Selkirk House, 1 Museum Street

Planning Submission Ref: 2021/2954/P

The Carbon Case for Retention and Retrofit

on behalf of

Save Museum Street
Climate Emergency Camden

Autumn 2021

Save Museum Street is a cross community coalition of the following amenity and community organisations

The Bloomsbury Association
The Covent Garden Community Association
The Covent Garden Area Trust
The Seven Dials Trust
Save Bloomsbury
The Soho Society
Leicester Square Association
South Bloomsbury Tenants' and Residents' Association
Dudley Court Tenants' Association
Tavistock Chambers Residents' Association
Grape Street Residents
Drury Lane Residents
Willoughby Residents' Association
Climate Emergency Camden

This Report is prepared by Targeting Zero LLP

Contents:

1. Report Summary:

1.1. This report examines the Whole Life Carbon impacts of the proposed demolition of the existing Selkirk House, 1 Museum Street, and its replacement with a new and significantly larger tower development.

1.2. The report makes the case that the proposed demolition is, in carbon terms, against UK National Policy, GLA Policy and intentions, and Camden's declared climate and ecological emergency and its resulting policies and intentions. The UK has legislated to drive down carbon emissions from all sources, as is evidenced by the Committee on Climate Change's 6th Carbon Budget which proposes to reduce UK carbon emissions by 78% by 2035 and 100% by 2050. This requires significant and fundamental changes to the UK economy, and in particular the built environment industry which is responsible for a significant percentage of UK emissions. In no sense does this mean 'business as usual'. This must be reflected in the approach to development at all levels which is why the new GLA London Plan Policy SI2 guidance prioritises Retrofit over New Build and promotes the Circular Economy Policy SI7. This planning submission for the demolition and replacement of 1 Museum Street is in fundamental opposition to UK National policy, GLA and Camden's own Policy intentions.

1.3. As shown in Section 4 below, the London Borough of Camden has through its Climate and Ecological Emergency Declaration plus a range of policy declarations demonstrated the political will to tackle the climate emergency, and to specifically prioritise retrofit over new build.

- Local Plan Item 8.3 (See para 4.2 below)
- Policy CC1 (See para 4.3 below)
- Climate Action Plan (See para 4.4 below)
- Camden Planning Guidance – Energy Efficiency and Adaptation (See para 4.5 below)

All these policy declarations make it plain that Retrofit should be prioritised over new build and give Camden the policy support to reject the demolition and replacement of 1 Museum Street.

1.4. The potential carbon cost of the new build proposal over a retrofit of the existing building is significant, avoidable, and unnecessary. A Consent for the demolition and replacement of Selkirk House, 1 Museum Street will in effect be an approval to emit approx. 64,000TCO2e of unnecessary carbon emissions over the next 60 years, plus generate a significant amount of

unnecessary waste. This is in direct opposition to Camden's Climate emergency declaration and associated carbon policies.

Proposed anodised aluminium facade

Bauxite mine for producing virgin aluminium. Mining like this produces significant carbon emissions. See Section 6.1.7 below

1.5. The current proposals include a Whole Life Carbon assessment in accordance with GLA requirements for referable schemes. This assessment contains a number of errors as outlined in Section 6. This gives an incorrect impression of the carbon impacts of the proposed scheme. Any update to the figures shown in Section 6 should be third party verified for accuracy.

1.6. The submission also includes a review of the reuse potential of the existing Selkirk House. This however appears to be designed to specifically rule out retrofit as an option so as to ensure the proposed demolition and redevelopment, rather than to positively examine options for repurposing and retrofit. The London Borough of Camden should require a positive, forward looking architectural proposal and whole life carbon assessment to be produced showing how the existing Selkirk House, 1 Museum Street, can be reused, repurposed, and retrofitted with an open mind on use types to achieve a viable retrofit option with improved public realm. The central premise should be to retain most of the existing structure and add to or adapt this creatively. This may not produce the level of profit that the submitted proposal will produce, but it will be produced at far less environmental cost.

