Circular Economy Statement

Former MSD Site, Breakspear Road, Ickenham

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1.0 Introduction

1.1 What is a Circular Economy?

The GLA defines a circular economy as “one where materials are retained in use at their highest value for as long as possible and are then reused or recycled, leaving a minimum of residual waste.” This is a change from the current model where materials are manufactured, used, and thrown away as demonstrated in figure 1 and 2. LWARB estimates that if circular economy principles are adopted it could contribute up to £3 billion for London by 2036 and create 12,000 new jobs.

1.2 Circular Economy Principles

This report will demonstrate that the following six core principles of a circular economy are a fundamental part of the developments design.

1) Building in layers
2) Designing out waste
3) Designing for longevity
4) Designing for adaptability and flexibility
5) Designing for disassembly
6) Using systems, elements or materials that can be reused and recycled.

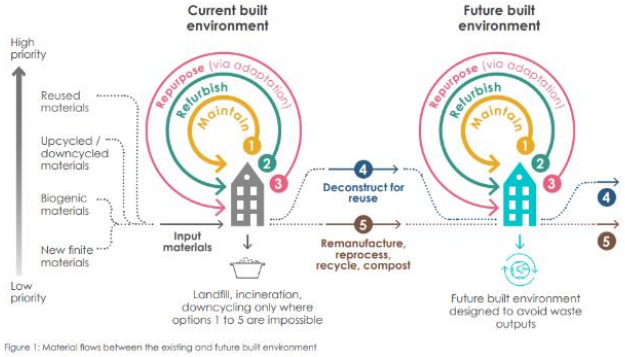


Figure 1

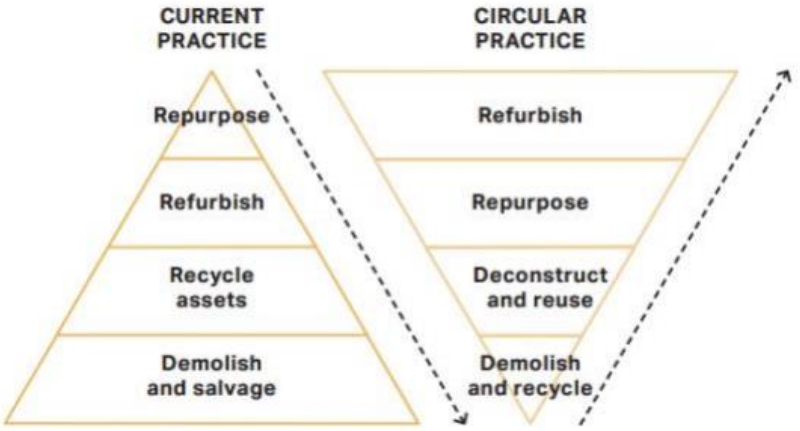


Figure 2

2.0 Description of the development

2.1 The Existing Site

The proposed site sites on an old vacant site adjacent to the Breakspear Road, highlighted in figure 3

Figure 3

Figure 4

The existing site has 16 no. existing buildings all of which are currently vacant and comprises a range of built structures, hardstanding, and poor-quality landscaping. Immediately to the south of the site, is occupied by HS2. These works occupy land that was formerly part of the MSD site

The subject lands have been vacant for circa 2 years following the site becoming surplus to MSD requirements. This is a previously developed site with extensive hardstanding and built structures, however, buildings are small, not fit for purpose and the layout is convoluted and therefore not suitable for reuse for a modern employment operator. The previous employment use was a mix of office, light industrial, and research facilities.

2.2 The proposed site

The proposed development is to consist of retention and demolition of existing buildings, construction of new buildings, all within Use Class B8 with ancillary uses, hardstanding, widening of vehicular access off Breakspear Road South, associated car and cycle parking, enhanced landscaping and ancillary works

Building Number	Level	GIA (sqm)
Block 1	00	645
	01	645
Block 2	00	900
	01	900
Block 3	00	900
	01	900
Block 4	00	900
	01	900
Block 5	00	480
Total		7170

3.0 Regulations

3.1 London Policy

The New London Plan 2021 has introduced a range of topics including areas relating to a circular economy. Sections relating to a circular economy are covered in section SI 7 and can be seen below.

