

Haringey Civic Centre

Accessibility Statement

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Revision P02

Haringey Civic Centre

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P01	Issued for Information – Accessibility Statement	JS	13.03.23	MB
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date 28.04.23

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1 Accessibility

1.1 Executive Summary

Buro Happold (Inclusive Design) have been appointed to provide inclusive design consultancy services on the full refurbishment and extension of the Haringey Civic Offices, which is primarily office space with some community interfaces.

The following report sets out the parameters for on-going design development of the Haringey Civic Offices. These parameters set out the following approach to inclusive design – that creating inclusive and accessible facilities starts with the simple premise that inclusion is embedded in the design process to remove barriers and continuously challenge and interrogate our design.

As the aspirations of the project are to adopt an inclusive approach rather than the minima set out in the Building Regulations Approved Document M, Part M compliance in itself is not sufficient and good practice guidance such as BS8300-2018 ‘Design of an accessible and inclusive built environment’ was adopted as a baseline measure of suitability.

Creating inclusive and accessible facilities starts with the simple premise that inclusion rather than just accessibility is embedded in the design process to remove barriers and continuously challenge and interrogate the design.

London Borough of Haringey is committed to delivering an inclusive and accessible scheme that not only meets planning obligation and the requirements of the Building Regulations but allows the Council to fulfil their duties under the Equality Act 2010.

At a minimum, the design of the building should be welcoming to the wider community and accommodate those who have specific requirements. The building and its immediate surroundings should enable people to be able to make effective, independent choices about how they use the building without experiencing undue effort or separation. They must be able to participate equally in the activities that the scheme offers.

Design solutions must also consider not only those barriers that form physical constraints but also barriers experienced by people with learning difficulties, mental ill health issues, people who are deaf, deafened and hard-of-hearing and people who are blind or partially sighted or are neuro-divergent.

No matter how physically accessible a building is, without clear operational policy mechanisms, the accessibility of the building will be compromised and over time, diminish. Therefore, sufficiently robust provision, criterion and practices must be established by the building management and operators including the development of active management plans.

1.1.1 Inclusive Design Standards and Guidance

- BS 8300-1:2018 Design of accessible and inclusive built environment Part 1: External Environment – Code of Practice
- BS 8300-2:2018 Design of accessible and inclusive built environment Part 2: Buildings
- Building Regulation Approved Document K – Protection from falling, collision and impact 2013
- Building Regulation Approved Document M – Access to and use of Buildings Vol 1: Dwellings, 2016
- Building Regulation Approved Document M – Access to and use of Buildings Vol 2: Buildings Other Than Dwellings, 2015
- London Cycling Design Standards, TfL, 2014

1.1.2 The Equality Act (2010)

The Equality Act 2010 provides the legal framework that protects disabled people from discrimination. The Act replaced the Disability Discrimination Acts 1995 and 2005 (DDA) and creates a piece of anti-discrimination legislation across nine ‘protected characteristics’. These are:

- | | |
|----------------------------------|---------------------------|
| • Age | • Pregnancy and maternity |
| • Disability | • Race |
| • Gender reassignment | • Religion or belief |
| • Marriage and civil partnership | • Sex |
| | • Sexual orientation |

A person has a disability if they have a ‘physical or mental impairment’ which has a ‘substantial and long-term effect on their ability to carry out normal day-to-day activities’.

The Act applies to all providers of services, a public authority carrying out their functions, an association in Great Britain and employers. It applies to all services, whether or not a charge is made for them.

The reasonable adjustments duty within the Act imposes a duty on employers, service providers and public functions to make reasonable adjustments to any physical feature that may put a disabled person at a substantial disadvantage compared to non-disabled people. This is not a minimalist policy of simply ensuring that some access is available to disabled people; it is, so far as is reasonably practicable, to approximate the access enjoyed by disabled people to that enjoyed by the rest of the public.

As a public body, with duties owed under the Equality Act 2010 Public Sector Equality Duty, the Council is to adopt an ‘inclusive’ approach rather than the minima set out in Approved Document M, which adopts an ‘access to and use’ approach to design. Part M compliance in itself is not sufficient: Design solutions and delivery are to adopt good practice guidance such as BS 8300-2018 ‘Design of an accessible and inclusive built environment’ as the baseline measure of suitability.

The Equality Act 2010 carries ongoing responsibilities which will continue once the Haringey Civic Centre project is complete.

Meeting the requirements set out in Part K and Part M will be required for Building Control approval. However, the provisions set out in the Approved Document K and M are to be taken as a minimum standard. The adoption of British Standards and other good practice guidance set out below are to take precedence over the provisions set out in the Building Regulations, which is discussed further below.

1.1.3 Building Regulations 2010

This Section provides a brief overview of how the provisions of the Building Regulations will apply to the proposal in the context of accessibility under Part M, as well as the inter-relationship with the Equality Act 2010, which is principally human rights legislation.

The main part of the Building Regulations for accessibility is Part M. The objective of Part M is to allow all people to be able to access and use a building and its facilities.

All relevant Parts of the Building Regulations are set out in a functional format and in respect of Part M1, this states; “Reasonable provision shall be made for people to gain access and use the building and its facilities” – see Figure 2, below.

Requirement	Limits on application
PART M ACCESS TO AND USE OF BUILDINGS	
Access to and use of buildings other than dwellings	
M1. Reasonable provision must be made for people to— (a) gain access to; and (b) use, the building and its facilities.	Requirement M1 does not apply to any part of a building that is used solely to enable the building or any service or fitting in the building to be inspected, repaired or maintained.
Access to extensions to buildings other than dwellings	
M2. Suitable independent access must be provided to the extension where reasonably practicable.	Requirement M2 does not apply where suitable access to the extension is provided through the building that is extended.
Sanitary conveniences in extensions to buildings other than dwellings	
M3. If sanitary conveniences are provided in any building that is to be extended, reasonable provision shall be made within the extension for sanitary conveniences.	Requirement M3 does not apply where there is reasonable provision for sanitary conveniences elsewhere in the building, such that people occupied in, or otherwise having occasion to enter the extension, can gain access to and use those sanitary conveniences.

Figure 1—1 Part M of the Building Regulations

Part M2 also seeks reasonable access to extensions to buildings, where reasonably practicable to do so. In addition, Part M3 seeks reasonable provision for suitable sanitary accommodation in any extended building.

The Regulations themselves are supported by Approved Documents, which if followed would tend to demonstrate compliance with the functional requirement. In this case Approved Document M, would be the lead reference document. However, the Regulations permit other forms of evidence, such as British Standards, to assist in demonstrating compliance.

As noted above, the Equality Act 2010 also plays a part with access, circulation, and facilities, as this legislation carries an ongoing responsibility to building owners, employers, and service providers. In this respect, it applies to discrimination against disabled people in the way Haringey Council operate and manage the completed building, which includes any physical barrier to access.

If it can be demonstrated that the functional requirement noted above in Figure 1.1 can be met, then the arrangements adopted can be considered compliant with the Building Regulations. Section 1.2 below now identifies those key elements and how they will meet good practice guidelines.

