, (APR 1200) 100mm (Saint-Gobain ISOVER UK)	8045	m2	9654	0.08	10426.32	48.27	9605.73	5502.78	0	0					9654	Allowance for 100mm insulation above ceiling	As building	Landfilling (for inert materials)	Acoustic insulation panels

RICS category	Resource	User input	Unit	Total kg	Waste factor	Material quantity (Module A) kg	Renewable kg	Non-renewable materials kg	Recycled kg	Reused kg	Recycled content by value %	Recycling %	Reusing %	Downcycling kg	Use as energy kg	Disposal kg	Comment	Service life	EOL Process	Resource type
3.Internal finishes	Acoustic ceiling panel, 19 mm, 3.29 kg/m2, 173 kg/m3, THERMATEX Alpha Colour 19mm (KNAUF CEILING SOLUTIONS)	8070.2	m2	26526.75	0.08	28648.89	132.63	26394.11	11406.5	0	0					26526.75	Allowance for ceiling tiles (THERMATEX); assumed to all spaces	As building	Landfilling (for inert materials)	Acoustic insulation panels
3.Internal finishes	Metal framing components for gypsum plasterboard, 0.4-1.0 mm, 7750 kg/m3, Gyprframe (British Gypsum Saint Gobain (2021))	40225	kg	40225	0.075	43241.88	0	40225	28157.5	0	2.07	100					Allowance for metal frame supporting ceilings; assumed 5 kg/m2	As building	Steel recycling	Hot-dip galvanized/zinc coated steel
5.6.Space heating and Airconditioning	Temperature measurement sensor, 0.126 kg/unit, Sonde de température - DONNEE ENVIRONNEMENTALE PAR DEFAUT (MINISTERE DE L'ENVIRONNEMENT, DE L'ENERGIE ET DE LA MER - MINISTERE DU LOGEMENT ET DE L'HABITAT DURABLE)	21.707	unit	2.74	0.01	2.76	0	2.74	0	0	0	100					Allowance for power distribution cabinet system - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	HVAC components and equipment
5.8.Electrical installations	Technical sensor (gas, water .), Détecteurs techniques (gaz, eau.) (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT)	5.4268	unit	0.81	0.01	0.82	0	0.81	0	0	0	100					Allowance for power distribution cabinet system - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.8.Electrical installations	Programmable thermostat, 0.1921 kg/unit, 6053005_TYBOX 1117 Autres références visées: 6053006 - 6053064 - 6053072 - 6053073 (Delta Dore)	5.4268	unit	1.04	0.01	1.05	0	1.04	0	0	0	100					Allowance for power distribution cabinet system - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.8.Electrical installations	Electronic time lag switch, 0.088 kg/unit, EZN001 EZN006; EZN005; EZN004; EZN003; EZN002; EZN001 (Hager SE)	21.707	unit	1.91	0.01	1.93	0	1.91	0	0	0	100					Allowance for power distribution cabinet system - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.8.Electrical installations	Remote control for home equipment (lights, blinds, alarm, heating), 1.3659 kg/unit, TYDOM 2.0 (6414118) (Delta Dore)	32.561	unit	44.48	0.01	44.92	0	44.48	0	0	0	100					Allowance for power distribution cabinet system - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.8.Electrical installations	Voltage Presence Indicator System, VPIS V3 : Voltage Presence Indicator System (SCHNEIDER ELECTRIC INDUSTRIES SAS)	54.268	unit	6.19	0.01	6.25	0	6.19	0	0	0	100					Allowance for power distribution cabinet system - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.8.Electrical installations	Whole Home Surge Protection Device, Homeline, HOM250SPD (SCHNEIDER ELECTRIC INDUSTRIES SAS)	59.695	unit	13.19	0.01	13.32	0	13.19	0	0	0	100					Allowance for power distribution cabinet system - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.8.Electrical installations	Single and three phase distribution boards, 14.7 kg/unit, Acti9 Isobar P Distribution Board - SEA9BPN12 (Schneider Electric)	70.548	unit	1037.06	0.01	1047.43	0	1037.06	0	0	0	100					Allowance for power distribution cabinet system - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	Electrification components and systems

RICS category	Resource	User input	Unit	Total kg	Waste factor	Material quantity (Module A) kg	Renewable kg	Non-renewable materials kg	Recycled kg	Reused kg	Recycled content by value %	Recycling %	Reusing %	Downcycling kg	Use as energy kg	Disposal kg	Comment	Service life	EOL Process	Resource type
