MAYOR OF LONDON

Greater London Authority: Circular Economy Monitoring 2022

Analysis of circular economy data monitored from applications received by the GLA up to the end of the 2022 calendar year

May 2024

THIS REPORT

Contents

This report sets out the background to the 2021-published London Plan's circular economy policy area, including data relating to the ***circular economy statements received by the Greater London Authority (GLA)***.

The report includes details of circular economy statements that were ***submitted in support of referable applications by the end of December 2022***. The report also summarises the monitored circular economy outcomes of all referable developments, that the Mayor called in and determined favourably, and all those that the boroughs gave a resolution to grant permission for, and that the Mayor then stated at stage 2 that he was content for the borough to go ahead and determine the applications in the calendar year 2022 (referred to as ***'2022 cases'***), assessing them against the London Plan's Circular Economy and Waste policy SI 7.

THE LONDON PLAN 2021

The current London Plan[1] was published in March 2021 and sets out a planning policy framework for how London will develop over the next 20-25 years and the Mayor's vision for Good Growth.

The Plan is part of the statutory development plan for London boroughs, meaning that planning applications across the capital should be determined in accordance with the Plan and any adopted local plan (constituting 'the development plan'), unless material considerations indicate otherwise. Boroughs' local plans must be in 'general conformity' with the London Plan, ensuring that the planning system for London operates in a joined-up way and reflects the overall strategy for how London can develop sustainably, which the London Plan sets out.

The London Plan 2021 saw the introduction of planning policy in several areas, including definitions: Policy SI7 Reducing waste and supporting the circular economy, and Policy D3 Optimising site capacity through the design-led approach.

Policy SI 7 Reducing waste and supporting the circular economy

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.*

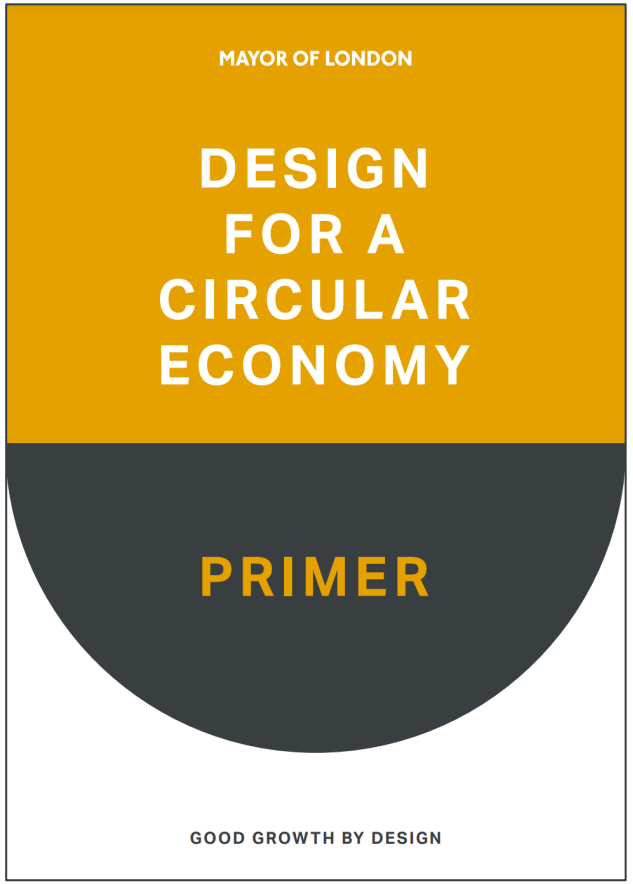
[1] *The London Plan: The Spatial Development Strategy for Greater London (March 2021) can be found at: https://www.london.gov.uk/sites/default/files/the_london_plan_2021.pdf*

DESIGN FOR A CIRCULAR ECONOMY PRIMER

Prior to the publication of The London Plan (2021), the GLA published *Design for a Circular Economy Primer*[2] to support the Mayor's vision of London transitioning to a circular economy, as set out in the (then) draft London Plan and in his Environment Strategy. The Design for a Circular Economy Primer was written to help support organisations in the built environment sector understand how they could embed circular economy principles into their projects and design processes. The Primer was written to summarise the direction that technical guidance would take. It establishes the principle of a circular economy for London, one that seeks to move away from the "take – make – dispose" model of the linear economy, towards recycling and circular economies that allow materials to be remanufactured and reused.