1.2 Access Statement

1.2.1 External Environment & Approach

It is important that the external environments of the civic offices meet best practice provision in inclusive design not only to meet the needs of people with disabilities, but also as inclusive design is indivisible from good design and will benefit all the users of the building in terms of providing legible, logical, safe and navigable pedestrian routes externally and spacious and legible spaces internally.

Inclusive Design is the practice of ensuring that a design is convenient and welcoming with no disabling barriers, providing independent access without additional undue effort, separation or special treatment for all users, and is a key consideration for Haringey Council. This statement sets out the design intent with recommendations on how to ensure the most inclusive building for staff and visitors.

Any changes of level within the public realm and the approach to the main entrance will ensure gradients and any changes in level will be as shallow as possible and circulation routes will be clear, logical and free of obstructions. Potential obstacles, such as street furniture and cycle parking, should be located off the primary circulation routes through the public realm and should contrast visually with the background to ensure they are obvious on approach.

By avoiding any level changes this is of benefit to all users, but particularly disabled people. Those with mobility issues will not need to negotiate either a sloped, ramped or stepped approach, whilst those who are blind or partially sighted will be at a significantly lesser risk of slips and trips. Such an arrangement also assists parents with prams and (to a lesser degree) people with luggage. Level access ensures that the main entrance is welcoming for all and promotes inclusion by ensuring everyone can enter the building from the same location.

By removing the ramp at the main entrance allows more straight forward access for all building users, arriving on foot, by public transport or from the accessible car parking spaces. Level access ensures that all building users can access the building easily. The existing ramp does not meet current regulations/ standards and as such would need to be upgraded to meet currents standards, ideally by the provision of a ‘slope’ as defined in 8.1.4 of BS 8300-1:2018. By removing it and improving the external landscaping and omitting the ramp ensures more inclusive straightforward access to the building for all potential users

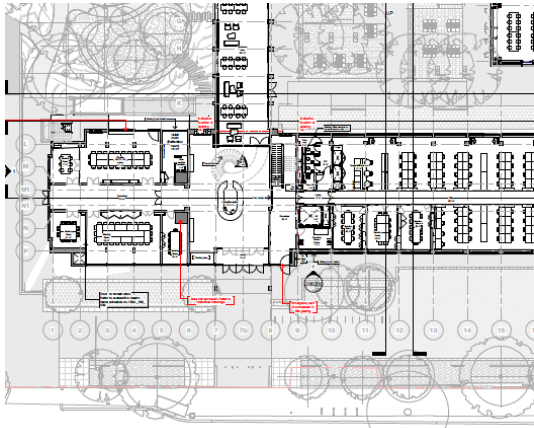


Figure 1- Main Entrance

Access to the site will be predominately by public transport, supplemented with some accessible parking at the main entrance. The accessible parking bays have been designed to provide a clear 1200mm access zone to one side and foot of the bays meeting AD M Vol 2 and BS8300-1. The designated parking spaces for disabled people will be located on a level road surface and not more than 45m from the main entrance.

A seating strategy for the public realm/ external areas is still being developed, however it should take regard of travel distances between buildings and parking /drop off and the changes in level across the site. The distance between accessible seating opportunities should be no greater than 50m. A variety of seating should be available, some with backrests and arms on both sides to provide additional support. Seating areas should also include space alongside for strollers/prams and wheelchair and scooter users.

Potential obstacles, such as street furniture and cycle parking, should be located off the primary circulation routes through the public realm and should contrast visually with the background to ensure they are obvious on approach.

1.2.2 Entrances & Reception Area

By improving the entrance and providing a single point of entry helps to ensure that all building users can identify the route to the main entrance and subsequent reception area.

The location of the reception desk is planned to be centrally located in the main reception foyer and will be easy to locate for people unfamiliar with the building. The surroundings of the reception should be designed to have a plain background to ensure someone with a visual impairment is able to lipread if required.

It should be noted that a Changing Places facility is planned, located near the main entrance lobby. Therefore, to ensure people who require to use this facility, a level entrance approach will ensure they can access the building and facility more easily than having to overcome a ramp, which may not always be suitable for user needs.

1.2.3 Accessibility throughout the building

On Level 2 there is limited access for wheelchair users to the Civic Chamber, partially due to existing internal level changes as well as structural columns, therefore it is proposed that accessible seating will be provided on the lower floor only. Due to the heritage status of this area of the building, the reasonable solution is to provide access to the ground floor for people using wheelchairs.

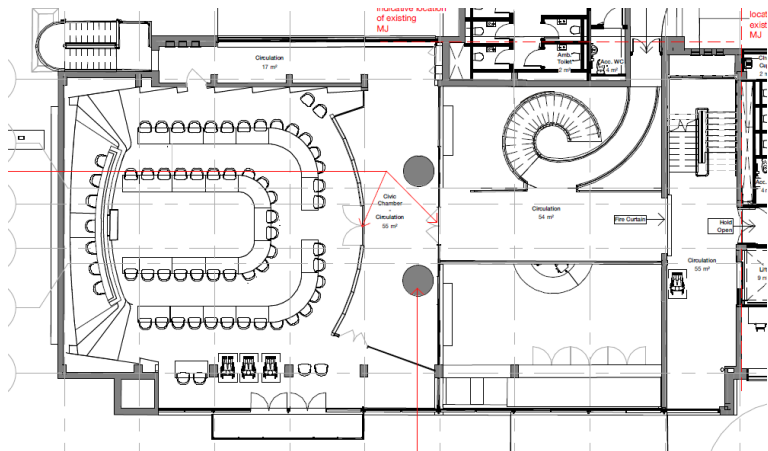


Figure 2- Auditorium

It should be noted that other areas such as the committee rooms on the upper floor will be accessible for wheelchair users, accessed via a passenger lift.

Within the existing building there is a listed spiral staircase, where possible this should be upgraded to ensure its accessible as possible. For people unable to use the stairs a passenger lift is located in close proximity.

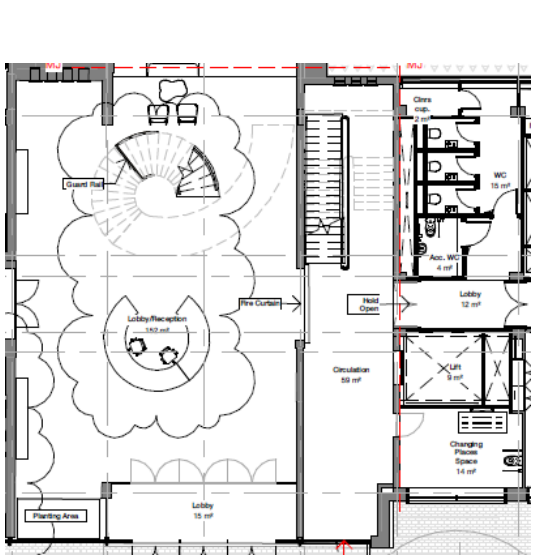


Figure 3 – Existing Spiral Staircase

Within the existing building a platform lift is intended to overcome a small level change. It is recommended that the platform lift be an enclosed platform lift with a minimum size of 1100x1400mm. This lift will allow direct access to the new building, however there are alternative more direct routes from the main entrance if people do not wish to use this lift.

