

<b>Committee(s)</b>	<b>Dated:</b>
Planning and Transportation Committee	18 July 2023
<b>Subject:</b> Whole life-cycle carbon emission data monitoring in major planning applications	<b>Public</b>
<b>Which outcomes in the City Corporation's Corporate Plan does this proposal aim to impact directly?</b>	<b>5, 11, 12</b>
<b>Does this proposal require extra revenue and/or capital spending?</b>	<b>N</b>
<b>If so, how much?</b>	<b>£0</b>
<b>What is the source of Funding?</b>	<b>n/a</b>
<b>Has this Funding Source been agreed with the Chamberlain's Department?</b>	<b>n/a</b>
<b>Report of:</b> Juliemma McLoughlin, Executive Director, Environment	<b>For Information</b>
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### Summary

This report provides information about planning application stage whole life-cycle carbon emissions calculated for development proposals by the applicants' teams. The applications were approved by the City of London Corporation between January 2021 and March 2023. This time frame is determined by the earliest availability of relevant data as part of major applications. The monitored data indicate a whole life-cycle carbon impact (over 60 years) of approx. 1,576 ktCO<sub>2</sub>e from applications approved in this period.

### Recommendation

Members are asked to:

- Note the results of the monitoring of whole life-cycle carbon emissions.

### Main Report

#### Background

1. The built environment is responsible for almost 40 per cent of the UK's carbon emissions (source: RICS). The reporting and monitoring of carbon data from development is an important step to facilitate the reduction of emissions in this sector.
2. The City of London has adopted its Climate Action Strategy 2020 – 2027 in 2020 through which the City Corporation commits to reduce carbon emissions to achieve:

- net zero by 2027 in the City Corporation's operations
  - net zero by 2040 across the City Corporation's full value chain
  - net zero by 2040 in the Square Mile
  - Climate resilience in our buildings, public spaces and infrastructure.
3. The Climate Action Strategy team reports in their annual progress reports successes and challenges of achieving net zero in their own operations and value chains, and how the strategy supports the achievement of net zero in the Square Mile.
  4. Members have requested details of whole life-cycle carbon emissions that are likely to result from approving major planning applications in order to understand their carbon impact on the Square Mile.
  5. The accompanying Excel spreadsheet shows the collected data sets for each major application approved between 2021 and 2023 so far. This report summarises the results of the planning application data on whole life-cycle carbon emissions.
  6. It should be noted that planning stage data of whole life-cycle carbon emissions are calculations based on RIBA stage 3 (Spatial Coordination) at which the technical design is still in development, and consequently details and materials of a development scheme are not confirmed. Whole life-cycle carbon emissions can change considerably between RIBA stage 4 (Technical Design) and RIBA stage 7 (in use), and therefore actual data can only be assessed in a meaningful way through post-construction whole life-cycle carbon assessments. However, the analysis of planning stage data provides an indication of the level of carbon impact when comparing applications of the same type (new build or retrofit) and similar scale, and will help with shaping the approach to developing policies and providing guidance to development proposals on reducing carbon emissions.

### **The monitored data**

7. For general monitoring purposes, the following data were collected for all major applications approved by Planning & Transportation committee and delegated decision that have submitted whole life-cycle carbon assessments:
  - Proposed floorspace
  - Proposed dominant use
  - Development type
  - Absolute whole life-cycle carbon emissions (decarbonisation applied/not applied)
  - Square meter based whole life-cycle carbon emissions (decarbonisation applied/not applied)
  - Operational carbon emission reduction compared to Part L 2013 or 2021 as relevant
  - Targetted BREEAM rating (to provide a broader focus on sustainability credentials).

For the purpose of this report, the whole life-cycle carbon emissions are reported in relation to the type of development (new build or refurbishment with extension) and in relation to the total number of applications that have provided whole life-cycle carbon data and have been approved in the period between January 2021 and March 2023. The resulting size of proposed floorspace (in refurbishments this is calculated as the sum of existing retained plus new floorspace) is shown in table 1.