"As the largest user of materials and generator of waste in the economy, the built environment sector must take a lead in supporting the shift towards a circular economy. In London, the sector consumes 400 million tonnes of material each year and accounts for 54% of waste. Extending the life of buildings and recovering and reusing materials at the end of their life can help reduce the demand for virgin materials and waste arising from the built environment."

Figure 1. GLA Design for a Circular Economy Primer



[2] *The Design for a Circular Economy Primer can be found at: https://www.london.gov.uk/sites/default/files/design_for_a_circular_economy_primer_ggbd_web2.pdf*

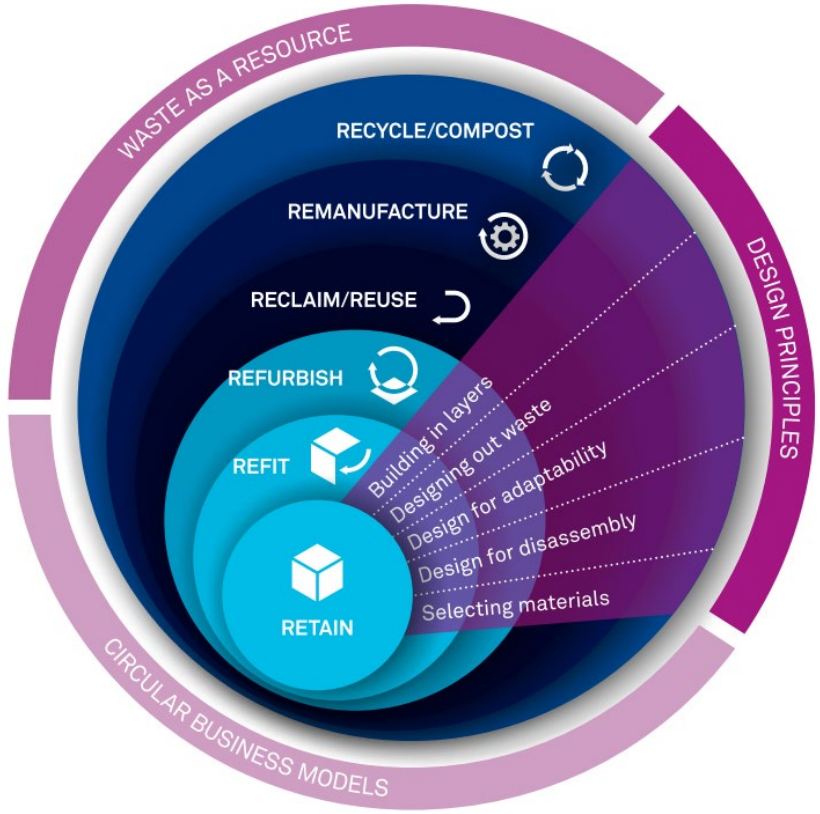
CIRCULAR ECONOMY STATEMENTS: POLICY CONTEXT

London Plan policy SI 7 B for the submission of a Circular Economy Statement with applications for referable development considers how the approach can be established in the built environment. Through the policy and accompanying guidance, a 'Waste Hierarchy' and a series of design principles are defined for buildings to which proposals should respond, to establish a circular building stock in London.

The report includes details of circular economy statements that were ***submitted in support of referable applications by the end of December 2022***[3], assessing them against the London Plan Circular Economy and Waste policy SI 7. This report also includes analysis of outcomes from ***2022 cases,*** as defined on Page 2 of this report.

[3] A planning application is referable to the Mayor if it meets the criteria set out in the Town and Country Planning (Mayor of London) Order 2008. The criteria include: residential development of 150 units or more; non-residential development of more than 100,000 m² (in the City of London), more than 20,000 m² (in Central London excluding City of London), more than 15,000 m² (outside Central London); any development over 30 metres in height (outside the City of London) or on Green Belt or on Metropolitan Open Land. See the Order for the full criteria.