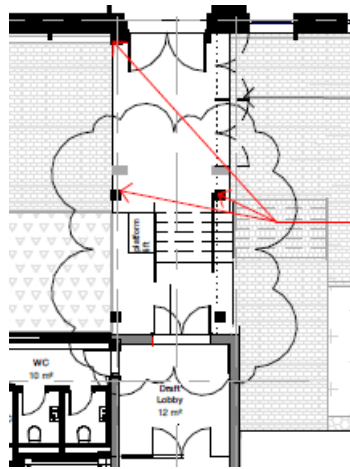


Figure 4- Platform Lift link to Annex

To overcome the level change between the existing building and the annex an internal slope has been designed to allow ease of movement. During stakeholder engagement there was some resistance to this design, however the slope has a gradient of 1:21. To ensure ease of use the surfaces of the slope should be carefully considered to ensure they are slip resistant.

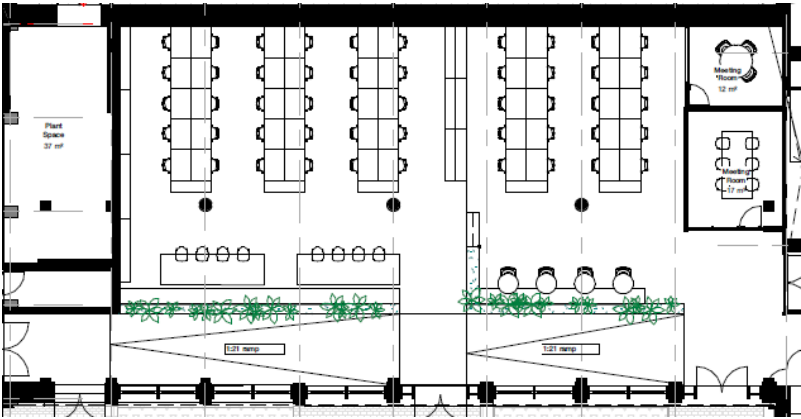


Figure 5 – Level Change from existing to annex

2 Heritage Statement

Heritage Assessment

Montagu Evans has reviewed the history and significance of the front steps, and provided an assessment of the effect of replacing them with a ramp to improve level access to the front entrance.

The front steps are part of the original design of the building and are integrated with the portico and raised beds surrounding the Civic Centre. The front steps form part of the arrival sequence from the street to the main reception, and have been identified as being of high significance.

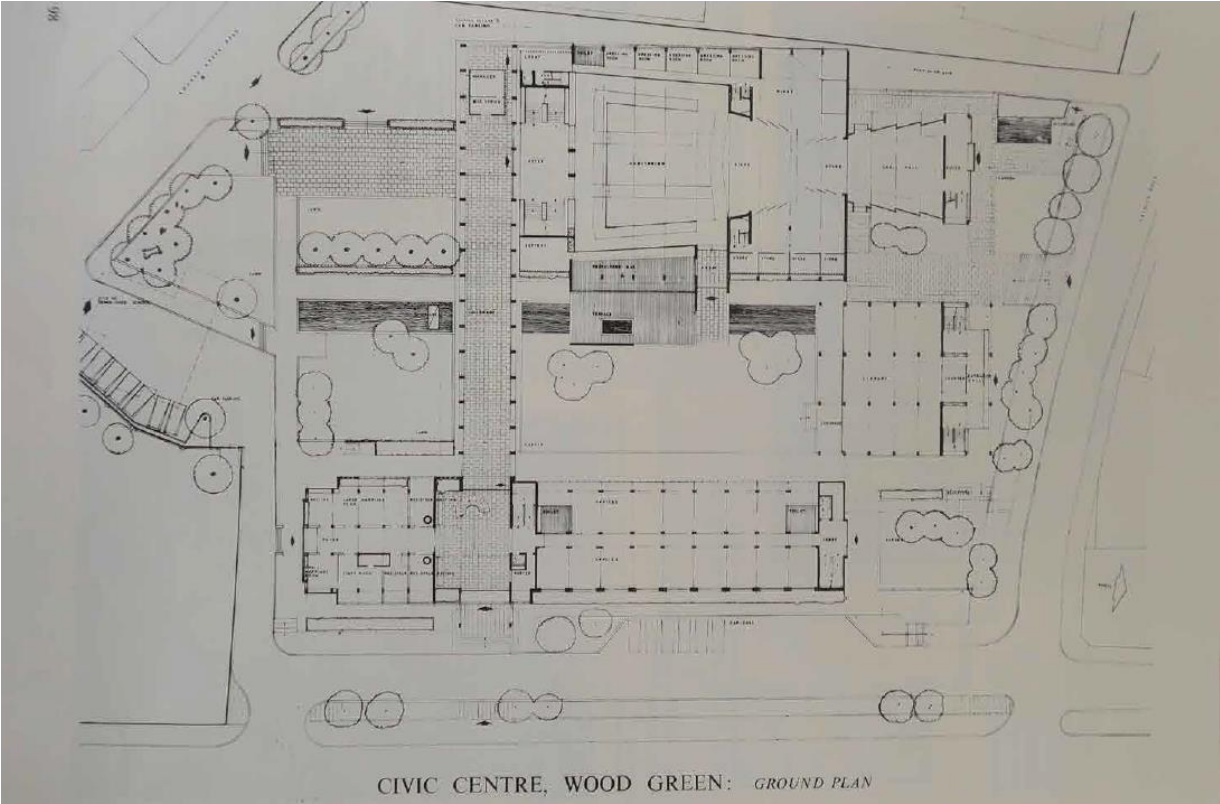


Figure 6 – Original Floor Plan



Figure 7 – Historic Photo



Figure 8 – Historic Photo

In 1987 planning permission was granted for the ramped access to the south of the main entrance (application reference 1987/0673). The description of development was:

"Provision of new ramped access to main entrance, renewal of pavings and provision a handrails to main entrance pavements & northstop".

This indicates that the pavings and handrails to the front steps date from c. 1987 and are not original, but were replaced and added at the same time as the ramped access, which is consistent with their appearance.



Figure 9 – Replacement Handrails



Figure 10 – Replacement Handrails

There was no assessment of the significance of the ramp in the 2019 Heritage Report because the ramp was not surveyed on the drawings. Montagu Evans assessment is that the 1987 ramp detracts from the architectural interest of the listed building because it is of poor design quality, in red brick, which jars with the yellow stock brick of the original phase. The hand rails add visual clutter, both to the southern part of the elevation where the ramp is located and to the front entrance.

The removal of the 1987 ramp and hand rails to the steps would therefore enhance the architectural significance of the listed building, by removing features that detract from and add visual clutter to the front elevation, to reinstate its original clean and open appearance. The removal of the front steps would result in a degree of less than substantial harm to the listed building, given that these were part of the original design and have been identified as being of high significance.

3 Conclusion

Inclusive Design can help everyone experience the world around them in a fair and equal way by creating safe and accessible environments for all members of the community, by removing barriers, so that everyone, regardless of disability, age or gender will be able to use the facilities of the scheme equally, confidently and independently with choice and dignity.