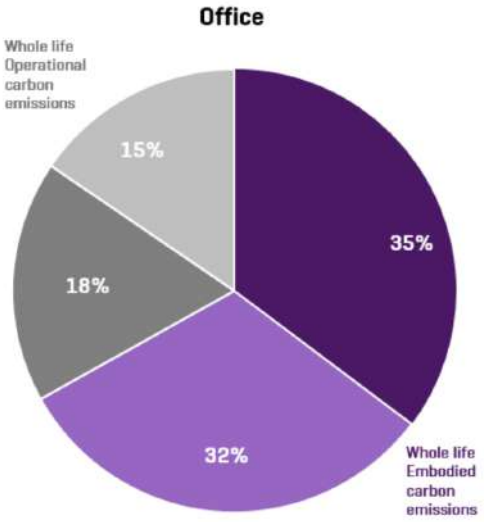
2. UK Political Context

2.1. The UK national political context is to achieve a 'Net Zero' carbon economy by 2050. This was passed by parliament in 2019 as a legally binding amendment to the Climate Change Act of 2008. This commitment was further updated in April 2021 by creating an interim commitment of achieving 78% carbon reductions by 2035.

2.2. The built environment sector is generally held to be responsible for some 40% (*World Green Building Council*) of global CO_2 and other Greenhouse Gas (GHG's) emissions and therefore there is particular pressure on the built environment to significantly and rapidly reduce carbon emissions. To achieve 78% of reductions by 2035 means that schemes under consideration today already need to be making significant reductions in their overall whole life carbon footprint. The RIBA's 2030 Climate Challenge sets out interim targets for this. Avoiding demolition, and encouraging retrofitting is however a priority.

2.3. The carbon emissions covered by the Government's 2019 and 2021 commitments are all carbon emissions, both in-use 'operational' (day to day), energy use, as well as the 'embodied' carbon emissions from the sourcing of materials and products, fabrication, transport, construction and the in-use emissions due to maintenance, repair and replacement of components, as well as final demolition and disposal. What is known as 'Whole Life Carbon' assessment brings together embodied (material related) and operational (day to day energy use) emissions over the entire life cycle of the building.

2.4. Under the UN's Greenhouse Gas Protocol 'operational' ie energy use emissions are covered under Scope 1 emissions ('*direct emissions' as in the use of petrol)* and Scope 2 emissions ('*energy indirect' as in bought electricity*) with 'embodied' emissions covered under Scope 3 emissions (*purchased goods and services, which includes construction*). 'Embodied' carbon emissions (Scope 3) include the carbon emissions from the sourcing of materials, the fabrication into products and systems, the installation and construction processes, and then after completion, the maintenance, repair, and replacement of components, and finally emissions from demolition and disposal. The UK Government's objectives are to reduce Scopes 1, 2 and 3 emissions as far as possible through positive action before the inclusion of offsetting to achieve 'net zero'.



Speculative office building with Cat A fit out; central London

This diagram shows the relationship between embodied and operational emissions for a typical new office building over 60 years.

Dark Purple – Embodied emissions from Construction
Light Purple – Embodied emissions in use
Dark Grey – Operational Emissions – Regulated: Heating/lighting/cooling
Light Grey – Operational Emissions – Unregulated: Small power

Extract from RICS Professional Statement – Whole Life Carbon Assessment for the Built Environment – 2017, page 3. Diagram assumes grid decarbonisation.

2.5. In December 2020 the Committee on Climate Change (CCC) published the 6th Carbon Budget which requires a 68% reduction in all carbon emissions compared to 1990 by 2030, 78% reduction by 2035, and 100% reduction by 2050.