Figure 2. Circular economy hierarchy for building approaches



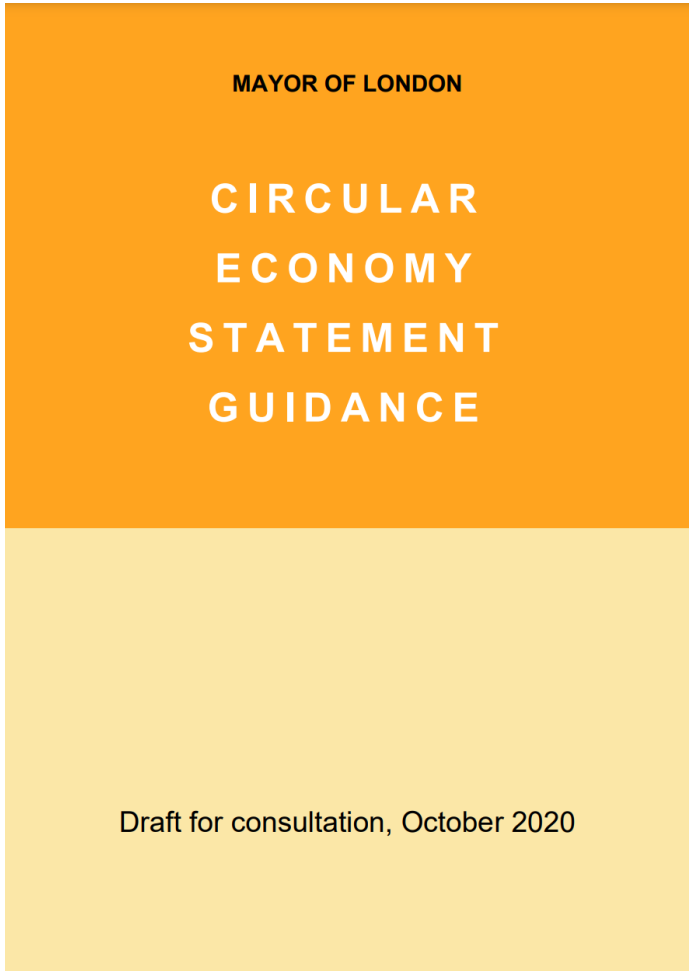
Source: Building Revolutions (2016), David Cheshire, RIBA Publishing ©

CIRCULAR ECONOMY STATEMENT GUIDANCE: INITIAL AND CONSULTATION DRAFTS

An **initial draft guidance** document was published for information-only in March 2020. This version of the draft guidance was amended prior to undergoing a twelve-week consultation period from October 2020 to January 2021. During the consultation period, feedback was gathered to inform the final version of the guidance. The **Draft for consultation**, October 2020 was the-then current version of the emerging guidance during the first year following the publication of The London Plan in March 2021 which sets out in Policy SI 7 that a Circular Economy Statement should be submitted as part of referable planning applications.

The GLA published the finalised **London Plan Guidance: Circular Economy Statements** on 25th March 2022; it superseded the previous Draft for consultation, October 2020 version. This still-current guidance was informed by extensive engagement with a range of built environment stakeholders including developers, architects, contractors, technical consultants, the public sector and academia.
The guidance applies to the largest developments in London that are referable to the Mayor, as specified by London Plan Policy SI 7. However, boroughs are also encouraged to apply the policies to smaller developments (in line with Policy SI 7 Part C).