The Haringey Civic Offices are being designed to take into consideration the requirements of best practice guidance where possible, in conjunction with heritage and listed building constraints.

By creating an inclusive internal and external environment, this not only can help to meet the needs of people with disabilities, but as inclusive design is indivisible from good design, it can benefit all users of the built environment to create a sustainable, flexible and fit-for-purpose approach for Haringey Civic Centre.

At this stage for planning initial stakeholder consultations for accessibility and inclusive design have taken place to ensure staff using the building are involved in the process. As part of the continuing detailed design for the Civic Centre further user consultations will take place where relevant in the design process for Haringey Civic Centre design proposals to deliver an inclusive and accessible project with the aim of meeting good practice guidelines.

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10 Carbon Analysis & Sustainability

10.1 Approach to Whole Life Carbon analysis

Whole Life Design

The London Borough of Haringey has committed to deliver a net zero-carbon borough by 2041 with all the Council's operational buildings becoming Net Zero Carbon by 2027.

The Civic Centre and Trinity Building will therefore be an exemplar sustainable project that sets the highest standard for refurbishment and new build within the borough. Both the refurbishment and new extension will be all-electric benefitting from the decarbonising grid, minimise energy demands and maximise on-site renewable with the residual powered through off-site renewables. The design has prioritised low embodied carbon materials, reducing maintenance and running costs while supporting the well-being of the occupants and the enhancement of the building surroundings design, maximising passive design.

The design responds to current and future needs at the macro and micro scales and with care for the context, client, contractors, occupants and community. This means that, while carbon reduction and monitoring is essential, we must also support occupant wellbeing in a range of ways. Where conflicts can occur such as between increasing ventilation rates, and reducing energy use we have sought to identify these early on and include solutions to meet both needs.

Reducing Carbon Emissions

The proposed refurbishment and new building seeks to act as an exemplar case study for how Haringey City Council can eventually achieve Net Zero Carbon. The building aims to achieve Net Zero Carbon by 2027, responding and supporting the City Council's carbon neutral pledge. A thorough set of Sustainability targets (Carbon, Energy, Environmental Assessment & Certification (BREEAM), Social & Health Benefits, MEP Strategy and Site Enhancement) has been developed and tracked alongside the project to ensure there is a golden thread of sustainable design in each decision.

Operational Carbon

The new annex is designed to achieve low levels of energy use. The buildings will be all electric and air source heat pumps for heating, cooling, ventilation, and hot water needs. The concrete frame currently proposed is a key part of this strategy as it provides enough thermal mass to store "coolth" from the night-time and smooth out peaks and troughs in temperature due to sudden changes in occupancy. PV panels will provide a minimum of 20% of the operational energy demands of both buildings.

Following a fabric first approach, the existing building fabric will be improved thermally to enhance the performance of the building.

Embodied Carbon

Embodied carbon has been assessed from an early stage and will continue to be assessed as the project develops. The current structural design has been optimised through the removal of basement, use of Post-tensioned slabs, and a 50% of cement replacement through the use of GGBS has been considered.

The facade is proposed to be predominantly GRC to provide a long life, low maintenance adaptable solution. Larger modules of GRC are being considered to reduce the amount of fixings.

Where energy hungry materials are used, such as the aluminium is proposed to the plant screen, a higher recycled content has been considered to reduce the environmental impact. Interior strategies focus on maximising flexibility, and increasing the potential for biogenic carbon storage in plant based products such as timber where possible.

Net Zero Carbon

The project will meet the London Plan definition of 'Net Zero Carbon' by aligning with the operational requirements. However, the borough have committed to achieving the UKGBC Net Zero Carbon Framework definition of Net Zero Carbon in Operation. This will be achieved by minimising energy demand, and offsetting with both on-site renewables and off-site renewables to be purchased.

In addition, consideration has been given to the requirements to achieve the UKGBC Net Zero Carbon in Construction definition. Embodied carbon has been measured at each design stages, material efficiency measures integrated, specifications considered and offsetting or carbon removal programmes are being explored. If this is taken forwards, a post-completion embodied carbon analysis will be carried out and the upfront carbon of the project offset to achieve the Net Zero balance.