8. The data sets were collected from the whole life-cycle carbon assessments and energy strategies as well as GLA spreadsheets for energy demand and whole life-cycle carbon emissions (where available) submitted with the applications. In some cases, revised data was submitted due to changes to a scheme during the application process. These would have been submitted in separate addendums or email correspondence and are available in the list of application documents.
9. An Excel worksheet with all collected data sets will be published separately.
10. The tables below show the data of a total of 26 major planning application schemes (including GLA referable schemes). However, not all 26 schemes provide fully matching data sets, due to changes in Greater London Authority (GLA) guidance and Building Regulations Part L in 2022. As a consequence, some totals set out in this report are based on a subset of schemes, depending on whether the whole life-cycle carbon emissions were reported including or excluding the use of future decarbonised energy data, and on the basis of which Building Regulations Part L version (2013 or 2021) the operational carbon emission reduction calculation has been calculated.
11. In accordance with the reasons set out in paragraph 10, the total whole life-cycle carbon emissions of the approved applications have been grouped into schemes that have reported emissions without applying a future decarbonisation of the national grid, as required by current GLA guidance, and schemes that have reported emissions including the decarbonisation of the national grid, which was optional in the draft GLA guidance before it was changed and adopted in 2022.

## Summaries of the monitored data

12. Out of the 26 planning applications that have submitted whole life-cycle carbon data, 18 are new build schemes and 8 are refurbishment with extension schemes. The following table shows the total proposed floorspace for each category:

Table 1: Total floorspace per development type of schemes that have submitted WLC data

Development Type	No. of Developments	Total Proposed Floor Area (GIA) m <sup>2</sup>
New Build	18	626,454
Refurbishment + Extension	8	199,925
<b>Total</b>	<b>26</b>	<b>826,379</b>

### Average WLC carbon emissions across life-cycle stages

13. There are 16 schemes that have included both absolute and per square meter carbon data (without decarbonisation), the latter separate for various life-cycle stages. Table 2 below shows an approx. 70/30 split of percentage between new build and refurbishment schemes. The new build schemes account for the highest proportion of absolute WLC carbon impact due to their larger number and higher absolute WLC carbon figures.

On average per square meter, the upfront carbon impact (life-cycle stages A1-A5) of new builds results in almost double of the carbon impact compared to refurbishments with extension, while operational carbon impacts (life-cycle stages B6 and B7) tend to be higher in refurbishment with extension schemes.

Table 2: Total WLC emissions and average emissions per square metre per life-cycle module for schemes that applied no decarbonisation factor:

Development Type	No. of Developments	Total WLC emissions over 60-yr lifetime (kgCO <sub>2</sub> e)	Average WLC emissions A1-A5, excluding sequestration (kgCO <sub>2</sub> e/m <sup>2</sup> )	Average WLC emissions B-C excluding B6 & B7 (kgCO <sub>2</sub> e/m <sup>2</sup> )	Average WLC emissions A-C, including sequestration, but excluding B6 & B7 (kgCO <sub>2</sub> e/m <sup>2</sup> )	Average WLC emissions B6 & B7 (kgCO <sub>2</sub> e/m <sup>2</sup> )
New build	11	848,555,661	901	390	1,271	877
Refurbishment + Extension	5	301,340,562	495	481	943	1,156
<b>Total</b>	<b>16</b>	<b>1,149,896,223</b>	<b>774</b>	<b>418</b>	<b>1,168</b>	<b>2,033</b>

### Absolute whole life-cycle and operational carbon emissions

14. Table 3 provides an indication of the whole life-cycle carbon intensity of all 26 approved major applications, resulting in approx. 1,576 ktCO<sub>2</sub>e.
15. Table 4 provides an indication of the operational carbon intensity of 22 approved major applications, resulting in approx. 786 ktCO<sub>2</sub>e.
16. In table 3, looking at all 26 applications, 5 schemes have been submitted that only have decarbonised carbon data, and therefore the planning stage overall WLC carbon figure may be slightly higher. This gap in reported data would be more pronounced in the figures of table 4 which show the operational carbon emissions, with 4 out of 22 total applications reporting decarbonised carbon data only. However, the proportion of schemes with decarbonised data compared to undecarbonised data is low both for WLC and operational carbon emission figures.

Table 3: Absolute whole life-cycle carbon emissions across all 26 applications over a 60-year reference period:

Type of Development	Decarbonisation	No. of developments	Absolute WLC emissions (kgCO <sub>2</sub> e) over 60-year reference period
New build	With decarbonisation	4	136,715,008
Refurbishment + Extension	With decarbonisation	1	25,749,000
New build	Without decarbonisation	14	1,075,217,967
Refurbishment + Extension	Without decarbonisation	7	337,945,734
<b>Total</b>	<b>With and without decarbonisation</b>	<b>26</b>	<b>1,575,627,709</b>

Table 4: Absolute operational life-cycle carbon emissions across 22 applications over a 60-year reference period:

Type of Development	Decarbonisation factor	No. of Developments	Absolute Operational emissions (kgCO <sub>2</sub> e) over 60-year reference period
New build	With decarbonisation	3	93,973,506
Refurbishment + Extension	With decarbonisation	1	15,466
New build	Without decarbonisation	14	503,883,630
Refurbishment + Extension	Without decarbonisation	4	188,556,348
<b>Total</b>	<b>With and without decarbonisation</b>	<b>22</b>	<b>786,428,950</b>

### Operational carbon emissions savings beyond Part L Building Regulations

17. The GLA requires the reporting of operational carbon emissions savings compared to a Building Regulations Part L compliant building. Development should achieve a minimum of 35% carbon emissions reduction. In the City of London context, most developments are office schemes with a small mixed use proportion. Out of the 26 schemes monitored for this report, three schemes are hotels, two schemes are student housing, as well as one museum, one police and one court building. To understand potentials for operational carbon savings, the selection of non-office schemes would not be representative for their use types and therefore only office schemes are considered here. Out of the office schemes, only a small proportion are based on Part L 2021 or use their current energy performance as a baseline (some refurbishment schemes), and therefore only the schemes based on Part L 2013 will be shown here.

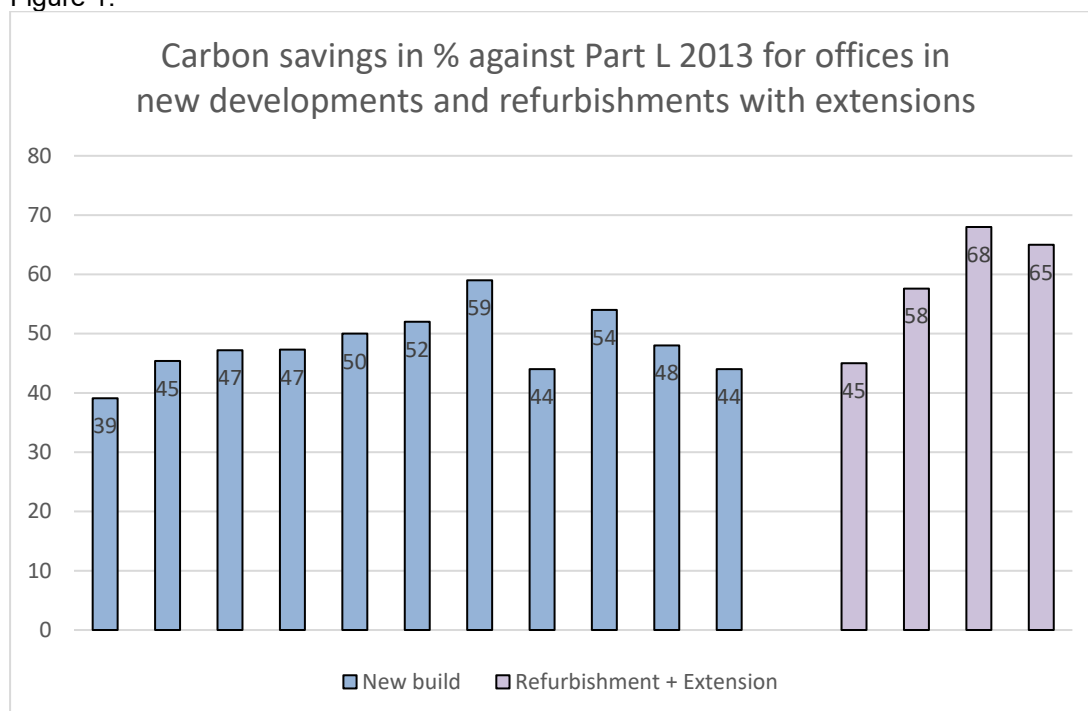
Table 5: Average operational carbon emission savings in percent compared to a Part L 2013 compliant office building:

Type of Development	Part L applied	No. of developments	Average carbon savings (%)
New build	2013	11	48
Refurbishment + Extension	2013	4	59

Table 5 shows that refurbishment + extension schemes achieve a higher average carbon emission reduction compared to new build schemes. In this case, the 4 refurbishment + extension schemes are more recent applications that relate to existing buildings with “good bones” in terms of structural capacity and generous floor to ceiling heights that enable the incorporation of efficient MEP and fit-out as well as a good level of extension potential. The new build schemes include applications submitted over a longer time period as well as large redevelopment schemes such as towers, all of which tend to result in higher operational carbon impacts. Overall, the average carbon emissions savings significantly exceed the GLA’s 35% standard.