Figure 3. GLA Circular Economy Statement Guidance Draft

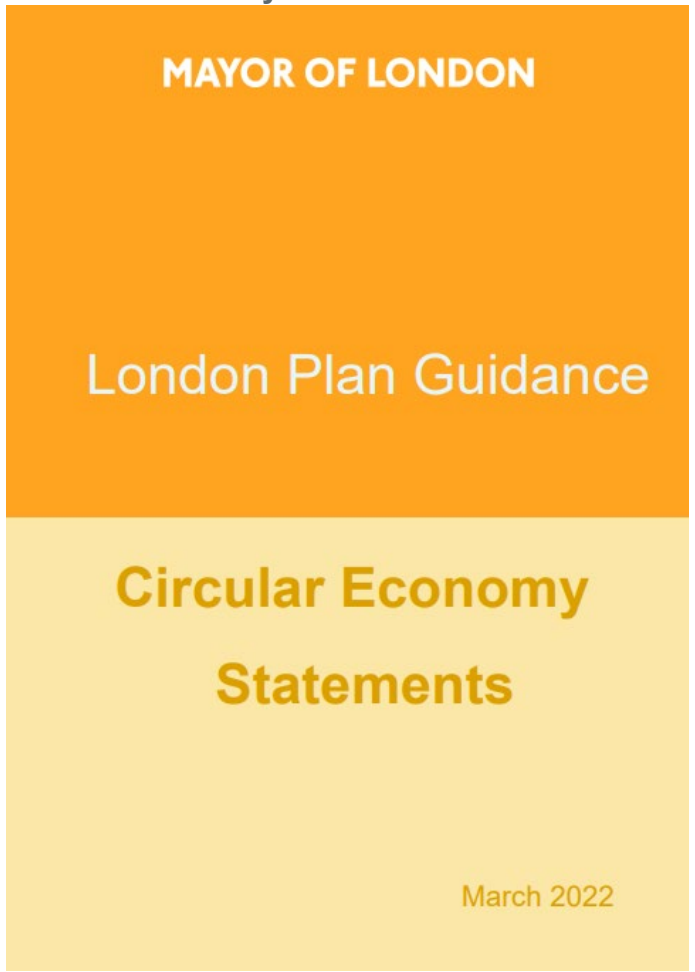


LONDON PLAN GUIDANCE (LPG): MARCH 2022

The March 2022 LPG sets out how applicants should develop Circular Economy Statements in accordance with London Plan Policy SI 7 “Reducing waste and supporting the circular economy” for referable planning applications. The key changes introduced in the published LPG compared to the initial, information-only document and then the consultation version can be summarised as follows:

- Introduces a **template** to be completed alongside the written report
- Sets out requirements for the **pre-application stage**
- **Aligns reporting for outline and detailed** application elements
- Refreshed **reporting tables,** with additional metrics for “Bill of Materials” and disposal breakdown within the “Recycling and Waste Reporting” table.
- Emphasis placed on the adoption of **refurbishment and retrofit** strategies when compared to new build.
- Introduces a requirement for a **Pre-redevelopment Audit**.
- Specific requirements introduced for the content of both **Pre-demolition Audit** and **Operational Waste Management Plan** documents.
- Redefines circular economy principles, to distil them down to six and to shift the emphasis to measures in line with the **strategic approaches and circularity of materials** at specification / construction stage and at end-of-life.

Figure 4. GLA London Plan Guidance: Circular Economy Statements



LONDON PLAN GUIDANCE (LPG): MARCH 2022 cont.

Table 1. CE Statements: valid data from applications reviewed 2020-22

Metric [tonnes/m² GIA]	Upper Quartile	Median	Lower Quartile	Sample Size
Demolition waste	0.958	0.480	0.138	48
Excavation waste	0.770	0.410	0.150	47
Construction waste	0.113	0.093	0.065	56
Municipal waste (per annum)	0.080	0.031	0.014	31
Metric [kg/m² GIA]	**Upper Quartile**	**Median**	**Lower Quartile**	**Sample Size**
Foundations	907.73	572.5	222.51	77
Frame	368.89	208.04	92.38	70
Upper Floors	702.27	542.33	294.75	72
Roof	77.09	42.37	17.52	63
Fabric	192.48	102.00	42.29	78
Partition	118.37	60.22	18.05	75

The published LPG also includes initial analysis of data collected from Circular Economy Statements submitted up to and including January 2022. The table presented in the LPG, and reproduced in Table 1, shows the upper, median and lower quartile figures for all key circular economy metrics, along with the sample size for each metric. This data can be used for comparison and is implemented as a comparative figure in the GLA circular economy template.

It is anticipated that referable applications in subsequent and future years will tend towards the median and lower quartile figures.

CIRCULAR ECONOMY STATEMENTS RECEIVED

By the end of December 2022, the GLA had engaged with 393 referable applications on circular economy matters, across all planning stages from pre-application onwards. This number included Circular Economy Statements dating from May 2020. During this period, more than 310 Circular Economy Statements were submitted to the GLA. This total is for Circular Economy Statement submissions, not the total number of mayoral permissions plus LPA notifications by the Mayor that the authority could go ahead and determine applications as they had proposed. Approved planning applications should also be conditioned to provide post-completion reporting that updates the reporting provided at planning application and determination stages with measured data; the analysis excludes post-completion reporting, as no reports of this type had been received by the end of December 2022.

Table 2. Circular Economy Statements (CES) received by the GLA by the end of December 2022

	Up to end December 2021	2022 Calendar Year
Number of Referable Applications	226	167
of which were at pre-application stage	17	26
Planning Application Stage: CES received	178	132
of which were provided following GLA consultation	28	14
of which were at the time of CES Guidance Draft for Consultation October 2020	96%	65%
of which referenced London Plan Guidance CES March 2022	4%	35%

CIRCULAR ECONOMY STATEMENTS RECEIVED cont.