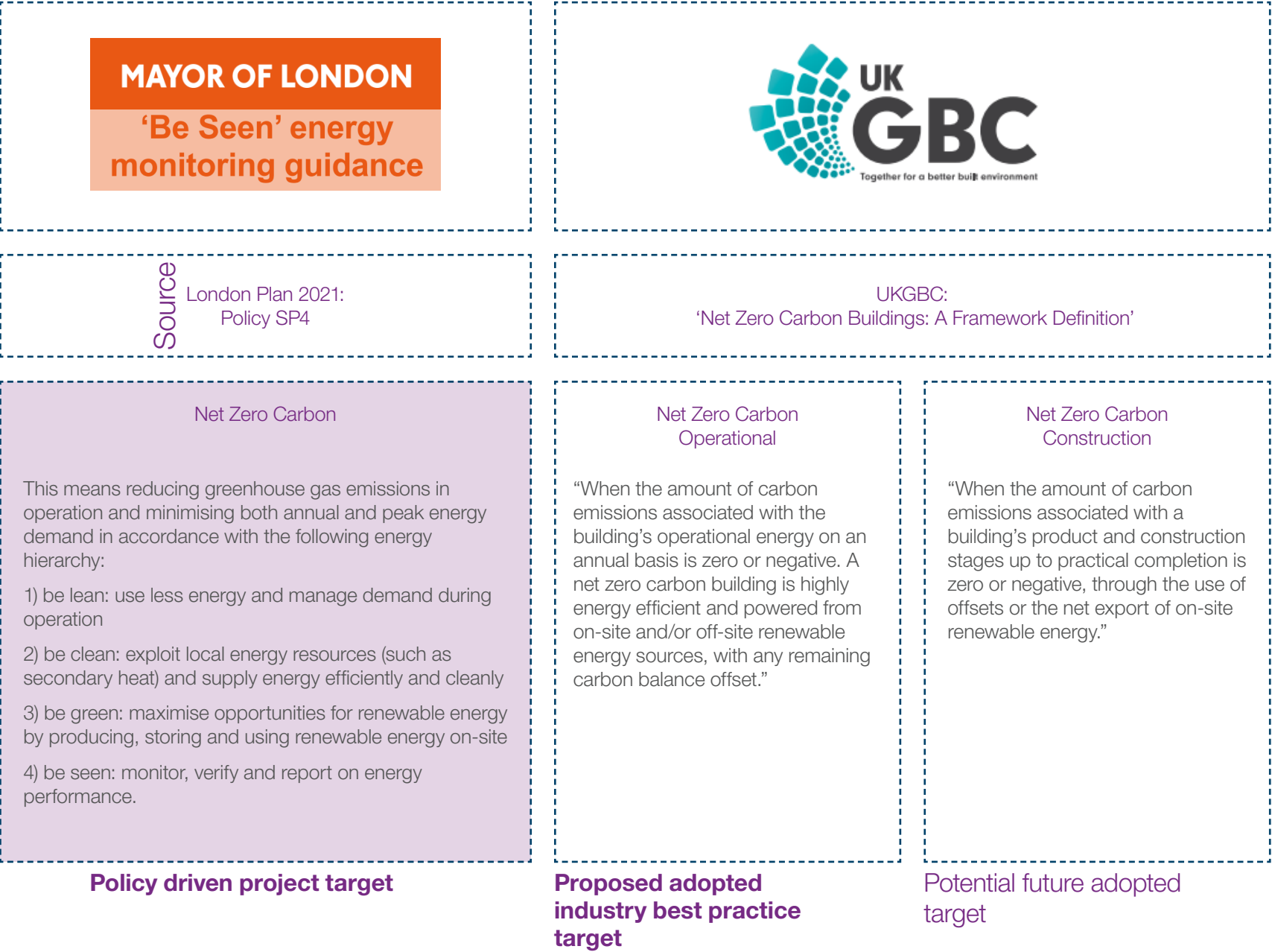
Whole Life Carbon and Net Zero Carbon

Whole Life Carbon can be a measure of good design quality. Following best industry practice the project has followed RICS/RIBA industry standards to measure the Whole Life Carbon analysis covering all life cycle stages (product, construction, use stage and end of life) in line with BS EN 15978:2011.

10 Carbon Analysis & Sustainability

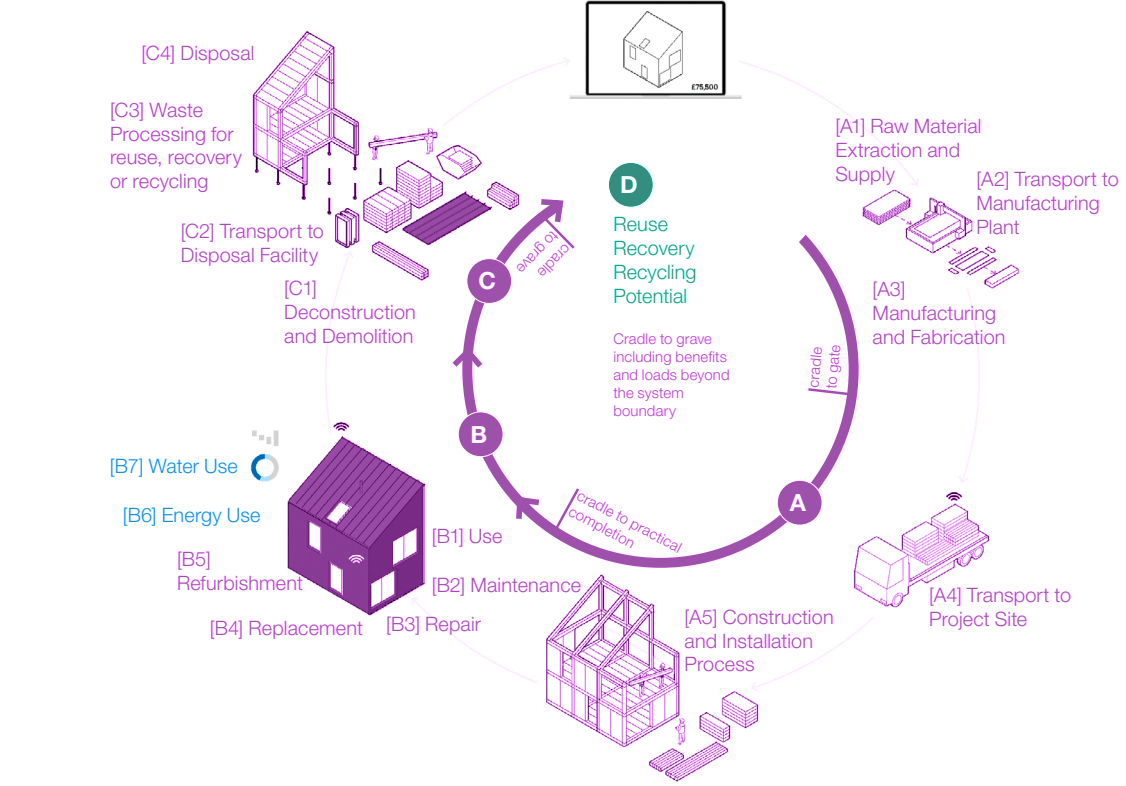
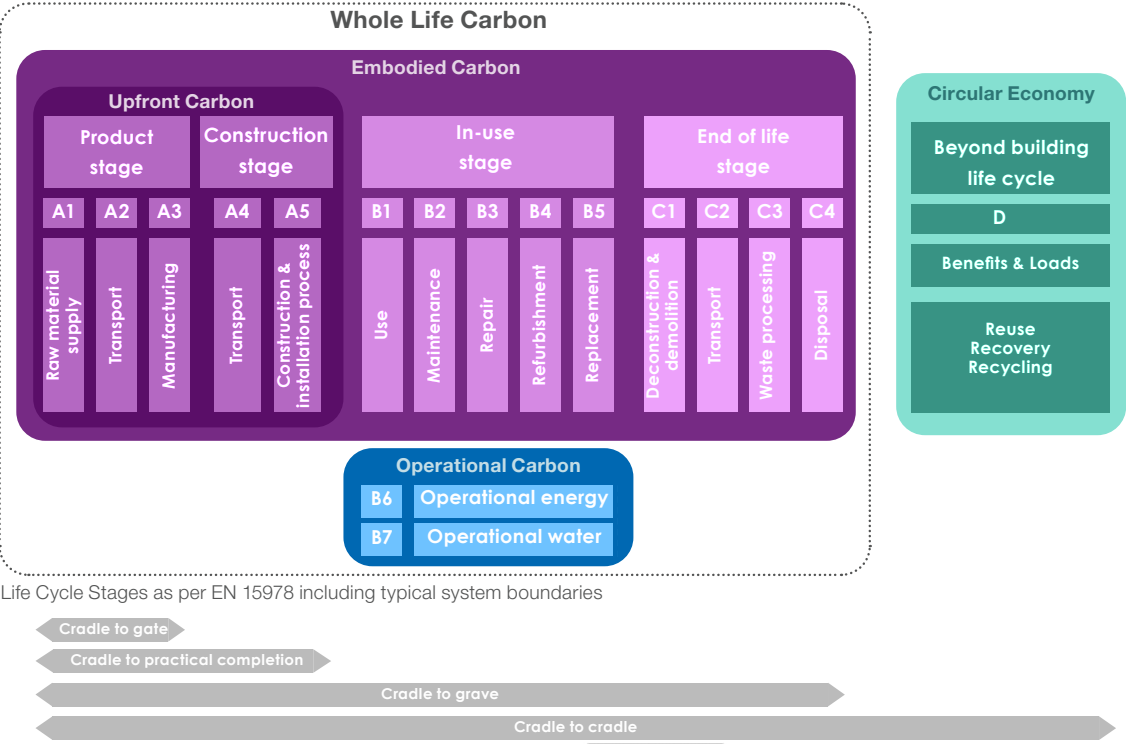
10.3 Industry Net Zero Carbon Definitions

The project will meet the London Plan definition of 'Net Zero Carbon' by aligning with the operational requirements. However, the borough have committed to achieving the UKGBC Net Zero Carbon Framework definition of Net Zero Carbon in Operation. Whole Life Carbon analysis covering all life cycle stages (product, construction, use stage and end of life) in line with BS EN 15978:2011 has been undertaken to support this ambition.