5.8.Electrical installations	Junction box, 0.154 kg/unit, IP55 100x100 (B05534), B05534, B05546 (Hager SE)	86.828	unit	13.37	0.01	13.51	0	13.37	0	0	0	100					Allowance for lightning protection system - per m2 GIA (10,376m2)	30	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.8.Electrical installations	Molded Case Circuit Breaker, BJL36125LU PowerPact B-frame (SCHNEIDER ELECTRIC INDUSTRIES SAS)	86.828	unit	115.31	0.01	116.46	0	115.31	0	0	0	100					Allowance for power distribution cabinet system - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.8.Electrical installations	Moulded case circuit breaker, 1.076 kg/unit, HDS061EC20 Moulded Case Circuit Breaker h3+ P160 18, 25 or 40kA from 16 to 160A (TM FIX 1P1D 63A 18kA CTC) (Hager SE)	103.109	unit	110.95	0.01	112.05	0	110.95	0	0	0	100					Allowance for power distribution cabinet system - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.8.Electrical installations	Contacteur, Contacteurs (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	146.523	unit	146.52	0.01	147.99	0	146.52	0	0	0	100					Allowance for power distribution cabinet system - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.8.Electrical installations	Control relay tri-phase, 0.182 kg/unit, EU300 EU300; EU302; EU301; EU103; EU102; EU101; EU100 (Hager SE)	173.657	unit	31.61	0.01	31.92	0	31.61	0	0	0	100					Allowance for power distribution cabinet system - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.8.Electrical installations	Modular circuit breaker, 0.113 kg/unit, MULTI9 C60 (SCHNEIDER ELECTRIC INDUSTRIES SAS)	233.351	unit	26.37	0.01	26.63	0	26.37	0	0	0	100					Allowance for power distribution cabinet system - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.8.Electrical installations	Circuit breaker, 0.8907 kg/unit, A9N18375 0 (SCHNEIDER ELECTRIC INDUSTRIES SAS)	634.933	unit	565.53	0.01	571.19	0	565.53	0	0	0	100					Allowance for power distribution cabinet system - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.8.Electrical installations	Circuit breaker, 0.22 kg/unit, 2P-16A, R9FEC206 R9FEC210 R9FEC216 R9FEC220 R9FEC225 R9FEC232 R9FEC206 - R9FEC210 -R9FEC216 - R9FEC220 - R9FEC225 - R9FEC232 (SCHNEIDER ELECTRIC INDUSTRIES SAS)	1389.26	unit	305.64	0.01	308.69	0	305.64	0	0	0	100					Allowance for power distribution cabinet system - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.Services	Stainless steel sink, 5.57 kg/unit, Evier en acier inoxydable [Long. 860 mm Larg. 500 mm Haut. 140 mm] (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	1	unit	5.57	0	5.57	0	5.57	0	0	0					5.57	Allowance for sanitaryware - 1 steel kitchen sink	20	Landfilling (for inert materials)	Sanitary ware
5.Services	Diesel generator, 5448 kg/unit, Groupe électrogène diesel insonorisé (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	1	unit	5448	0	5448	0	5448	0	0	0	100					Allowance for generator	20	Metal-containing product recycling (90 % metal)	Energy production systems from

RICS category	Resource	User input	Unit	Total kg	Waste factor	Material quantity (Module A) kg	Renewable kg	Non-renewable materials kg	Recycled kg	Reused kg	Recycled content by value %	Recycling %	Reusing %	Downcycling kg	Use as energy kg	Disposal kg	Comment	Service life	EOL Process	Resource type
5.Services	Variable refrigerant flow (VRF), system outdoor unit, 231 kg/unit, PURY-EM300YNW-A1 (Mitsubishi Electric)	1	unit	231	0	231	0	231	0	0	0	100					Allowance for VRF outdoor unit - assumed 1nr (to shopfront)	20	Metal-containing product recycling (90 % metal)	renewable energy HVAC equipment with refrigerant
5.Services	Ventilation exhaust box, single flow, 6.25 kg/unit, 250 m3/h, Caisson de ventilation simple extraction pour petit tertiaire [Débit=250m3/h] - DONNEE PAR DEFAUT (DED) (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT)	1.1111	unit	6.94	0.01	7.01	0	6.94	0	0	0	100					Allowance for mechanised fans ventilation - per m2 GIA (allowance made for shopfront area only - assumed 100m2)	15	Metal-containing product recycling (90 % metal)	HVAC components and equipment
5.Services	Ceramic wall-mounted bathroom sink, 18.84 kg/unit, GROHE Eurocube Wall-Hung Sink (LIXIL Water Technology)	3	unit	56.52	0	56.52	0	56.52	0	0	0					56.52	Allowance for sanitaryware - 3 wash basins	20	Landfilling (for inert materials)	Sanitary ware
5.Services	Ceramic toilet, 19.6 kg/unit, - DURAVIT : Starck 3 (420009; 452709; 220209). ME by Starck (452909; 453009). DuraStyle (455209; 457109). // - KOHLER : Struktura (EDE101-00 ; EDF101-00). Patio (EDV101-00 ; E1534-00). Brive (E4345-00) // - ROCA : DEBBA (A346998000 ; A34699L000). VICTORIA (A34630300S). (Association Française des Industries de la Salle de Bains)	3	unit	58.8	0	58.8	0	58.8	0	0	0					58.8	Allowance for sanitaryware - 3 toilets	20	Landfilling (for inert materials)	Sanitary ware