The **CES Guidance Draft for consultation** October 2020 was the current version for the first year following the March 2021 publication of The London Plan, including its Policy SI 7 "Reducing waste and supporting the circular economy." The LPG Circular Economy Statements March 2022 was published on 25th March, with a transition period ending on 25th June 2022. Referable application submissions between these dates were strongly encouraged to be aligned with the new guidance, whilst all submissions following this date should have followed the reporting approaches set out in the 2022-published LPG. When considering the timing of the publication of the March 2022 LPG, and the time taken for a referable application to be determined following submission, there will be a mix of applications which referenced either the CES Guidance Draft for consultation October 2020 or LPG Circular Economy Statements March 2022.

Of the Circular Economy Statements relating to referable applications received before the end of 2021, 4% of them were subsequently updated with reference to the LPG Circular Economy Statements March 2022.

35% of Circular Economy Statements received during the 2022 calendar year made reference to the LPG Circular Economy Statements March 2022.

CIRCULAR ECONOMY STATEMENTS: 2022 CASES

In the 2022 calendar year, a total of ***142 referable planning applications were subject of resolutions to grant permission by their local planning authority and the Mayor subsequently was content for the boroughs to proceed to determine them/ the Mayor called in the application(s) and favourably determined them*** (referred to as ***'2022 cases'***). Of these 142 applications, 82 submitted a Circular Economy Statement as part of the planning application in accordance with London Plan Policy SI 7. **The subsequent analysis focusses on data from Circular Economy Statements associated with these applications only.**

More than **three-quarters of applications that did not submit a Circular Economy Statement** were **made prior to the publication of The London Plan (2021)** and its policy SI 7 B that a Circular Economy Statement should be submitted with referable applications. Other applications without Circular Economy Statements were submitted/ proceeded beyond referral/ were called-in and favourably decided by the Mayor before the LPG was adopted in March 2022, or between that adoption date and the end of the transition period on 25 June 2022. These applicants may have concluded that they did not have to be consistent with the emerging LPG, as it was not adopted guidance at the time their applications were being made/ determined.

CIRCULAR ECONOMY STATEMENTS: 2022 CASES cont.

The proportion of referable applications accompanied by a Circular Economy Statement is expected to increase year-on-year, whereas the number of legacy cases that are yet to proceed beyond referral (or beyond the Mayor calling in and then subsequently issuing a favourable determination), that were submitted before the publication of The London Plan (2021), will reduce over time.

The LPG Circular Economy Statements March 2022 was published on 25th March, with a transition period running to 25th June 2022. Submissions between these dates were strongly encouraged to align with the new guidance, whilst all referable applications following this date should have followed the 2022-published LPG. Taking account of this approach, the 2022 cases will include a mix of Circular Economy Statements with reference to the CES Guidance Draft for consultation October 2020 or to the LPG Circular Economy Statements March 2022.

Of the 82 Circular Economy Statements submitted with respect to the 2022 cases, just **8 of these were submitted following the publication of the LPG Circular Economy Statements March 2022**, with 2 of these being submitted during the transition period.

CIRCULAR ECONOMY DESIGN APPROACHES

In order to implement circular economy principles most effectively, applicants should explore high-level strategic opportunities as early in the development process as possible. Applicants should consider strategies which prioritise retention of existing buildings and strategies which are appropriate to the expected lifespan of new development.

88% of 2022 cases had an existing building on the development site. On **10%** of sites with an existing building, an element of **retention, refurbishment or repurposing was proposed**. Retention, refurbishment or repurposing was primarily proposed in non-domestic schemes and mixed-use masterplan developments.

Almost all of the 2022 cases are developments expected to have a long life on the site and prioritise strategies for flexibility, adaptability and longevity. A single application for temporary development is expected to have a short-life on the site (an expected lifespan of 5-years) and proposes to prioritise reusability.

PRE-DEMOLITION AUDITS

Where a building is proposed to be demolished, a Pre-demolition Audit is an essential tool in establishing whether components of the building can be reclaimed. A Pre-demolition Audit should demonstrate how much waste the demolition is expected to generate, and how and where the waste will be managed in accordance with the waste hierarchy.