Policy SI 7 Reducing waste and supporting the circular economy

A 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:

1) promote a more circular economy that improves resource efficiency and innovation to keep products and materials at their highest use for as long as possible
2) encourage waste minimisation and waste prevention through the reuse of materials and using fewer resources in the production and distribution of products
3) ensure that there is zero biodegradable or recyclable waste to landfill by 2026
4) meet or exceed the municipal waste recycling target of 65 per cent by 2030[163]
5) meet or exceed the targets for each of the following waste and material streams:
   a) construction and demolition – 95 per cent reuse/recycling/recovery
   b) excavation – 95 per cent beneficial use[164]
6) design developments with adequate, flexible, and easily accessible storage space and collection systems that support, as a minimum, the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food.

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

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

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

163 Based on the EU definition of municipal waste being household waste and other waste similar in composition to household waste. This includes business waste collected by local authorities and by the private sector.

164 All inert excavation waste should be used for beneficial uses.

3.2 Hillingdon Local Plan

The Hillingdon local plan includes policy EM11 related to sustainable waste management. Waste management is an integral part of the GLAs circular economy principles and therefore policy EM 11 will be a key part of this circular economy statement.

Policy EM11: Sustainable Waste Management

The Council will aim to reduce the amount of waste produced in the Borough and work in conjunction with its partners in West London, to identify and allocate suitable new sites for waste management facilities within the West London Waste Plan to provide sufficient capacity to meet the apportionment requirements of the London Plan which is 382 thousand tonnes per annum for Hillingdon by 2026.

The Council will require all new development to address waste management at all stages of a development's life from design and construction through to the end use and activity on site, ensuring that all waste is managed towards the upper end of the waste hierarchy.

The Council will follow the waste hierarchy by promoting the reduction of waste generation through measures such as bioremediation of soils and best practice in building construction. The Council will promote using waste as a resource and encouraging the re-use of materials and recycling. The Council will also support opportunities for energy recovery from waste and composting where appropriate. The Council will safeguard existing waste sites unless compensatory provision can be made.

The Council will seek to maximise the use of existing waste management sites through intensification or co-location of facilities.

Implementation of Policy EM11 - how we will achieve this

The Council will implement Policy EM11 by:

- Coordinating with the other Borough members of the West London Waste Authority and the Council's Waste Minimisation Strategy.
- Working with West London Boroughs to produce the Waste LDD, and this will reflect the provisions of The London Plan (2011) and Mayor's Municipal Waste Management Strategy.
- Developing detailed development control policies in the Hillingdon Local Plan: Part 2- Development Management Policies LDD to ensure that new development makes sufficient provision for waste management facilities on sites that promote increased recycling.

Monitoring of Policy EM11 - how we will measure success

Monitoring of Policy EM11 will be through the Annual Monitoring Report with specific links to:

- **W1 (Core) Indicator:** Capacity of new waste management facilities by waste planning authority. **Target:** Specific monitoring details will be included in the Joint West London Waste Plan that will cover the monitoring of changes in the stock of waste management facilities, waste arisings, and the amount of waste recycled, recovered and going for disposal. It is premature at this stage to include these in the Hillingdon Local Plan: Part 1- Strategic Policies, however, the timing for preparing both documents will allow for this at a later stage.
- **W2 (Core) Indicator:** Amount of municipal waste arising, and managed by management type by waste planning authority. **Target:** BV82a & BV82b.

4.0 Circular Economy Strategy

GLAs circular economy statement guidance provides a circular economy decision tree. This was used to provide a high-level strategy for the redevelopment of the Breakspear road site. Separate decision trees have been used for the office block and the 4no. warehouse developments as they will follow different strategies. Figure 5 shows the decision tree for block 1 (office) and Figure 6 shows the decision tree for the 4 no. warehouse blocks.