5.Services	Concealed toilet flush tank, 11.56 kg/unit, Tropea S Block, Free-Standing Tropea S Block (Valsir S.p.A, Vestone plant)	3	unit	34.68	0	34.68	0	34.68	0	0	0					34.68	Allowance for sanitaryware - 3 toilet flush tank	20	Landfilling (for inert materials)	Sanitary ware
5.Services	Water faucet, sensor activated, 2 kg/unit, DELABIE, KOHLER, PRESTO (EVOLIS)	3	unit	6	0	6	0	6	0	0	0	100					Allowance for sanitaryware - 3 faucets to toilets and 1 faucet to staff kitchen	15	Metal-containing product recycling (90 % metal)	Other building technology systems
5.Services	Variable refrigerant flow (VRF), system indoor unit, 25 kg/unit, PEFY-M50VMA-A (Mitsubishi Electric)	3	unit	75	0	75	0	75	0	0	0	100					Allowance for VRF indoor units - assumed 3nr (to shopfront)	20	Metal-containing product recycling (90 % metal)	HVAC equipment with refrigerant
5.Services	Active ceiling vent, variable flow, Diffuseur actif à débit variable [plénum inclus] (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT)	3.1481	unit	4.81	0.01	4.86	0	4.81	0	0	0	100					Allowance for mechanised fans ventilation - per m2 GIA (allowance made for shopfront area	15	Metal-containing product recycling (90 % metal)	HVAC components and equipment
5.Services	Aluminium air intake vent, 200 x 200 mm, 0.04 m2/unit,	3.7037	unit	4.8	0.01	4.84	0	4.8	0	0	0	100					only - assumed 100m2) Allowance for mechanised fans ventilation - per m2 GIA (allowance	15	Metal-containing	HVAC components

RICS category	Resource	User input	Unit	Total kg	Waste factor	Material quantity (Module A) kg	Renewable kg	Non-renewable materials kg	Recycled kg	Reused kg	Recycled content by value %	Recycling %	Reusing %	Downcycling kg	Use as energy kg	Disposal kg	Comment	Service life	EOL Process	Resource type
	1.295 kg/unit, Grille extérieure de ventilation de type pare-pluie en aluminium 200x200 (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)																made for shopfront area only - assumed 100m2)		product recycling (90 % metal)	and equipment
5.Services	Elevator, 1600 kg capacity, for passenger use, 2.2 m x 1.4 m x 2.4 m, MonoSpace® 700, MonoSpace® 700 DX (KONE)	4	unit	27812	0	27812	80.65	27731.35	0	0	0	100					Allowance for lift - allowance for 4 lifts	20	Metal-containing product recycling (90 % metal)	Elevators and escalators
5.Services	Welded and pickled stainless steel products, 7850 kg/m3 (Øglænd System)	5.4268	kg	5.43	0.025	5.56	0	5.43	3.26	0	0.00058	100					Allowance for lightning protection system - per m2 GIA (10,376m2)	30	Stainless steel recycling	Stainless steel
5.Services	Single and three phase distribution boards, 14.7 kg/unit, Acti9 Isobar P Distribution Board - SEA9BPN12 (Schneider Electric)	5.4268	unit	79.77	0.01	80.57	0	79.77	0	0	0	100					Allowance for video surveillance system - per m2 GIA (10,376m2)	15	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.Services	Audible signaling device (siren), Matériel de signalisation phonique (sirène) (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	5.4268	unit	16.08	0	16.08	0	16.08	0	0	0	100					Allowance for power distribution cabinet system - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	Other building technology systems
5.Services	Rainwater drainage pipe, PVC, diamètre 100 mm, Descente d'eaux pluviales en PVC (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	5.4268	m	4.5	0.06	4.77	0	4.5	0	0	0	100					Allowance for water distribution system - per m2 GIA (10,376m2)	As building	Metal-containing product recycling (90 % metal)	Pipes (water, heating, sewage)
5.Services	Programmable microprocessor controllers, 0.491 kg/unit, ECY-PTU-208 3 modèles pour lesquels des règles d'extrapolation sont appliquées : - ECY-PTU-107 - ECY-PTU-203 - ECY-PTU-207 (Distech Controls SAS)	5.4268	unit	2.66	0.01	2.69	0	2.66	0	0	0	100					Allowance for water distribution system - per m2 GIA (10,376m2)	As building	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.Services	Metallic electrical equipment box/cabinet, 904421N (LEGRAND)	5.4268	unit	38.92	0.01	39.31	0	38.92	0	0	0	100					Allowance for water distribution system - per m2 GIA (10,376m2)	As building	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.Services	Surveillance équipement, Equipements pour la gestion de l'image de vidéosurveillance (1 écran de visualisation et enregistrement de 4 flux) (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	5.4268	unit	96.43	0.01	97.4	0	96.43	0	0	0					96.43	Allowance for video surveillance system - per m2 GIA (10,376m2)	15	Landfilling (for inert materials)	Communication systems