26 Pre-demolition Audits were received as part of submissions accompanying 2022 cases. Based on an analysis of these documents, the order of waste material types arising by estimated mass expected to arise was as follows:

1. Concrete
2. Ceramics / bricks
3. Mixed metals – ferrous (iron and steel)
4. Asphalt
5. Inert (soils, clay, sand and gravel)

London's existing building stock has predominantly not been designed for disassembly, therefore the main opportunities for key materials such as concrete and brick are to downcycle by crushing as standard practice.

CIRCULAR ECONOMY DESIGN PRINCIPLES

Applicants should respond to the Circular Economy principles as part of the Circular Economy Statement submission. This is achieved by setting out key measures and commitments with respect to the development proposals and explaining how these are being secured within the design at planning stage. Applicants should highlight where the proposals seek to go beyond standard practice.

Examples of measures that applicants have been proposing which go beyond standard practice include:

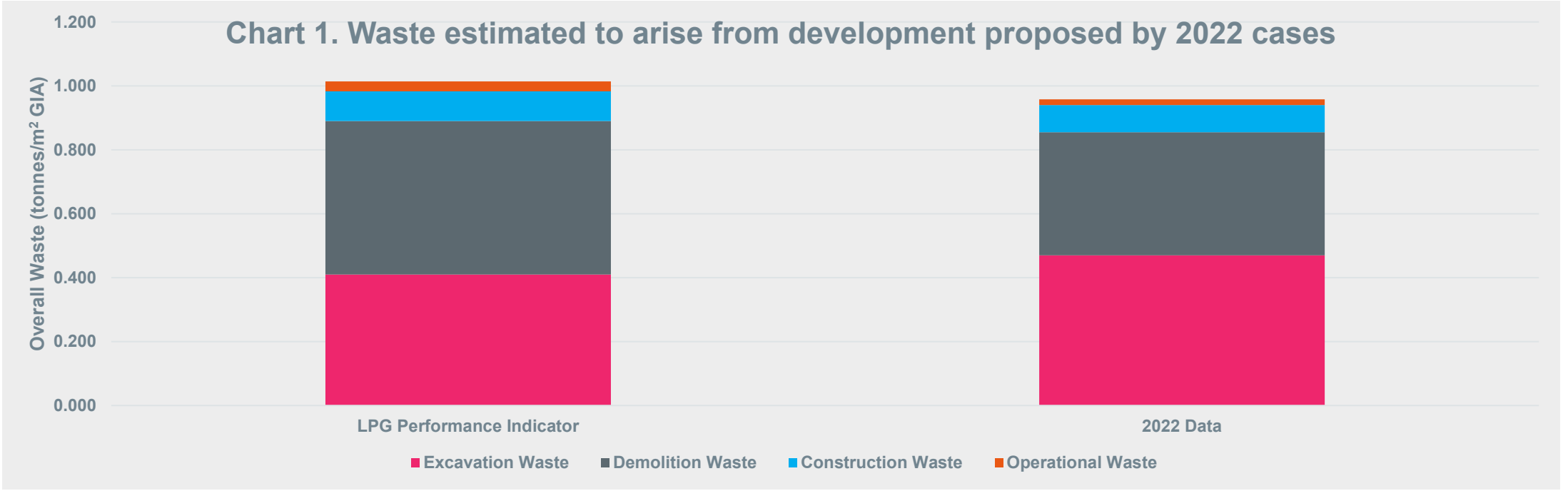
- design for disassembly including elements to be disassembled and strategies for the connections
- creation of material passports
- use of innovative materials (biobased, leasing schemes and high recycled content)
- use of timber elements where possible
- production of an adaptability study

As a result of engagement with the GLA throughout the planning process, **20 applicants reviewed their proposed circular economy measures and commitments and demonstrated improvement** from minimum practice to good practice.

RECYCLING AND WASTE REPORTING

As part of the Circular Economy Statement submission, applicants should provide a Recycling and Waste Reporting table with estimates of the quantity of key waste streams which are expected to arise as a result of the development proposals.

Chart 1 below illustrates how the estimated waste associated with the delivery of development proposed by 2022 cases compares to the valid data from Appendix 4 of the 2022 LPG, and as presented earlier in this report.



RECYCLING AND WASTE REPORTING: TRENDS

Chart 1 illustrates that waste estimated to arise from development approved in 2022 shows an overall reduction compared to the data presented in Appendix 4 of the LPG Circular Economy Statements March 2022. There has been a slight increase to excavation waste compared to the LPG's data. The estimation of excavation waste includes soil, rock or other material excavated during construction or maintenance activities. This should include works associated with the foundations of the development and any facilitating works, such as regrading. For this reason, basements are a significant contributor to excavation waste arising.