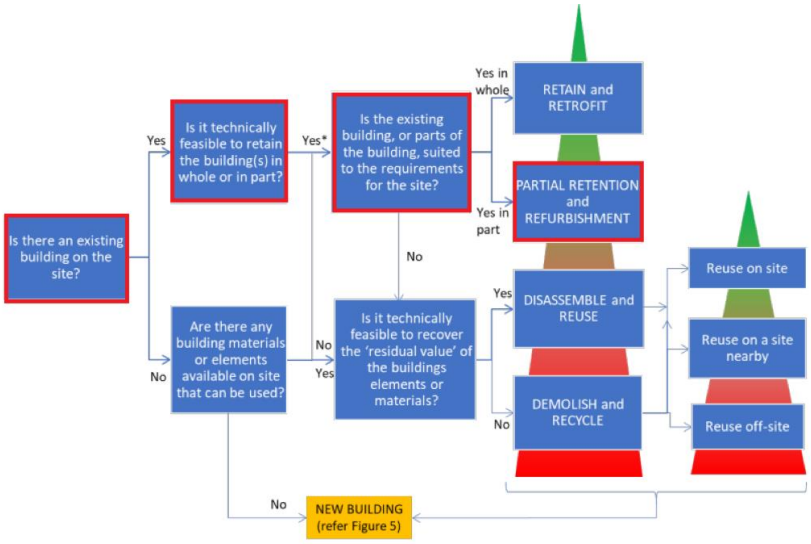


Figure 5

Figure 5 shows the high-level strategy for the office building will be partial retention and refurbishment of the existing building. This strategy of refurbishment over rebuild aims to greatly reduce the overall carbon impact onsite through reduction of new materials provided. The retain and retrofit strategy has been deemed inappropriate for the office block of the development as the materials are of poor quality and would not be an efficient option for a modern building.

The strategy for the warehouse blocks is to disassemble and reuse building components where possible. It has been proposed that 90% of steel used onsite will be reused from other developments. This strategy has been taken as the existing building are of poor quality and the layout of these building is convoluted and not fit for a modern employment operator. A pre demolition waste audit will be carried out to ensure that any materials suitable for reuse are tested and used on site where possible and if not reused on a site nearby or off site.

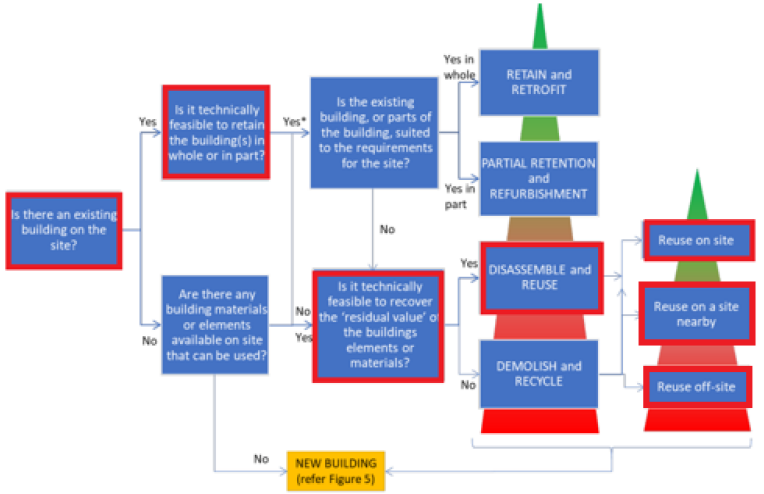


Figure 6

5.0 Design team Involvement

As required by the GLA circular economy statement guidance the Design team have met and held workshops to formulate a strategy to achieve a circular economy for the development. These workshops have been held in conjunction with BREEAM pre assessment workshops. As can be seen in the BREEAM pre assessment the project is targeting a BREEAM Very Good rating as a minimum, through the pursuit of this rating the development will broadly address the circular economy principles particularly the materials and waste categories.

5.1 Design Team Members

The following design team member organisations have been involved in BREEAM/Circular economy workshops to form a strategy for the development

Role	Organsiation
Client	Keltbray
Architect	Campbell architects
MEP	IN2
Civil engineers	Symmetrys

5.2 Design Team Aspirations

Through workshops the design team have developed the following aspirations:

- Pre demolition audit to be carried out. In line with Wst 01 guidance.
- Operational and construction waste targets to be set and space provided for segregation of waste in line with Wst 03 guidance.
- Materials to be responsible sourced Including 100% FSC timber and target major materials to be responsibly sourced.
- Materials with EPDs will be preferred.
- Steel to be recycled where possible and new steel to have a high recycled content.
- Design will be influenced by disassembly and adaptability principles in line with Wst 06 guidance.
- Priority given to locally sourced materials.
- Achieve at least 20% by value recycled content for the whole building.
- >95% target for construction and excavation waste to be reused or recycled.