2.6. HM Government has backed up its intentions with the following guidance, 'The Construction Playbook', published in December 2020 which says that it's use will create the right environment to:

2.6.1. *"Take strides towards our 2050 net zero commitment and focus on a whole life carbon approach to fight climate change and deliver greener facilities designed for the future".*

2.6.2. And that: *"contracting authorities should adopt the use of whole life carbon assessments to understand and minimise the GHG emissions footprint of projects and programmes throughout their lifecycle."*

2.7. Many Local Authorities, including Camden, have declared a Climate Emergency with some now actively pursuing low/zero 'whole life carbon' policies. For example, the Greater London Authority is, in the new London Plan, requiring all referable schemes to undertake a full 'whole life carbon' (i.e., operational and embodied emissions over the buildings entire life cycle) assessment at planning submission, and with an 'as built' update post completion.

2.8. In June 2021, the CCC published their Joint Recommendations Report to Parliament which calls for: "*Setting out a plan for phasing in mandatory whole-life reporting followed by minimum whole-life standards for all buildings, roads and infrastructure by 2025*".

3. The GLA London Plan:

3.1. The GLA's London Plan Policy SI2, Minimising Greenhouse Gas Emissions, detailed planning guidance states in Item 3.3, Table 2: *"Before embarking on the design of a new structure or building, the retrofit or reuse of any existing built structures, in part or as a whole, should be a priority consideration as this is typically the lowest carbon option. Significant retention and reuse of structures also reduces construction costs and can contribute to a smoother planning process.*" This recognizes that the best way to reduce carbon emissions in the built environment is to retrofit rather than to build new.

3.2. In the submission DAS, the architects/engineers have undertaken a basic review of the existing structure from a reuse perspective, however there is no indication that this has been done as '*a priority consideration'* (see above) or that reuse was developed in sufficient detail to explore how the existing Selkirk House could be adapted, extended or remodelled, or how the lower floors and car park could be creatively reimagined and repurposed for different uses and as public space, including improving the street frontage. The intention of the submission's reuse review appears to be to specifically rule out retrofit as an option so as to ensure the proposed demolition and redevelopment, rather than to positively examine options for repurposing and retrofit.

3.3. The existing Selkirk House is a substantial and robust structure that in the context of the climate crisis should not be seen as beyond economic reuse. The existing building/structure should be comprehensively explored as to how it can be reused and remodelled. The West End of London has some of the highest real estate values on the planet, it must therefore be possible to find an environmentally effective solution to this site that is also economically viable. This may not produce the maximum profit that the demolition/new build might produce, but it will be more appropriate in respect of UK, GLA and Camden policies.

The existing Selkirk House, 1 Museum Street. A robust and substantial structure capable of beneficial reuse and repurposing, thus avoiding the demolition that would contribute to the climate crisis.

3.4. GLA London Plan Policy SI7 Reducing Waste and the Circular Economy has at its core, 'reuse' and 'waste reduction'. The demolition of Selkirk House avoids reuse and produces significant waste to be transported (with associated CO_2e emissions) from the site and is therefore entirely at odds with Policy SI7.

4. London Borough of Camden Carbon Policies:

4.1. In 2019, Camden declared a climate and ecological emergency and held the UK's first Citizens' Assembly on the Climate crisis. This democratic exercise agreed the requirement that: *"Developers to fund energy efficient retrofits of old buildings"* supported by 86% of the Assembly. Whilst this is not a direct instruction for schemes of this type, it does demonstrate a clear democratic support for retrofit.

4.2. **Camden Local Plan 2017** States:

4.2.1. Item 8.3: *"Any new development in Camden has the potential to increase carbon dioxide emissions in the borough. If we are to achieve local, and support national, carbon dioxide reduction targets, it is crucial that planning policy limits carbon dioxide emissions from new development wherever possible and supports sensitive energy efficiency improvements to existing buildings*."

4.3. **Camden Policy CC1 Climate Change Mitigation** states, we will:

- *"support and encourage sensitive energy efficiency improvements to existing buildings"*
- *"require all proposals that involve substantial demolition to demonstrate that it is not possible to retain and improve the existing building"* As noted above this has not been demonstrated.
- *"expect all developments to optimise resource efficiency"* This is not the case with this proposal as demolition and rebuild clearly does not *"optimise resource efficiency".* Quite the reverse, as for this site, the demolition proposal maximises waste, and the new build absorbs significant new resources.