5.Services	Anti pollution non-return check valve, 1.6kg, Clapet anti-retour / anti-pollution (DONNEE)	5.4268	unit	8.74	0	8.74	0	8.74	0	0	0					8.74	Allowance for sanitary sewage system - per m2 GIA (10,376m2)	As building	Landfilling (for inert materials)	Water heating and handling equipment

RICS category	Resource	User input	Unit	Total kg	Waste factor	Material quantity (Module A) kg	Renewable kg	Non-renewable materials kg	Recycled kg	Reused kg	Recycled content by value %	Recycling %	Reusing %	Downcycling kg	Use as energy kg	Disposal kg	Comment	Service life	EOL Process	Resource type
	ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)																			
5.Services	Electrical control panel, IB+ Touch Building Controller (SOMFY)	5.4268	unit	8.03	0.01	8.11	0	8.03	0	0	0	100					Allowance for fire detection and alarm system - per m2 GIA (10,376m2)	15	Metal-containing product recycling (90 % metal)	HVAC components and equipment
5.Services	Electric instantaneous water heater, 21 kW, 3.95 kg/unit, EN15804+A2, Elektrischer Durchlauferhitzer (21 kW) (Sphera Solutions GmbH)	10	unit	39.5	0.01	39.9	0	39.5	0	0	0	100					Allowance for instantenous water heaters - assumed 10 nr	20	Metal-containing product recycling (90 % metal)	HVAC components and equipment
5.Services	Electric radiator, 17 kg/unit, 1.5 kW, NEK2455SEEC NEK2455SEEC (MULLER INTUITIV)	10	unit	170	0.01	171.7	0	170	0	0	0	100					Allowance for electric radiators to fab labs - assumed 10 nr	20	Metal-containing product recycling (90 % metal)	HVAC components and equipment
5.Services	Stainless steel sheets or plates, 7900 kg/m3 (Outokumpu Oyj)	10.854	kg	10.85	0.025	11.13	0	10.85	8.25	0	0.0015	100					Allowance for lightning protection system - per m2 GIA (10,376m2)	30	Stainless steel recycling	Stainless steel
5.Services	Electric heat pump (water-water), 10 kW	10.854	unit	2984.85	0.01	3014.7	0	2984.85	0	0	0	100					Allowance for water distribution system - per m2 GIA (10,376m2)	As building	Metal-containing product recycling (90 % metal)	HVAC components and equipment
5.Services	Ventilation cap, DN du conduit VMC 250mm, 8.05kg, Chapeau de toiture pour VMC (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	10.854	unit	87.37	0.01	88.25	0	87.37	61.16	0	0	100					Allowance for sanitary sewage system - per m2 GIA (10,376m2)	As building	Steel recycling	Ventilation ducts and channels
5.Services	Flexible ventilation pipes, 0.206 kg/m, Conduits flexibles (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	12.963	m	2.67	0.01	2.7	0	2.67	0	0	0	100					Allowance for mechanised fans ventilation - per m2 GIA (allowance made for shopfront area only - assumed 100m2)	15	Metal-containing product recycling (90 % metal)	HVAC components and equipment
5.Services	Indoor luminescent ceiling light, waterproof, P=14W à 35W et diam.=70mm, Luminaires intérieurs étanches (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	16.28	unit	32.95	0	32.95	0	32.95	0	0	0				32.95		Allowance for lighting system - per m2 GIA (10,376m2)	20	Landfilling (for inert materials)	Lighting
5.Services	Aluminium tubular profiles for ceiling decoration/cladding, 7.399 kg/m2, Fire resistance class = A2-s1, d0, SAS System 750 Tubeline (SAS)	21.707	m2	160.61	0.075	172.66	0	160.61	0	0	0	100					Allowance for lightning protection system - per m2 GIA (10,376m2)	30	Aluminium recycling	Aluminium
5.Services	PVC fittings, covers and jacketing, ZESTON® 2000 SERIES, ZESTON® 300 SERIES, ZESTON® PVC JACKETING (Johns Manville)	27.134	kg	27.13	0.075	29.17	0	27.13	0	0	0			27.13			Allowance for lighting system sockets and switches - per m2 GIA (10,376m2)	10	Plastic-based material incineration	Plastic profiles and products