5.3 BREEAM

Several BREEAM targeted credits will contribute to the circular economy of the development, these credits can be seen in the table below.

BREEAM Credit	Available	Targeted	Notes
Man 03	6	6	All responsible construction credits targeted
Mat 02	1	1	Targeting at least 20 EPD points
Mat 05	1	1	Design takes into account durability and resilience
Wst 01	4	2	Pre demolition audit to be produced and waste generation targets adhered to.
Wst 03	1	1	Dedicated space for waste provided.
Wst 06	2	2	Disassembly and adaptability to influence design.
LE 01	2	1	Site is on 100% previously occupied land

6.0 Summary of Strategic Approach

Aspect	Steering Approach	Explanation	Target	Supporting Analysis/Studies/Surveys/ Audits
Circular economy approach for the new development.	BREEAM credits are to be targeted to ensure opportunities to advance a circular economy are included. Best Practice guidelines from CIBSE/LETI etc will be met and exceeded.	BREEAM credits that have been initially targeted to aid circular economy principles include: • Man 03-Resposnible construction • Mat 02-Environemental impacts from construction products. • Mat 03-Respsonsible sourcing • Mat 05-Design for durability and resilience • Wst 03-Operational waste • Wst 06- Design for disassembly and adaptability Main contractor will be required to produce a sustainable procurement plan	>95% diversion from landfill (GLA target)	BREEAM pre-assessment Whole life Carbon assessment Energy Statement Sustainable procurement plan
Circular economy approach for the existing site.	A pre-demolition audit is to be completed to fully guide the design team in materials which are appropriate to reuse/recycle. Block 1 is set to follow the partial retention and refurbishment route, whereas the other blocks are to be demolished. The decision for the other blocks to be demolished is due to the poor quality of the buildings and the convoluted layout being unsuitable for a modern employment provider. New build for these blocks will allow for better energy efficiency as fabric can be optimised.	BREEAM credit LE 01 is targeted for use of previously occupied land Rainwater harvesting to be investigated by design team in line with Hillingdon local plan policies. Wst 01 BREEAM criteria to be followed as well as all recommendations for reusable materials from the pre demolition audit.	>95% diversion from landfill at end of life (GLA target)	Pre-Demolition Audit WLC Assessment
Circular economy approach for municipal waste during operation	Operational waste management plan will be prepared to aide in sustainable waste management throughout the development's lifespan. Waste BREEAM requirements targeted.	Waste storage requirement to be calculated in line with BREEAM requirements. Recycling and waste forecasts are included in the recycling and waste table.	90% diversion from landfill	Sustainable waste management Plan BREEAM Pre-assessment

7.0 Summary of Key Commitments

Building "Layer"	Site	Substructure	Shell/Skin	Services	Space	Stuff	Construction Stuff	Superstructure	Challenges	Counteractions + Who + When	Plan to prove and quantify
Minimising the quantities of materials used	Section A: Conserve Resources										
	Pre demolition audit to be utilised and at least 95% of demolition waste will be diverted from landfill. Block 1 of existing site will be partially retained and refurbished to reduce building quantities used.	Substructure material usage has been optimised through WLC assessment. Concrete with GGBS content to be used within the substructure where feasible.	High quality materials with a long lifespan to be used to limit the need for replacement over the development's lifespan.	Services will be designed for prefabrication to aid in disassembly and prevent material wastage.	Speculative finishes to be limited to show area unless final tenant is none in line with Wst 04	Subject to tenant fitout.	Materials to be ordered in larger pack sizes to minimise delivery waste. Just in time delivery methods to be utilised by contractor to minimise risk of damage of materials on site.	superstructure material usage has been optimised through WLC assessment.	Ensuring Commitments made are carried out. Cost implications Potential issues sourcing materials with appropriate levels of recycled materials.	Civil engineers to comment on recycled material targets Main contractor to ensure all actions agreed to are carried out. Quantity surveyor to establish cost implications.	Bill of materials analysis. Material efficiency review.