4.4. **Camden's Climate Action Plan** States:

4.4.1. "*In 2020, deliver a Retrofit Summit for residents, businesses and community groups to develop our understanding of the retrofit challenge*". This demonstrates the seriousness with which Camden is taking Retrofit as a standard approach.

4.4.2. *"By 2021, introduce a new requirement for all future Community Investment Programme development to include a lifecycle carbon impact assessment (retrofit versus new-build) as part of the pre-feasibility appraisal."* If this is a requirement for 'Community Investment Programme development', surely the same should apply to external developers. This should be specifically required for this site.

4.5. **Camden Planning Guidance – Energy Efficiency and Adaptation Jan 2021:** Under 'Reuse and Optimising resource Efficiency' the 'Key Messages' include:

4.5.1. *"We will expect creative and innovative solutions to repurposing existing buildings, and avoiding demolition"*. This has not been demonstrated.

4.5.2. "All development should seek to optimise resource efficiency and use circular economy principles". This has not been demonstrated.

4.5.3. Item 9.1 states: *"Retaining the resource value embedded in structures is one of the most significant actions you can take to reduce waste and material consumption"* (Green Construction Board, Top Tips for Embedding Circular Economy Principles in the Construction Industry). This has not been acted on.

4.5.4. Item 9.3 states: *"Reusing buildings helps developers and the wider community to understand the environmental, social, and heritage value of a site. Benefits of retaining and refurbishing buildings:*

• Reduces the requirement for virgin materials and therefore reduces its embodied carbon impact;

• keeps products and materials at their highest value for as long as possible;

• maintains heritage value;

• minimises demolition waste;"

4.5.5. Item 9.4 states: *"In assessing the opportunities for retention and refurbishment developers should assess the condition of the existing building and explore future potential of the site. The New London Plan highlights the importance of retaining the value of existing buildings with the least preferable development option of recycling through demolition".*

4.5.6. Item 9.6 states: *"All options should achieve maximum possible reductions for carbon dioxide emissions and include adaptation measures, in accordance with the Council's Development Plan and this CPG.*

- *Refit*
- *Refurbish*
- *Substantial refurbishment and extension*
- *Reclaim and recycle"*

4.5.7. Item 9.6 also includes:

- Refurbish: *Refurbishment should seek to significantly improve the service life of the existing building. This option provides an opportunity to retrofit the building to reduce carbon emissions and include sustainable adaptation measures*."
- Substantial Refurbishment and Extension: *"This option is similar to the above, but takes into consideration the need to optimise site capacity and alter the existing structure to meet future needs. This may involve significant changes to the façade (façade replacement) but should seek to retain as much of the existing building as possible reducing the need to use new materials and reduce the loss of embodied carbon in the existing structure."* As noted above this has not been positively explored.

4.5.8. Item 9.7 states: *"This approach is justified through Local Plan policy CC1 which requires all proposals that involve substantial demolition to demonstrate that it is not possible to retain and improve the existing building."* Not demonstrated.

4.5.9. Item 9.8 states: *"It is important to connect all development options to resource efficiency and circular economy principles, outlined in Local Plan policy CC1".*

4.5.10. Item 9.9 states*: "As noted above the construction process and new materials employed in developing buildings are major consumers of resources and can produce large quantities of waste and carbon emissions."*

4.5.11. Item 9.10 states: *"Reducing embodied carbon impacts can result in other additional benefits including: less waste to landfill from efficient construction methods, or improved air quality benefits from reduced transportation and lower costs of development, operation, and maintenance."* This all applies positively to the Retrofit approach.

4.6. Design Review Panel 22nd November 2019:

4.6.1. The Summary, first paragraph, states: *"At a strategic level, the panel asks for justification as to why little of the existing buildings are retained – and highlights the 'carbon cost' of removing one concrete frame and replacing it with another."*

4.6.2. This comment is repeated under the Sustainability section, but as noted above has not been comprehensively and positively explored.