5.Services	Audible signaling device (siren), Matériel de signalisation phonique (sirène) (DONNEE	37.987	unit	112.56	0	112.56	0	112.56	0	0	0	100					Allowance for fire detection and alarm system - per m2 GIA (10,376m2)	15	Metal-containing product	Other building technology systems

RICS category	Resource	User input	Unit	Total kg	Waste factor	Material quantity (Module A) kg	Renewable kg	Non-renewable materials kg	Recycled kg	Reused kg	Recycled content by value %	Recycling %	Reusing %	Downcycling kg	Use as energy kg	Disposal kg	Comment	Service life	EOL Process	Resource type
	ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)																			recycling (90 % metal)
5.Services	Rotary switches, Serie 1930 (WMV025, WMV002, WMV009, WMV024, WMV025, WMV300BA, WMV300NA, WMV302BA, WMV302NA) (Hager SE)	43.414	unit	2.63	0.01	2.66	0	2.63	0	0	0	100					Allowance for lighting system sockets and switches - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.Services	PVC fittings, covers and jacketing, ZESTON® 2000 SERIES, ZESTON® 300 SERIES, ZESTON® PVC JACKETING (Johns Manville)	54.268	kg	54.27	0.075	58.34	0	54.27	0	0	0				54.27		Allowance for lightning protection system - per m2 GIA (10,376m2)	30	Plastic-based material incineration	Plastic profiles and products
5.Services	PVC fittings, covers and jacketing, ZESTON® 2000 SERIES, ZESTON® 300 SERIES, ZESTON® PVC JACKETING (Johns Manville)	54.268	kg	54.27	0.075	58.34	0	54.27	0	0	0				54.27		Allowance for signal cable network - per m2 GIA (10,376m2)	25	Plastic-based material incineration	Plastic profiles and products
5.Services	Emergency evacuation lighting, 1.174 kg/unit, 128115V 128114V - 128214V - 128215V (LEGRAND)	74.612	unit	87.59	0	87.59	0	87.59	0	0	0					87.59	Allowance for emergency lighting system - per m2 GIA (10,376m2)	20	Landfilling (for inert materials)	Lighting
5.Services	Autonomous fire alarm system, BAASL Sa (1 405 31) (Legrand)	75.975	unit	44.14	0	44.14	0	44.14	0	0	0	100					Allowance for fire detection and alarm system - per m2 GIA (10,376m2)	15	Metal-containing product recycling (90 % metal)	Other building technology systems
5.Services	Polypropylene pipes for wastewater or rainwater, 37.8 kg/m, diameter: 250-500 mm, POLO-ECO plus Premium DN 250 à DN 500 (POLOPLAST FRANCE SAS)	81.402	m	3077	0.06	3261.62	0	3077	0	0	0	100					Allowance for sanitary sewage system - per m2 GIA (10,376m2)	As building	Metal-containing product recycling (90 % metal)	Pipes (water, heating, sewage)
5.Services	Industrial vigilant LED lighting unit, 7.12 kg/unit, Vigilant Low Profile Linear (Dialight Plc)	81.402	unit	579.58	0	579.58	0	579.58	0	0	0					579.58	Allowance for lighting system - per m2 GIA (10,376m2)	20	Landfilling (for inert materials)	Lighting
5.Services	Floodlight LED lighting unit, 13.6 kg/unit, Durosite Floodlight (Dialight Plc)	81.402	unit	1107.07	0	1107.07	0	1107.07	0	0	0					1107.07	Allowance for lighting system - per m2 GIA (10,376m2)	20	Landfilling (for inert materials)	Lighting
5.Services	Surveillance camera, French average, Equipements pour la capture d'image (caméras) (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	86.828	unit	8.68	0.01	8.77	0	8.68	0	0	0					8.68	Allowance for video surveillance system - per m2 GIA (10,376m2)	15	Landfilling (for inert materials)	Communication systems
5.Services	PVC pipes for water supply networks, Dia = 110 - 160 mm, Thickness = 2.4 - 3.5 mm, 16 bar, 3.24 kg/m, DN 110, DN 140, DN 160 (Pipelife France)	92.255	m	298.91	0.06	316.84	0	298.91	0	0	0	100					Allowance for sanitary sewage system - per m2 GIA (10,376m2)	As building	Metal-containing product recycling (90 % metal)	Pipes (water, heating, sewage)
5.Services	Interior floor drain, DN = 100 mm, 2.87 kg/unit, Siphon de sol intérieur DN évacuation 100 mm (DONNEE)	92.255	unit	264.77	0	264.77	0	264.77	0	0	0					264.77	Allowance for sanitary sewage system - per m2 GIA (10,376m2)	As building	Landfilling (for inert materials)	Water heating and handling equipment

RICS category	Resource	User input	Unit	Total kg	Waste factor	Material quantity (Module A) kg	Renewable kg	Non-renewable materials kg	Recycled kg	Reused kg	Recycled content by value %	Recycling %	Reusing %	Downcycling kg	Use as energy kg	Disposal kg	Comment	Service life	EOL Process	Resource type
	ENVIRONNEMENTALE GNERIQUE PAR DEFAULT)																			