Minimising the quantities of other resources used (energy, water, land)	The site is 100% on previously occupied land. WLC assessment as well as fully energy assessment has been undertaken to optimise performance of the development.	WLC assessment carried out to aid in reduction of resources.	Energy efficient fabric utilised in line with industry best practice guidance (LETI/CIBSE/UKGBC)	Full energy modelling in line with GLA requirements have been carried out full details can be found in the energy strategy. BREEAM credit WAT01 targeted to provide efficient sanitary fittings.	Warehouse spaces to be designed to be flexible meaning they could change use easily without the need for large quantities or resources.	Operational energy to be reduced through tenant fit out.	Main contractor will be required to monitor energy and water usage throughout the construction process.	WLC assessment carried out to aid in reduction of resources.	Cost Implications	Architect to specify low consumption sanitary fittings.	BREEAM pre assessment will quantify many of the items in this section

Specifying and sourcing materials responsibly and sustainably	Contractor will be responsible for a sustainable procurement plan for the site.	Concrete with GGBS to be used where possible. Priority given to products with EPDs 100% FSC timber to be used.	Priority given to products with EPDs	M & E services with EPDs to be prioritised.	N/A	To be considered as part of tenant fit out.	Contractor to develop sustainable procurement plan	Structural steel to be reused from existing structures where possible	Cost Implications Availability of products with EPDs	Supply chain engagement	

Building "Layer"	Site	Substructure	Shell/Skin	Services	Space	Stuff	Construction Stuff	Superstructure	Challenges	Counteractions + Who + When	Plan to prove and quantify
Designing for reusability / recoverability / longevity / adaptability / flexibility	Section B: Design to eliminate waste (and for ease of maintenance)										
	Entire development to be designed for adaptability allowing for flexibility in uses.	Substructure to be long lasting lending itself to be potentially reused at end-of-life stage of the development.	Standard material sizes and components to be used to aid maintenance and replacement of parts. Off site fabrication to be considered.	Plant disassembly strategy to be developed to allow for ease of replacement and maintenance.	Future change of warehouse or office space use will be possible due to flexible design.	To be considered as part of tenant fit out.	Where possible construction for easy disassembly i.e nuts and bolts rather than welding.	Superstructure to be long lasting lending itself to be potentially reused at end-of-life stage of the development.	Cost Implications	Service replacement strategy Potential production of a adaptability and disassembly guide	

Designing out construction, demolition, excavation, industrial and municipal waste arising	N/A	Foundations and groundworks excavated during demolition will be reused on site where possible and reused elsewhere otherwise.	Where possible pre-fabricated elements of façade will be specified. Pre Fabricated sandwich panels to be specified for the majority of warehouse build ups.	M+E service providers to be made responsible for their own waste to promote reusable packaging.	Space will be set aside for the storage of construction waste.	To be considered as part of tenant fit out.	Larger pack sizes to be ordered to reduce total packaging waste. Contractor will be responsible for a site waste management plan to reduce waste but also to segregate to aid recycling and reuse.	N/A	To be reviewed once a contractor has been appointed.	Main contractor to ensure actions carried out.	Sustainable waste management plan.

Building "Layer"	Site	Substructure	Shell/Skin	Services	Space	Stuff	Construction Stuff	Superstructure	Challenges	Counteractions + Who + When	Plan to prove and quantify
Demolition waste (how waste from demolition of the layers will be managed)	Section C: Manage waste										
	Aim to achieve 95% diversion from landfill	Foundations and groundworks excavated during demolition will be reused on site where possible and reused elsewhere otherwise.	Pre demolition audit undertaken to identify opportunities for reuse and recycling of materials.	Pre demolition audit undertaken to identify opportunities for reuse and recycling of materials.	N/A	Pre demolition audit undertaken to identify opportunities for reuse and recycling of materials.	Pre demolition audit undertaken to identify opportunities for reuse and recycling of materials.	Steel beams from existing building to be reused where possible.	To be reviewed once the Main Contractor is appointed.	Main contractor to ensure actions are carried out.	Pre-Demolition audit.

Excavation waste (how waste from excavation will be managed)	Excavated waste will be reused where possible.	Foundations and groundworks excavated during demolition will be reused on site where possible and reused elsewhere otherwise.	N/A	N/A	N/A	N/A	N/A	N/A	Finding uses on site for the excavated materials.	Design options to be considered for reuse of excavated materials.	To be discussed at the next stage of design.