5. The Project Team

5.1. **The Client: LabTech:** LabTech state on their website the following:

- *"LabTech is committed to……creating a sustainable environment…"*
- *"LabTech is committed to reducing the potential environmental impact and is working continually to improving environmental performance which is an integral part of the business strategy and operation model. We encourage our suppliers, customers and all stakeholders to strive towards our ambitions."*
- *"We recognise our responsibility and operate our business model in a way that protects and improves the local environment for future generations."*

5.1.1. Improving the built environment is important, but how do these commitments align with the carbon cost of new build over retrofit, and the embodied, operational, and waste carbon costs associated with this strategy? (See section 6 below).

5.1.2. International Investment organisations such as the TCFD, PRI and the Bank of England are all prioritising the requirement that 'Climate Risk' should be included within any investment strategy. Investments that are not 'climate clean' will be seen as high risk investments. Buildings or Projects that are climate clean with therefore have the advantage in value terms over those that are not. Occupiers will start to shy away from

buildings that are not climate clean. Climate related obsolescence will become a significant investment concern. The demolition and new build epitomise these concerns.

5.2. **The Architect: DSDHA:** DSDHA are signatories to 'Architects Declare' which recognises that architects need to change how they design to meet the Climate Emergency. Three of the eleven commitments are:

- ***"****Evaluate all new projects against the aspiration to contribute positively to mitigating climate breakdown, and encourage our clients to adopt this approach"*
- "*Upgrade existing buildings for extended use as a more carbon efficient alternative to demolition and new build whenever there is a viable choice."*
- *"Minimise wasteful use of resources in architecture and urban planning, both in quantum and in detail."*

5.2.1. The questions for DSDHA are, have they really understood these commitments? How has this changed their approach for this project?

5.2.2. DSDHA have, with their scheme for the Economist Plaza, demonstrated that they are fully able to retrofit buildings of a similar type and vintage to Selkirk House. As Selkirk House is not Listed, surely there is the opportunity to demonstrate a creative reuse of the existing building that would be compatible with the GLA's and Camden's Policies on prioritising Retrofit, and their own commitments to Architects Declare.

6. The Submission Documents:

6.1. DAS 2.11 Demolition: Justification for Rebuild Approach: The submission states the following:

6.1.1. *"Adaptation of the existing structure to new use was the first choice approach for the site at the onset of scheme development and a series of feasibility studies were undertaken both by DSDHA and a previous architect developing the site. These studies were led by hotel use for typical floors in combination with commercial floors at lower levels".* This is a restricted scope for examining retrofit.

6.1.2. The studies included in the submission do not demonstrate that the building is as is stated in the submission *'impossible to reuse'* and has a *'highly impractical to reuse structure'*.

6.1.3. The submission states*: "These studies were led by hotel use for typical floors in combination with commercial floors at lower levels".* In other words a limited approach to reuse was adopted. Potential residential use is mentioned but dismissed without any evidence of a comprehensive or creative approach to this use type.

6.1.4. As has been noted above the objective of these studies appears to demonstrate that the building can't be reused so as to ensure maximum demolition rather than adopting a creative approach to reusing and adapting the building with alternative use types (including office use).

6.1.5. The submission claims that '95%' of demolition waste will be reused/recycled. There is a difference as 'recycled' for example means that waste rubble diverted to motorway hardcore is technically 'recycled' but it is at the lowest level and therefore this is not a claim with any real substance, and not 'reused' in the same way as a steel beam can be directly 'reused'.

6.1.6. The new façade for 1 Museum Street is shown as being in 'Light/dark anodized aluminium" with double glazed units. The double-glazed units have a life expectancy of some 30-40 years, and when these are replaced, it is very probable that the entire aluminium system will need also to be replaced. Anodizing can have a longer life than the D/G units, but it depends on the specification and quality.

6.1.7. Anodizing as a coating for an aluminium façade means that to achieve a uniform colour you need to use 100% virgin aluminium rather than using recycled aluminium which tends to give colour variations to the substrate. This means that the carbon cost of such a façade is at its highest and typically cannot be mitigated using recycled content. Has this been reflected in the GLA WLC assessment figures?