5.Services	Heat distribution piping network, per m2 heated area, all building types	100	m2	18.51	0.06	19.62	0	18.51	0	0	0	100					Allowance for heat distribution piping network - per m2 GIA (allowance made for shopfront area only - assumed 100m2)	25	Metal-containing product recycling (90 % metal)	Pipes (water, heating, sewage)
5.Services	Double socket outlet, 0.17 kg/unit, 077142L (Mcanisme) - 010954 (Plaque/Support) 077142L Double prise 077143L Triple prise 077145L Simple prise + 077100L accessoire de liaison + 077142L Double prise 010954 Support 4 modules 010956 Support 6 modules (LEGRAND)	103.109	unit	17.53	0.01	17.7	0	17.53	0	0	0	100					Allowance for lighting system sockets and switches - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.Services	Copper data cable, plenum rated, 0.0454 kg/m, 10Gain XP 6A (Superior Essex)	108.536	m	4.93	0.01	4.98	0	4.93	0	0	0				4.93		Allowance for fire detection and alarm system - per m2 GIA (10,376m2)	15	Landfilling (for inert materials)	Cables
5.Services	Polypropylene pipes for wastewater or rainwater, 37.8 kg/m, diameter: 250-500 mm, POLO-ECO plus Premium DN 250 à DN 500 (POLOPLAST FRANCE SAS)	113.962	m	4307.76	0.06	4566.23	0	4307.76	0	0	0	100					Allowance for stormwater drainage system - per m2 GIA (10,376m2)	As building	Metal-containing product recycling (90 % metal)	Pipes (water, heating, sewage)
5.Services	Industrial socket, French average, Prise industrielle (DONNEE ENVIRONNEMENTALE GNERIQUE PAR DEFAULT)	119.389	unit	12.54	0.01	12.66	0	12.54	0	0	0	100					Allowance for lighting system sockets and switches - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.Services	Brass quarter-turn valve, 0.3 kg/unit, diameter: 20 mm, Vanne quart-de-tour en laiton [DN = 20mm] (DONNEE ENVIRONNEMENTALE GNERIQUE PAR DEFAULT)	141.096	unit	42.33	0.06	44.87	0	42.33	0	0	0	100					Allowance for water distribution system - per m2 GIA (10,376m2)	As building	Metal-containing product recycling (90 % metal)	Pipes (water, heating, sewage)
5.Services	Autonomous lighting, 118139 (LEGRAND)	189.937	unit	104.57	0	104.57	0	104.57	0	0	0				104.57		Allowance for lighting system - per m2 GIA (10,376m2)	20	Landfilling (for inert materials)	Lighting
5.Services	Emergency light, 320lm/h, 129124 (LEGRAND)	193.99	unit	88.42	0	88.42	0	88.42	0	0	0				88.42		Allowance for emergency lighting system - per m2 GIA (10,376m2)	20	Landfilling (for inert materials)	Lighting
5.Services	Steel forging part	217.071	kg	217.07	0.1	238.78	0	217.07	130.24	0	0.012	100					Allowance for lightning protection system - per m2 GIA (10,376m2)	30	Steel recycling	Other steel/iron
5.Services	Waterproof lighting, P=18 W, Luminaire étanche IP>54 (DONNEE ENVIRONNEMENTALE GNERIQUE PAR DEFAULT)	238.778	unit	227.67	0	227.67	0	227.67	0	0	0				227.67		Allowance for lighting system - per m2 GIA (10,376m2)	20	Landfilling (for inert materials)	Lighting
5.Services	Interior LED projector, P= 14 à 30 W, Projecteur intérieur LED (DONNEE ENVIRONNEMENTALE GNERIQUE PAR DEFAULT)	249.632	unit	299.31	0	299.31	0	299.31	0	0	0				299.31		Allowance for lighting system - per m2 GIA (10,376m2)	20	Landfilling (for inert materials)	Lighting

RICS category	Resource	User input	Unit	Total kg	Waste factor	Material quantity (Module A) kg	Renewable kg	Non-renewable materials kg	Recycled kg	Reused kg	Recycled content by value %	Recycling %	Reusing %	Downcycling kg	Use as energy kg	Disposal kg	Comment	Service life	EOL Process	Resource type
5.Services	Remote control for home equipment (lights, blinds, alarm, heating), 0.287 kg/unit, Tydom 2000 (Delta Dore)	271.339	unit	77.87	0.01	78.65	0	77.87	0	0	0	100					Allowance for lighting system sockets and switches - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.Services	Stainless steel sheet, 7900.0 kg/ m^3	271.339	kg	271.34	0.025	278.12	0	271.34	162.8	0	0.029	100					Allowance for water distribution system - per m2 GIA (10,376m2)	As building	Stainless steel recycling	Stainless steel