The data illustrates an overall reduction in estimated demolition waste arising. This can represent development which is proposing to retain existing building structures, components and materials. It can also be driven by replacement of existing buildings with considerably higher-density development.

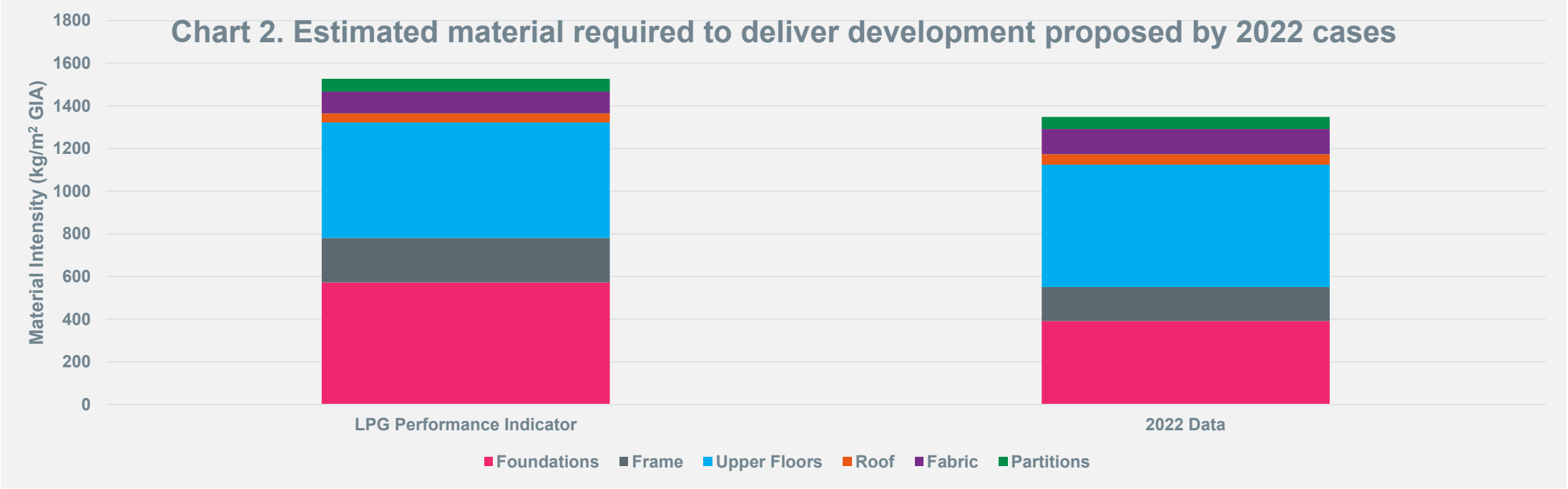
The estimated construction waste from development proposed by 2022 cases aligns with the LPG data. Applicants often reference BRE SmartWaste data and credits targeted in line with environmental assessment methods as a source of construction waste estimates. This is illustrated where the construction waste upper and lower quartiles align with BREEAM Wst 01 one credit and two credit requirements; 0.111 t/m^2 GIA and 0.065 t/m^2 GIA respectively.

For operational waste, applicants are asked to provide an estimate in tonnes per annum. Whilst appearing nominal when reported in this way compared to construction phase waste, development designed for longevity is expected to have an expected lifespan of at least 60 years. For development proposed by 2022 cases, a total of approximately 30,000 tonnes of waste would be expected to arise from operations over a 60-year period compared to approximately 26,000 tonnes in the construction phase.

BILL OF MATERIALS

As part of the Circular Economy Statement submission, applicants should provide a Bill of Materials table with estimates of the quantity of materials required to deliver the development proposals with respect to key waste building layer categories.

Chart 2 below illustrates how the estimated material associated with the delivery of development proposed by 2022 cases compares to the valid data from Appendix 4 of the 2022 LPG, and as presented earlier in this report.



BILL OF MATERIALS: TRENDS

Chart 2 demonstrates that the estimated material required to deliver development proposed by 2022 cases shows an overall reduction compared to the data presented in Appendix 4 of the LPG Circular Economy Statements March 2022.