6.1.8. For a building of this size and bearing in mind the substantial resources necessary to build it, you would expect it to have a significant life expectancy, in excess of 100 years (as opposed to the 60 year assessment life). As the façade design is unlikely to last more than 30-40 years, this means that over the course of a century the façade, like for like, will have to be replaced 2- 3 times. Is this a sensible architectural approach, and an appropriate environmental legacy for the future?

6.2. **Whole Life Carbon (WLC) Assessment in accordance with GLA requirements** for the new 1 Museum Street Tower building. There are a number of errors in the assessment that have the effect of underestimating the actual embodied carbon cost of the new build proposal. The following comments relate to the submitted GLA reporting matrix:

6.2.1. Product Life – there is a fundamental misunderstanding as it seems that 'material life' is being used as 'product life'. For example, glazing is shown as having a 'product life' of '150 years' which may be true of a single sheet of glass but is not credible with double glazed or laminated glazed units where the warranty period would typically be 20-25 years with the life expectancy of about 30-40 years. If the '150 year' product life figure is being used to identify the glazing replacement cycle rather than a more realistic 30-40 years then the whole life carbon assessment will be much lower for modules B1-B5 than it should be.

6.2.2. A figure of 73kg for 'glazing' is provided. Does this include sealant, aluminium spacers and gaskets? It is not clear, and if these have been omitted then the carbon figure could be low. The aluminium for the glazing system is listed separately so it suggests this is an elemental calculation and not based on an Environmental Product Declaration

(EPD) for an assumed system. The level of detail of this application suggests that a glazing system EPD could have been used. If omissions have been made this will have the effect of reducing the total figures shown in the assessment.

6.2.3. For the 'glazing' The 'estimated recyclable materials' shown is also '73kg', which suggests 100% recyclability. This is unrealistic as studies show (Cambridge University PhD – see Appendix) that around the perimeter of a double-glazed unit the sealant cannot be easily removed which results in a less than 100% recovery of the glass. The same is true of laminated glass which is also difficult to recover. There are also the carbon emissions from the recycling process to factor in. The assumption of a 100% credit will inflate the Module D benefit.

6.2.4. The same comment can be made about the other materials/products listed many of which have similar problems leading to an overall inflated Module D benefit.

6.2.5. As is made clear in the RICS Professional Statement on Whole Life carbon, Module D must be assessed and reported separately. It should therefore not be added to Modules A-C to help reduce the A-C figure. This will have the effect of incorrectly reducing the overall reported figure.

6.2.6. '101 kg' of bricks are shown as 'Estimated Reusable Material'. This would only be possible if the mortar was removable, as in lime mortar rather than cement mortar. Which assumption for mortar has been made, as this makes a difference?

6.2.7. The total carbon cost for all external walls and windows for modules A1-A5 amounts to 4,162,119 kgCO2e. The Total replacement for all walls and windows over 60 years (B1-B5) amounts to 1,165,894 kgCO2e. This suggests that over the service life of the scheme (assumed at 60 years) only some 28% will be replaced. This is not credible. The tower building represents 74% of the proposed floor area and is clad in anodized aluminium panels with double glazed units. These have a life expectancy of some 30-50 years which means the entire cladding has a very high probability of total replacement well before the end of the 60 year period. If you add in the other cladding elements (specifically windows) that will also need replacing, then the 1,165,894 kgCO2e figure is a significant under estimate. This will have the effect of reducing the total figures shown in the assessment.

6.2.8. 'Substructure' for B1 has a figure of -7528kgCO2e. How does this come about? A sequestration benefit for this seems unlikely.

6.2.9. 'Superstructure: Internal Walls and Partitions' have module A figures but nothing for module B. This does not seem realistic over 60 years and is a potential omission leading to a reduced total 'in use' carbon cost module B figure.

6.2.10. 'Services MEP' This shows a B1 figure of '-1731 kgCO2e'. How does this come about? What allowance has been made for refrigerant leakage? A sequestration benefit seems unlikely.