Construction waste (how waste arising from construction of the layers will be reused or recycled)	Target will be set for the construction site that 95% of construction waste will be diverted from landfill.	Sustainable waste management plan to be implemented and contractor to monitor progress.	Sustainable waste management plan to be implemented and contractor to monitor progress.	Sustainable waste management plan to be implemented and contractor to monitor progress.	N/A	Sustainable waste management plan to be implemented and contractor to monitor progress.	Sustainable waste management plan to be implemented and contractor to monitor progress.	Sustainable waste management plan to be implemented and contractor to monitor progress.	Ensuring sustainable waste management plan is followed.	Main contractor to monitor and ensure waste management plan is being followed.	Sustainable waste management Plan.

Municipal and industrial waste (how the design will support operational waste management)	Space to be provided on site for the segregation of waste streams.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Architect to confirm space for segregation provided.	Site Plans.

8.0 Plans for Implementation

8.1 Plans for short and medium term

- Final destination of all landfill product to be determined and confirmation needed that destination has capacity for all products.
- Main contractor to implement sustainable procurement plan and sustainable waste management plan.
- Main contractor to ensure 95% of waste from construction diverted from landfill.
- Explore the potential of a building adaptability and disassembly guide.
- Ensure materials sourced result in overall 20% recycled content in the building.

8.2 Longer Term Plans

- Main contractor to provide evidence that all targets set are achieved.
- Post completion report to be provided to the GLA as per CE statement guidance.
- Ensure tenants are aware of municipal waste targets.
- Provide evidence that 20% of total building elements are recycled

8.3 End of Life strategy

The developments' structure and envelope will be designed for an indicative life of over 60 years in line with current British standards

Durable materials will be specified in all areas with high pedestrian movement in line with BREEAM requirements to minimise the need for replacement.

It is anticipated that the end-of-life strategy will consist of the following:

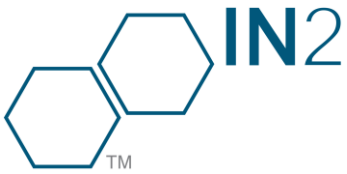
- Façade and window frames and glazing to be removed for reuse or disassembled for recycling.
- MEP services disassembled and parts reused where appropriate and otherwise recycled.
- Steel beams to be graded and reused where appropriate and recycled otherwise.

A full list of end-of-life scenarios for building materials for the Breakspear development can be found in the circular economy spreadsheet submitted along with this report.

9.0 Appendix A

Full Bill of quantities Information can be found in the circular economy spreadsheet including confirmation of 20.3% recycled content in the development. A sample of the information can be seen below. Full recycling and waste reporting table is also available in the circular economy spreadsheet.

	Building Element Category	Material Type	Material quantity (Module A) (kg)	Material intensity (Module A) (kg/m² GIA)	Performance Indicator (LPG Appendix 1)
0.1	Demolition: Toxic/Hazardous/Contaminated Material Treatment	-	0	0	-
0.2	Major Demolition Works	-	0	0	-
0.3	Temporary Support to Adjacent Structures	-	0	0	-
0.4	Specialist Ground Works	-	0	0	-
1	Substructure	-	1,151,811	161	Building Element Category 1, 1st Quartile
2.1	Superstructure: Frame	-	228,861	32	Building Element Category 2.1, 1st Quartile
2.2	Superstructure: Upper Floors	-	798,032	111	Building Element Category 2.2, 1st Quartile
2.3	Superstructure: Roof	-	120,132	17	Building Element Category 2.3, 2nd Quartile
2.4	Superstructure: Stairs and Ramps	-	2,998	0	-
2.5	Superstructure: External Walls	-	243,573	34	Building Element Category 2.5 & 2.6, 2nd Quartile
2.6	Superstructure: Windows and External Doors	-	21,685	3	Building Element Category 2.5 & 2.6, 2nd Quartile
2.7	Superstructure: Internal Walls and Partitions	-	9,254	1	Building Element Category 2.7 & 2.8, 1st Quartile
2.8	Superstructure: Internal Doors	-	4,023	1	Building Element Category 2.7 & 2.8, 1st Quartile
3	Finishes	-	4,088	1	-
4	Fittings, furnishings & equipment (FFE)	-	5,584	1	-
5	Services (MEP)	-	22,057	3	-
6	Prefabricated Buildings and Building Units	-	0	0	-
7	Work to Existing Building	-	0	0	-
8	External works	-	3,989,595	556	-
	Overall		6,601,693	921	



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