Whole Life Carbon = **Operational Carbon** + **Embodied Carbon**

Net Zero Whole Life Carbon = **Operational Carbon** + **Embodied Carbon** + **Offsetting**



10 Carbon Analysis & Sustainability

10.5 Operational Carbon

10.5.1 Lean, Mean & Green

This page summarises the lean, mean & green measures applied into the design and taken into consideration for the Part L modelling.

Lean

The new build followed a fabric first approach and has an efficient form factor and high-performance façade. Glazing ratio were also carefully considered not to exceed an average of 35%. External shading responding to orientation avoids excessive solar gains.

Measures were taken for the existing building to reduce the energy use of the building as possible within the restraint of the heritage.

Mean

The HVAC system is fan coil units with air source heat pumps, and heat recovery. Summertime design temperature band is wider to avoid excessive cooling loads (23-27C). There is potential to open windows out of core hours.

Green

A minimum 20% of regulated campus wide energy demand shall be from on-site renewables, all roofs will have PV modules.

- L.1

Efficient form factor
- L.2

High performance facade - Uvalue and air tightness considerations
- L.3

Spatial arrangement responding to the site and orientation – wider windows located at amenity areas
- L.4

Glazing ratios – no more than 35% glazing on average over all façades
- L.5

Shading responding to orientation and balancing heat gains - denser fins on upper floors
- L.6

Envelope thermally enhanced
- L.7

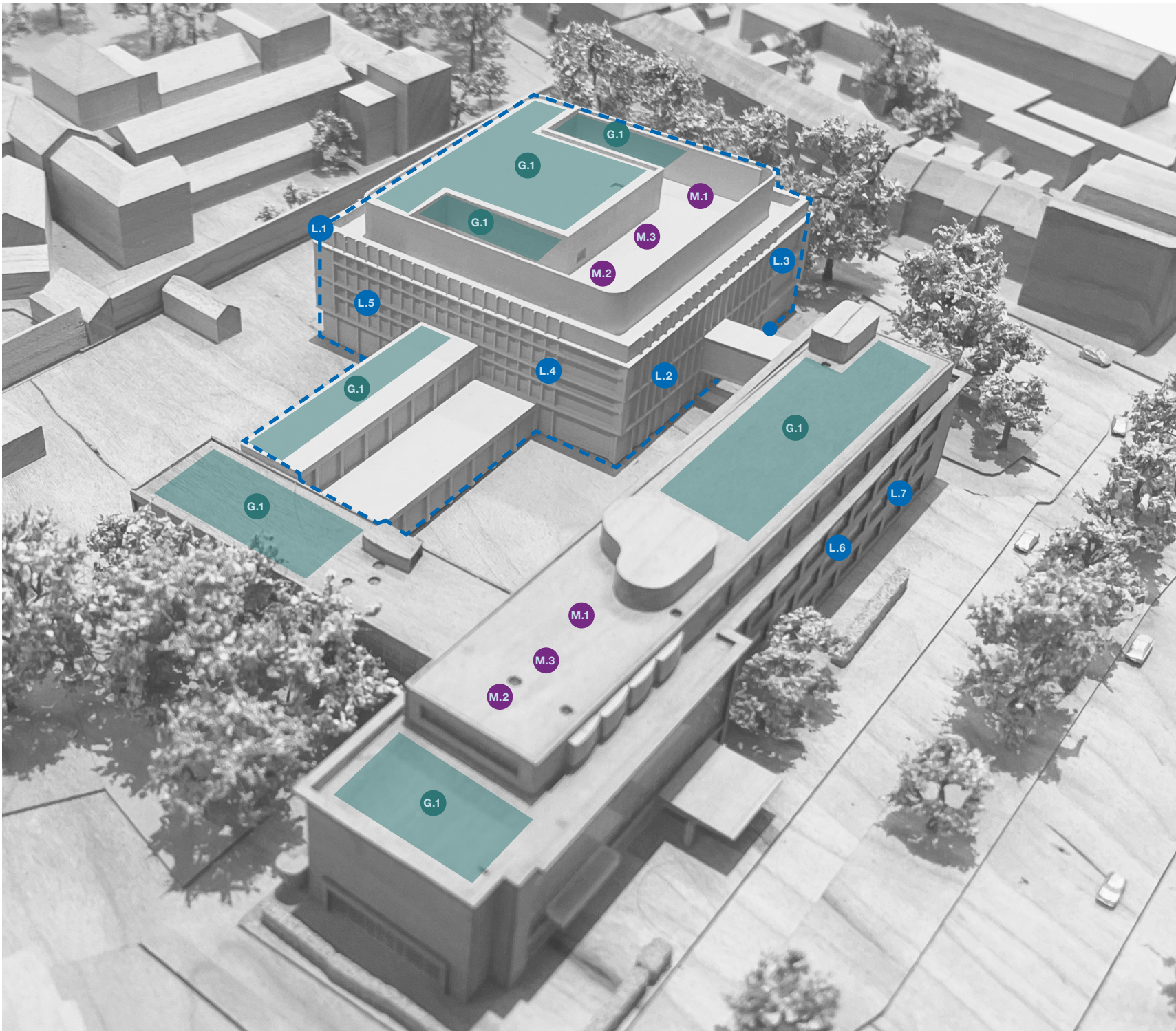
Window replacement
- M.1

Mechanical ventilation with integrated heat recovery to enable low energy ventilation and good air quality
- M.2

All-electric MEP strategy to benefit from decarbonising national grid
- M.3

Installation of Air Source Heat Pumps for space heating, cooling and domestic hot water
- G.1

Maximise renewables on site - PVs on roof



10 Carbon Analysis & Sustainability

10.5 Operational Carbon

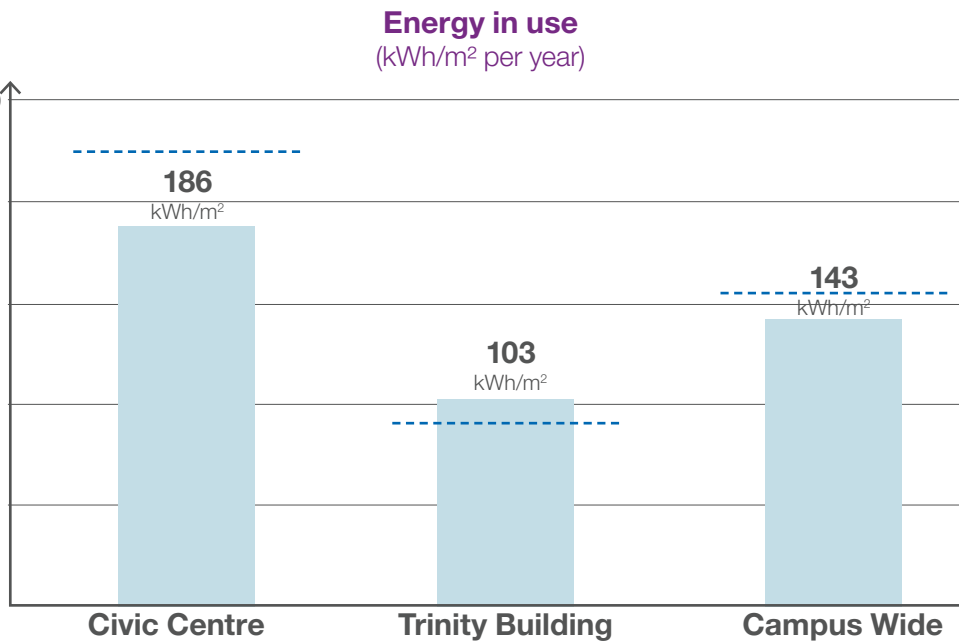
10.5.2 Results

Energy in use

It is good practice to define targets based on industry benchmarks. The targets were split between Civic centre (existing building) and Trinity building (new build), as it is expected that a refurb will not perform as well as a new build due to limitations in building fabric performance. A campus wide target was derived based on area weighted calculation from the new build and existing building targets.