5.Services	Light switch, 0.113 kg/unit, 077001L (mécanisme) / 078801L (plaque) / 080250 (support) mécanisme : 077001L - 079201L - 079101L - plaque : 078801L - 079301L - support : 080250 (LEGRAND)	369.021	unit	41.7	0.01	42.12	0	41.7	0	0	0	100					Allowance for lighting system sockets and switches - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.Services	Motion detector, 0.184 kg/unit, TCC521E TKK525PE; TKK523PE; TCC521A (Hager SE)	412.851	unit	75.96	0.01	76.72	0	75.96	0	0	0	100					Allowance for emergency lighting system - per m2 GIA (10,376m2)	20	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.Services	Pre-insulated pipes from polypropylene random copolymer (PP-R), 1.24 kg/m, inner pipe diameter: 25 mm, Aqua plus prins (INTERPLAST)	651.213	m	807.5	0.06	855.95	0	807.5	0	0	0	100					Allowance for water distribution system - per m2 GIA (10,376m2)	As building	Metal-containing product recycling (90 % metal)	Pipes (water, heating, sewage)
5.Services	Smoke detector, French average, Détecteurs de fumée (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFALT)	770.603	unit	385.3	0.01	389.15	0	385.3	0	0	0	100					Allowance for fire detection and alarm system - per m2 GIA (10,376m2)	15	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.Services	PVC pipes for water supply networks, Dia = 110 - 160 mm, Thickness = 2.4 - 3.5 mm, 16 bar, 3.24 kg/m, DN 110, DN 140, DN 160 (Pipelife France)	889.992	m	2883.57	0.06	3056.59	0	2883.57	0	0	0	100					Allowance for stormwater drainage system - per m2 GIA (10,376m2)	As building	Metal-containing product recycling (90 % metal)	Pipes (water, heating, sewage)
5.Services	LED pendant luminaire, 2.8 kg/unit, TECTON MIREL LED5400-830 L2000 LDO BK (Zumtobel Lighting GmbH)	1031.09	unit	2887.05	0.01	2915.92	0	2887.05	0	0	0	100					Allowance for lighting system - per m2 GIA (10,376m2)	20	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.Services	Polypropylene pipe for drainage network, 5.18 kg/m, PP Master 10 DN 200, PP Master 10 DN 160 (Pipelife France)	1372.97	m	7111.98	0.06	7538.7	0	7111.98	0	0	0	100					Allowance for sanitary sewage system - per m2 GIA (10,376m2)	As building	Metal-containing product recycling (90 % metal)	Pipes (water, heating, sewage)
5.Services	Adaptator female/female, RJ45 180°, Adaptator RJ45 female/female 180° (Hager SE)	1470.66	unit	62.14	0.01	62.76	0	62.14	0	0	0	100					Allowance for signal cable network - per m2 GIA (10,376m2)	25	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.Services	Galvanized steel edging, 2.5 mm, H = 120 mm, 2.34 kg/m, Bordure en acier galvanisé [hauteur : 12cm] [épaisseur : 2,5mm] (DONNEE)	1899.37	m	4444.53	0.075	4777.87	0	4444.53	3111.17	0	0	100					Allowance for lightning protection system - per m2 GIA (10,376m2)	30	Steel recycling	Hot-dip galvanized/ zinc coated steel

RICS category	Resource	User input	Unit	Total kg	Waste factor	Material quantity (Module A) kg	Renewable kg	Non-renewable materials kg	Recycled kg	Reused kg	Recycled content by value %	Recycling %	Reusing %	Downcycling kg	Use as energy kg	Disposal kg	Comment	Service life	EOL Process	Resource type
	ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)																			
5.Services	Low voltage cable, Section conductrice de 5 mm2 à 120 mm2, Câble basse tension 0,6/1kV (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	1953.64	m	2656.95	0.01	2683.52	0	2656.95	0	0	0					2656.95	Allowance for fire detection and alarm system - per m2 GIA (10,376m2)	15	Landfilling (for inert materials)	Cables
5.Services	PVC resin pipes, for sewerage, drainage and conduits application, 16 - 315 mm, 1350 - 1550 kg/m3 (Rifeng)	2441.99	kg	2441.99	0.06	2588.51	0	2441.99	0	0	0	100					Allowance for fire detection and alarm system - per m2 GIA (10,376m2)	15	Metal-containing product recycling (90 % metal)	Pipes (water, heating, sewage)
5.Services	Socket outlet 2P+T, 0.173 kg/unit, Plexo 2P+T - 16 A - IP55 (LEGRAND)	3299.48	unit	570.81	0.01	576.52	0	570.81	0	0	0	100					Allowance for lighting system sockets and switches - per m2 GIA (10,376m2)	10	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.Services	HDPE sewage pipe, 3.68 kg/m, Système SuperTube (GEBERIT)	3771.61	m	13879.52	0.06	14712.32	0	13879.52	0	0	0	100					Allowance for water distribution system - per m2 GIA (10,376m2)	As building	Metal-containing product recycling (90 % metal)	Pipes (water, heating, sewage)
5.Services	Corrugated plastic pipes, 0.138 kg/m, FFKuS-EM-F-105 co2ntrol (Fränkische Rohrwerke Gebr. Kirchner GmbH & Co.)	4965.5	m	685.24	0.06	726.35	34.26	650.98	0	0	0	100					Allowance for video surveillance system - per m2 GIA (10,376m2)	15	Metal-containing product recycling (90 % metal)	Pipes (water, heating, sewage)