The data collected from development approved in 2022 highlights the proportions by which each of the key building element categories contribute to the overall building weight. Structural elements can account for 15 to 50% of the embodied carbon of a building. They are also materially intensive. Based on the 2022 dataset median, it is indicated that around 87% of the building weight is made up of structural elements. This also highlights the importance of retaining existing structures wherever possible in line with preferred circular economy design approaches.

In line with circular economy principles, development should be designed to be resource-efficient to minimise material demands. The material intensity of foundational and framing elements have illustrated a reduction compared to the 2022 LPG data. Lean design of structures should avoid over-engineering, seeking to simplify and maximise reuse to lower material intensity. The principles can be applied to other elements such as fit-out and finishing (through specification of inherent finishes, for example).

The material intensity of a given development can be driven significantly by its type and scale of development. Low-density development can accommodate a lighter-weight structure compared to a high-rise development. Residential development will often have a higher partition material intensity than industrial and commercial uses which are delivered to be predominantly open-plan.

CIRCULAR ECONOMY TARGETS

Demolition Waste

to meet or exceed 95% reuse / recycling / recovery

London Plan Policy SI 7

average target of

96%

Construction Waste

to meet or exceed 95% reuse / recycling / recovery

London Plan Policy SI 7

average target of

95%

Excavation Waste

to meet or exceed 95% beneficial reuse

London Plan Policy SI 7

average target of

96%

Municipal Waste

to meet or exceed 65% recycling rate by 2030

London Plan Policy SI 7

average target of

65%

Reused or Recycled Content

at least 20% by value for the whole building

London Plan Guidance

average target of

21%

The London Plan and the Mayor's associated strategies set out a range of targets which support aims to conserve resources, reduce waste and promote material reuse and recycling across London. As part of the Circular Economy Statement, applicants should provide a commitment to these policy targets as a minimum. The actual performance against these targets should be reported by applicants as part of the post-completion reporting.

CONCLUSIONS

The analysis presented in this report demonstrates that applicants are responding to London Plan Policy SI 7 to support waste reduction and the circular economy in London. Through this process more than 310 Circular Economy Statements have been received by GLA up to the end of the 2022 calendar year.

The findings of this report demonstrate that in 2022 applicants were:

- Providing commitments to policy targets as a minimum
- Reducing materials and waste associated with development proposals
- Exploring how waste could be managed sustainably in line with the Waste Hierarchy

APPENDIX – RECYCLING AND WASTE REPORTING

Table 3. Waste estimated to arise from development proposed by 2022 cases compared to valid data presented in LPG

[tonnes / m^2 GIA]	Upper Quart. LPG Data	Upper Quart. 2022 Data	Median LPG Data	Median 2022 Data	Lower Quart. LPG Data	Lower Quart. 2022 Data
Demolition Waste	0.958	0.710	0.480	0.385	0.138	0.125
Excavation Waste	0.770	0.730	0.410	0.470	0.150	0.215
Construction Waste	0.113	0.112	0.093	0.085	0.065	0.065
Operational Waste	0.080	0.038	0.031	0.018	0.014	0.012

Table 3, to the left, illustrates the data used to plot Chart 1 on Page 15 of this report.
This compares how the estimated waste associated with the delivery of development proposed by 2022 cases varies from the valid data from Appendix 4 of the LPG, and as presented earlier in this report.

APPENDIX – BILL OF MATERIALS

Table 4. Estimated material required to deliver development proposed by 2022 cases compared to valid data presented in LPG

[kg / m² GIA]	Upper Quart. LPG Data	Upper Quart. 2022 Data	Median LPG Data	Median 2022 Data	Lower Quart. LPG Data	Lower Quart. 2022 Data
Foundations	907.73	659.21	572.50	391.23	222.51	241.78
Frame	368.89	279.42	208.04	159.90	92.38	96.99
Upper Floors	702.27	719.90	542.33	573.59	294.75	282.00
Roof	77.09	94.54	42.37	49.04	17.52	19.00
Fabric	192.48	248.23	102.00	118.30	42.29	44.08
Partitions	118.37	124.63	60.22	56.50	18.05	20.15

Table 4, to the left, illustrates the data used to plot Chart 2 on Page 17 of this report.

This compares how the estimated material associated with the delivery of development proposed by 2022 cases varies from the valid data from Appendix 4 of the LPG, and as presented earlier in this report.