	Civic Centre	Trinity Building	Campus wide
target	225 kWh/m²/yr	90 kWh/m²/yr	155 kWh/m²/yr
source	RIBA 2030 Climate Challenge V1 2019 Target	UKGBC Energy performance targets for net zero carbon operational energy 2025-2030	Target is derived from the Civic Centre and Trinity targets area weighted

Below are the results of the TM54 model for both regulated and unregulated energy in use. This was calculated by Buro Happold.



- KEY
- Energy in use - calculated
 - Energy in use - target

Operational carbon

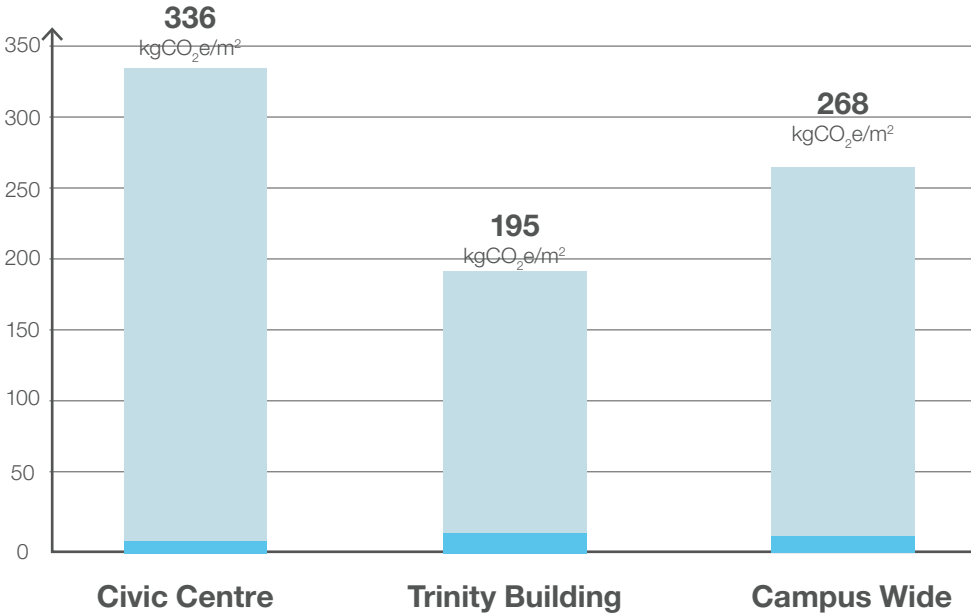
The operational carbon emissions have been based on Buro Happold TM54 energy analysis.

The energy consumption of the development has been calculated for a life-cycle of 60 years based on the assumption that the annual operation energy consumption will remain the same throughout the life-cycle of the project. It was considered the UK average carbon intensity figure as produced by OneClickLCA 'Average future electricity, UK (2022-2082, for 60 years service life) based on Non-2050 compliant - Steady Progression 2050 scenario', which considers the decarbonisation of the grid by 2050. The factor is calculated based on RICS equation for future energy grid decarbonisation and data from Future Energy Scenarios, National Grid Electricity System Operator ESO 2020/2021.

The water use for all scenarios was based on the RIBA 2025 target benchmark of 13l/p/day. The information was input in OneClickLCA software and calculated both tap clean water and waste water.

Operational Carbon

B6 & B7 only (kgCO₂/m²)



	Overall Carbon (tonnesCO ₂ eq)		
	Civic Centre	Trinity Building	Campus wide
Operational Energy (B6)	1,807	922	2,729
Operational Water (B7)	44	66	110
Operational Carbon	1,851	989	2,839

	Carbon per m2 GIA (kgCO ₂ eq/m²)		
	Civic Centre 5,505m²	Trinity Building 5,075m²	Campus wide 10,580m²
Operational Energy (B6)	328	182	258
Operational Water (B7)	8	13	10
Operational Carbon	336	195	268