Figure 1 below shows the schemes’ individual carbon emission reductions.

Figure 1:



### BREEAM pre-assessment ratings

18. All major applications are required to carry out a BREEAM pre-assessment that confirms that a minimum rating of “excellent” can be achieved.

Table 6: BREEAM pre-assessment ratings:

Type of Development	BREEAM pre-assessment rating “Outstanding”	BREEAM pre-assessment rating “Excellent”
New build	12	6
Refurbishment + Extension	3	5
<b>Total</b>	<b>15</b>	<b>11</b>

Table 6 shows that 15 out of all 26 schemes could potentially achieve a BREEAM rating of “outstanding”, closely followed by 11 schemes achieving an “excellent” rating. The “outstanding” rating would be more likely achievable by new build schemes while refurbishment with extension schemes would

achieve more “excellent” ratings. This is most likely due to limitations to meeting BREEAM criteria in schemes with heritage related and existing structural constraints to incorporate sustainability measures.

## Technical Notes

19. The City of London Corporation is committed to the highest standard and quality of information and every reasonable attempt has been made to present up-to-date and accurate information. All figures and ratings are based on information provided by applicants and are liable to change as the technical design develops after planning permission. The information in this report has been provided for information purposes only and the City of London Corporation gives no warranty, express or implied, as to the accuracy, timeliness or decency of the information and accepts no liability for any loss, damage or inconvenience howsoever arising caused by, or because of, reliance upon such information.

## Next steps

20. Monitoring of carbon data will be incorporated into the monitoring of the new City Plan and the work of the Monitoring and Information team within the Planning Division.

21. Through the planning system and wider work, the City Corporation are taking steps to minimise WLC emissions from new developments. This includes a number of City Plan policies, including proposed policies to require a ‘retrofit first’ approach that would prioritise the retention and retrofit of existing buildings, helping to minimise upfront embodied emissions in particular.

22. As part of the Climate Action Strategy, an embodied carbon action plan is being developed, which will set out a series of actions that the City Corporation can take (including through partnership working) to complement the ‘retrofit first’ approach in the new City Plan.

## Corporate & Strategic Implications

23. **Strategic implications-** The monitoring data and analysis support the delivery of the following outcomes in the Corporate Plan:

- Outcome 5: Businesses are trusted and socially and environmentally responsible
- Outcome 11: We have clean air, land and water and a thriving and sustainable natural environment
- Outcome 12: Our spaces are secure, resilient and well-maintained.

24. **Financial implications-** There are no financial implications arising from this report.

25. **Resource implication-** Provision of monitoring data and analysis will be through existing Environment Department staff resources.

26. **Equalities implications-** The monitoring analysis is available in an accessible format, in line with the requirements for publication of Corporation documents.
27. **Climate implications-** Monitoring data and analysis will contribute towards meeting the objectives of the Climate Action Strategy and ensure that the whole life-cycle carbon impact through development is understood and can be addressed as relevant applications come forward.
28. The data covered in this report show that the developments included could result in a whole life-cycle carbon impact of approx. 1,576 ktCO<sub>2</sub>e over a 60 year reference period. This is a substantial quantity of carbon emissions, and includes both upfront emissions (ie 'embodied' carbon) as well as operational emissions. As most upfront emissions in the manufacturing of construction materials are not produced within the Square Mile, these are not included in the methodology for the calculation of net zero targets and monitoring that is set out in the Climate Action Strategy. (The City Corporation follows the approach set out by the Carbon Trust in 2022, which suggests cities set and pursue a 1.5 degree aligned target for all the emissions sources covered within the BASIC+ methodology issued by the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC)).
29. **Legal implications** -There are no legal implications arising from this report.
30. **Risk implications** - There are no additional new risks arising from this report.
31. **Security implications** - There are no security implications arising from this report.

## Conclusion

32. Data from major applications approved by the City of London Corporation between January 2021 and March 2023 shows that these schemes could result in a whole life-cycle carbon impact of approx. 1,576 ktCO<sub>2</sub>e over a 60 year reference period.
33. Around 58 per cent of applications monitored have met BREEAM 'outstanding' (with the remainder meeting the 'excellent' standard).
34. New build schemes tend to have higher upfront emissions and lower operational emissions (per square metre); the opposite is the case for refurbishment and extension schemes.
35. Further steps are being taken to reduce WLC carbon emission from development, including the introduction of a 'retrofit first' policy in the City Plan and the development of an embodied carbon action plan as part of the Climate Action Strategy.



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