6.2.11. Modules B3 and C1 of the WLC assessment have not been included, why is this?

6.3. **LETI:** The submission makes the claim that the new 1 Museum Street is registered as a LETI 'Pioneer Project'.

6.3.1. In the LETI 'Climate Emergency Design Guide' the first 'Primary Action' is to *'Build Less'* and asks, *"Is a new building necessary"*?

6.3.2. In the LETI Embodied Carbon Primer it states under 'Low carbon strategy and procurement priorities' the following:

- *"Less is more. Reducing overall building size and material quantities and complexity in form will generally reduce the overall embodied carbon."*
- *"Making use of the site and retrofitting existing buildings rather than building anew."*

6.3.3. Even if the proposed scheme were to meet LETI new build targets (not demonstrated) it has ignored the basic LETI position to prioritise retrofit over new build.

6.3.4. Registering as a 'Pioneer Project' does not of itself demonstrate a sustainable or low carbon project.

6.4. **Carbon Cost Comparison of Retrofit of against New Build** (Please note that these figures are based on the submissions DAS and GLA assessment and are indicative only)**:**

6.4.1. The GIA figures in the submission given for the existing building are: 10804m2 for the Hotel and 8037m2 for the Car Park. Assuming a retrofit cost of 400kgCO2e/m2 for the Hotel floors (assuming change of use to office/residential and including a new façade) and an enhanced figure for the Car Park of 500kgCO2e/m2 (change of use to retail/market/gym/London Dungeon type use and including some opening up for public realm benefits). This would give a total carbon WLC cost of approximately **8,340 TCO2e**.

6.4.2. The GIA figures in the submission for the new build for 1 Museum Street are 22287m2 for office E1 use. Using the total embodied carbon cost figure as per the submissions GLA assessment means that the Tower accounts for some 1000kgCO2e/m2 (note comments in Section 6.2 above about omissions). This equates to some **22,290 TCO2e** as a total WLC carbon cost.

6.4.3. Therefore, the additional life time embodied carbon costs of new build over retrofit for 1 Museum Street equates to approximately **14,000 TCO2e.** In addition to this are the regular embodied carbon costs of façade replacements at 30-40 year intervals which do not appear to have been fully included.

6.4.4. This significant embodied carbon impact would take some **238,000 trees 10 years to absorb**.

6.4.5. In addition, the operational carbon costs of 76,000 TCO2e (59,000TCO2e with grid decarbonisation) appear substantially down to air conditioning/servicing of the office tower. A residential retrofit or a naturally ventilated office retrofit would require nothing like this level of load, due to significantly reduced servicing requirements. It would not be unreasonable to assume a 2/3 saving for a retrofit approach. This amounts to a saving of some **50,000TCO2e** (40,000TCO2e) for the retrofit route.

6.4.6. All together therefore the additional combined embodied and operational carbon emissions costs of building the new proposal over a retrofit approach could amount to some **64,000TCO2e** (54,000TCO2e with grid decarbonisation).

6.4.7. This vast carbon impact would take some **1,088,000 trees 10 years to absorb**.

7. References:

- Application Documents
- Camden Planning Guidance – Energy Efficiency and Adaptation Jan 2021.
- Camden Local Plan 2017.
- Camden Climate Action Plan 2020-2025
- Camden approves ambitious five year Climate Action Plan 11 June 2020.
- London Borough of Camden's Carbon Footprint update for 2019/20
- Camden Citizen's Assembly on the Climate Crisis Sept 2019
- GLA London Plan – Whole Life Carbon Guidance for Policy SI2
- GLA London Plan – Circular Economy Guidance for Policy SI7
- CCC 2021 Report to Parliament
- CCC 6th Carbon Budget December 2020.

- RICS Professional Statement – Whole Life Carbon Assessment for the Built Environment 2017
- ‘End of Life Challenges in Façade Design’ – Rebecca Hartwell
- LETI Climate Emergency Design Guide.
- LETI Embodied Carbon Primer

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