5.Services	Communication cable, 0.231 kg/m, Câble PTT 288 [14 paires] - DONNEE ENVIRONNEMENTALE PAR DEFAULT (MINISTERE DE L'ENVIRONNEMENT, DE L'ENERGIE ET DE LA MER - MINISTERE DU LOGEMENT ET DE L'HABITAT DURABLE)	6892.01	m	1592.05	0.01	1607.97	0	1592.05	0	0	0					1592.05	Allowance for fire detection and alarm system - per m2 GIA (10,376m2)	15	Landfilling (for inert materials)	Cables
5.Services	Copper data cable, plenum rated, 0.0454 kg/m, 10Gain XP 6A (Superior Essex)	7000.54	m	317.82	0.01	321	0	317.82	0	0	0					317.82	Allowance for signal cable network - per m2 GIA (10,376m2)	25	Landfilling (for inert materials)	Cables
5.Services	Communication cable, 0.231 kg/m, Câble PTT 288 [14 paires] - DONNEE ENVIRONNEMENTALE PAR DEFAULT (MINISTERE DE L'ENVIRONNEMENT, DE L'ENERGIE ET DE LA MER - MINISTERE DU LOGEMENT ET DE L'HABITAT DURABLE)	8954.18	m	2068.42	0.01	2089.1	0	2068.42	0	0	0					2068.42	Allowance for video surveillance system - per m2 GIA (10,376m2)	15	Landfilling (for inert materials)	Cables
5.Services	Corrugated plastic pipes, 0.138 kg/m, FFKuS-EM-F-105 co2ntrol (Fränkische Rohrwerke Gebr. Kirchner GmbH & Co.)	16280.3	m	2246.68	0.06	2381.48	112.33	2134.35	0	0	0	100					Allowance for signal cable network - per m2 GIA (10,376m2)	25	Metal-containing product recycling (90 % metal)	Pipes (water, heating, sewage)
5.Services	Cable 5-wire, 0.168 kg/m	17392.8	m	2921.99	0.01	2951.21	0	2921.99	0	0	0	100					Allowance for power cable network - per m2 GIA (10,376m2)	25	Metal-containing product	Electrification

RICS category	Resource	User input	Unit	Total kg	Waste factor	Material quantity (Module A) kg	Renewable kg	Non-renewable materials kg	Recycled kg	Reused kg	Recycled content by value %	Recycling %	Reusing %	Downcycling kg	Use as energy kg	Disposal kg	Comment	Service life	EOL Process	Resource type
5.Services	Corrugated plastic pipes, 0.138 kg/m, FFKuS-EM-F-105 co2ntrol (Fränkische Rohrwerke Gebr. Kirchner GmbH & Co.)	24420.5	m	3370.03	0.06	3572.23	168.5	3201.53	0	0	0	100					Allowance for power cable network - per m2 GIA (10,376m2)	25	recycling (90 % metal) Metal-containing product recycling (90 % metal)	components and systems Pipes (water, heating, sewage)
5.Services	Cable 3-wire, 0.121 kg/m	47842.5	m	5788.94	0.01	5846.83	0	5788.94	0	0	0	100					Allowance for power cable network - per m2 GIA (10,376m2)	25	Metal-containing product recycling (90 % metal)	Electrification components and systems
5.Services	Communication cable, fiber optic, 12 optic fibers, 94.3g/m, MBO 12FO version renforcée B1216 (ACOME)	76897.4	m	7250	0.01	7322.5	0	7250	464	0	0				7250		Allowance for signal cable network - per m2 GIA (10,376m2)	25	Landfilling (for inert materials)	Cables
8.External Works	Sand, compacted dry density, 1682 kg/m³	47.5	m3	79895	0	79895	0	79895	0	0	0					79895	Allowance for 50mm sand based to paving	As building		Sand, soil and gravel
8.External Works	Steel fence, French average, haut. 2.5m, Clôture en acier (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	154	m	2992.22	0.1	3291.44	0	2992.22	1795.33	0	0	100					Allowance for fence and gate	As building	Steel recycling	Other steel/iron
8.External Works	Aggregate (crushed gravel), generic, dry bulk density, 1600 kg/m3	285	m3	456000	0	456000	0	456000	0	0	0					456000	Allowance for subbase to paving	As building		Sand, soil and gravel
8.External Works	Concrete paving, 15.4 m2/m3, 96 units/m3, Andover Textured (Aggregate Industries)	950	m2	228000	0	228000	0	228000	0	0	0			228000			Allowance for paving	As building	Rebar separated (2 %), concrete to aggregate	Other precast concrete products
8.External Works	Rectangular paving stone, Finnish average, 2700 kg/m3 (KIVI ry)	20815	kg	20815	0.045	21751.68	0	20815	0	0	0			20815				As building	Brick/stone crushed to aggregate (for sub-base layers)	Natural stone
8.External Works	Asphalt, generic, compacted, 5/95% bitumen-aggregate ratio, 2350 kg/m3	112992	kg	112992	0	112992	0	112992	22598.4	0	0.095		100				2 cm	As building	Asphalt reuse via reprocessing	Asphalt
8.External Works	Macadam (8..16 mm), wet bulk density, 2000 kg/m3	188320	kg	188320	0	188320	0	188320	0	0	0					188320	4 cm	As building		Sand, soil and gravel
8.External Works	Aggregate (crushed gravel), generic, dry bulk density, 1600 kg/m³	564960	kg	564960	0	564960	0	564960	0	0	0					564960	15 cm	As building		Sand, soil and gravel