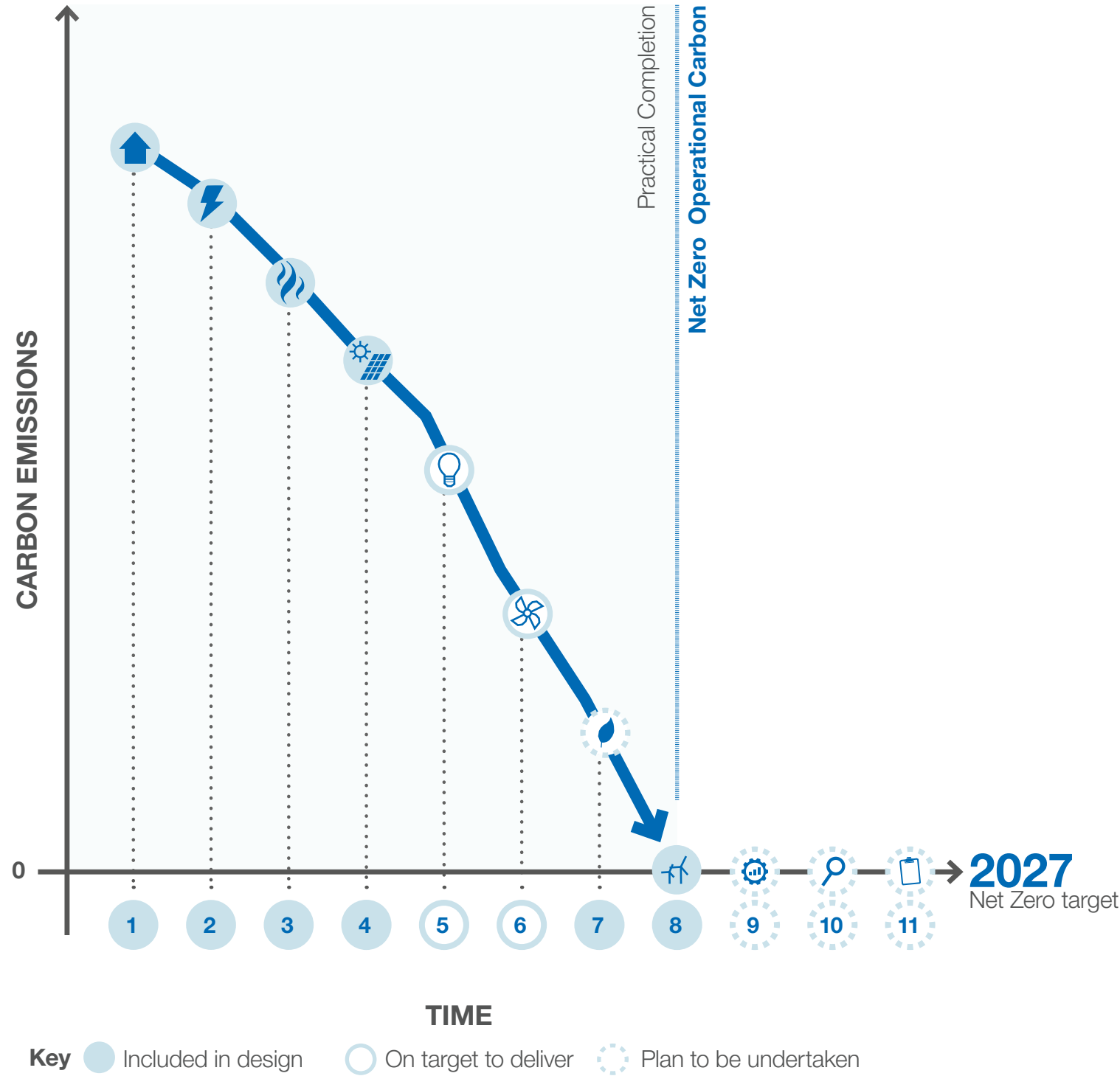
10 Carbon Analysis & Sustainability

10.5 Operational Carbon

10.5.3 Roadmap to net zero operational carbon

This graph is an illustrative roadmap showcasing the key steps needed for the project to reach Net Zero Operational Carbon by 2027 as per the London Borough of Haringey’s commitment to ensure all operational buildings become Net Zero Carbon by 2027.

Steps towards Net Zero Operational Carbon	
	1. Fabric first approach, targeting LETI standards for the New Annex
	2. Fossil fuel free through all electric systems
	3. Efficient MEP systems
	4. Maximise Solar PV where possible
	5. Meet industry energy use intensity targets
	6. Commission of building systems to ensure performance principles are met
	7. Responsible offsetting of carbon at practical completion
	8. Operational energy annually sourced from renewable energy sources
	9. Energy metering, monitoring, and optimisation
	10. Post occupancy evaluation
	11. Annual reporting



10 Carbon Analysis & Sustainability

10.6 Embodied Carbon

10.6.1 Assessment methodology

Scope of assessment

The Embodied Assessment has been conducted in accordance with BS EN 15978: 2011: (Sustainability of construction works - Assessment of environmental performance of buildings - Calculation method) using the RICS Professional Statement: Whole Life Carbon assessment for the built environment), over a 60-year study period, covering the modules A to C, excluding B6 & B7.

All the building elements listed in Table by the side have been included in the LCA Assessment, in line with the RICS Professional Statement.

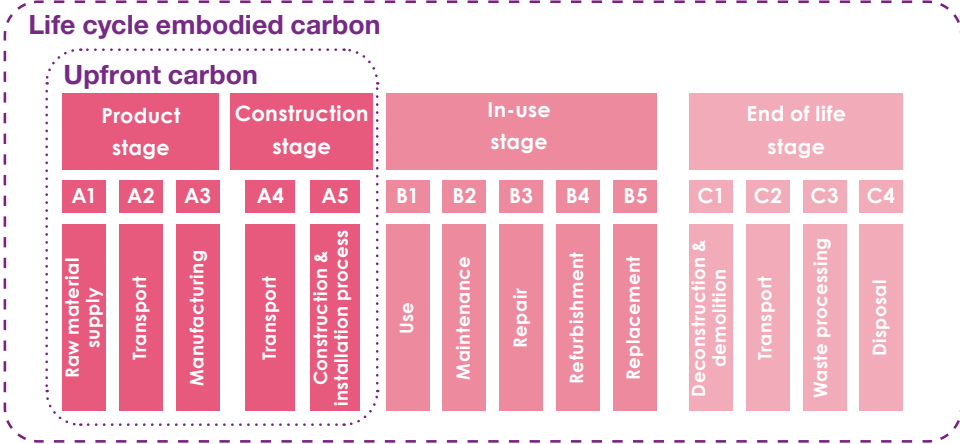
LCA Software

The LCA Assessment has been conducted using the LCA software “One Click LCA” by Bionova.

“One Click LCA” is an industry recognised tool that produces results compliant with the international standards ISO 14044 and EN 159781 and it is certified with Quality System ISO 90012. “One Click LCA” has material life-cycle inventory carbon data that is compliant with EN15804.

The tool integrates data from nearly all of the available EPD platforms around the globe.

Building element group	Building element (NRM level 2)	Included in WLC?
Demolition	0.1 Toxic/hazardous/contaminated material treatment 0.2 Major demolition works	N N
0 Facilitating works	0.3 & 0.5 Temporary/enabling works 0.4 Specialist groundworks	N N
2 Superstructure	2.1 Frame 2.2 Upper floors incl. balconies 2.3 Roof 2.4 Stairs and ramps 2.5 External walls 2.6 Windows and external doors 2.7 Internal walls and partitions 2.8 Internal doors	Y Y Y Y Y Y Y Y
3 Finishes	3.1 Wall finishes 3.2 Floor finishes 3.3 Ceiling finishes	Y Y Y
4 Fittings, furnishings and equipment (FF&E)	4.1 Fittings, furnishings & equipment incl. building related and non-building-related	Y
5 Building services/ MEP	5.1–5.14 Services incl. building-related* and nonbuilding-related**	Y
6 Prefabricated Buildings and Building Units	6.1 Prefabricated buildings and building units	n/a
7 Work to Existing Building	7.1 Minor demolition and alteration works	N
8 External works	8.1 Site preparation works 8.2 Roads, paths, pavings and surfacing 8.3 Soft landscaping, planting and irrigation systems 8.4 Fencing, railings and walls 8.5–8.7 External fixtures, drainage, services 8.8 Minor building works and ancillary buildings	Y



Benchmarks

It is good practice to set targets for WLC emissions reductions and to track progress against them throughout the design development.

Currently, at the industry we have benchmark targets set by LETI, RIBA and GLA. Both LETI and RIBA targets have been aligned in the 'Embodied Carbon Target Alignment'. GLA follows a similar target, with the current “aspirational benchmark” aligned with the RIBA 2025 targets.

For the campus wide, we are considering the following targets:

Upfront Embodied Carbon (A1-A5 exc. sequestration)

- Best Practice: LETI 2020 Design Target (Band C)
- Aspirational: LETI 2030 Design Target (Band A)

Life Cycle Embodied Carbon (A-C exc. B6&B7)

- Best Practice: RIBA 2025 Design Target (Band C)
- Aspirational: RIBA 2030 Design Target (Band B)



10 Carbon Analysis & Sustainability

10.6 Embodied Carbon

10.6.1 Assessment methodology

Methodology and assumptions

The calculation of the embodied carbon was based on the stage 3 design.

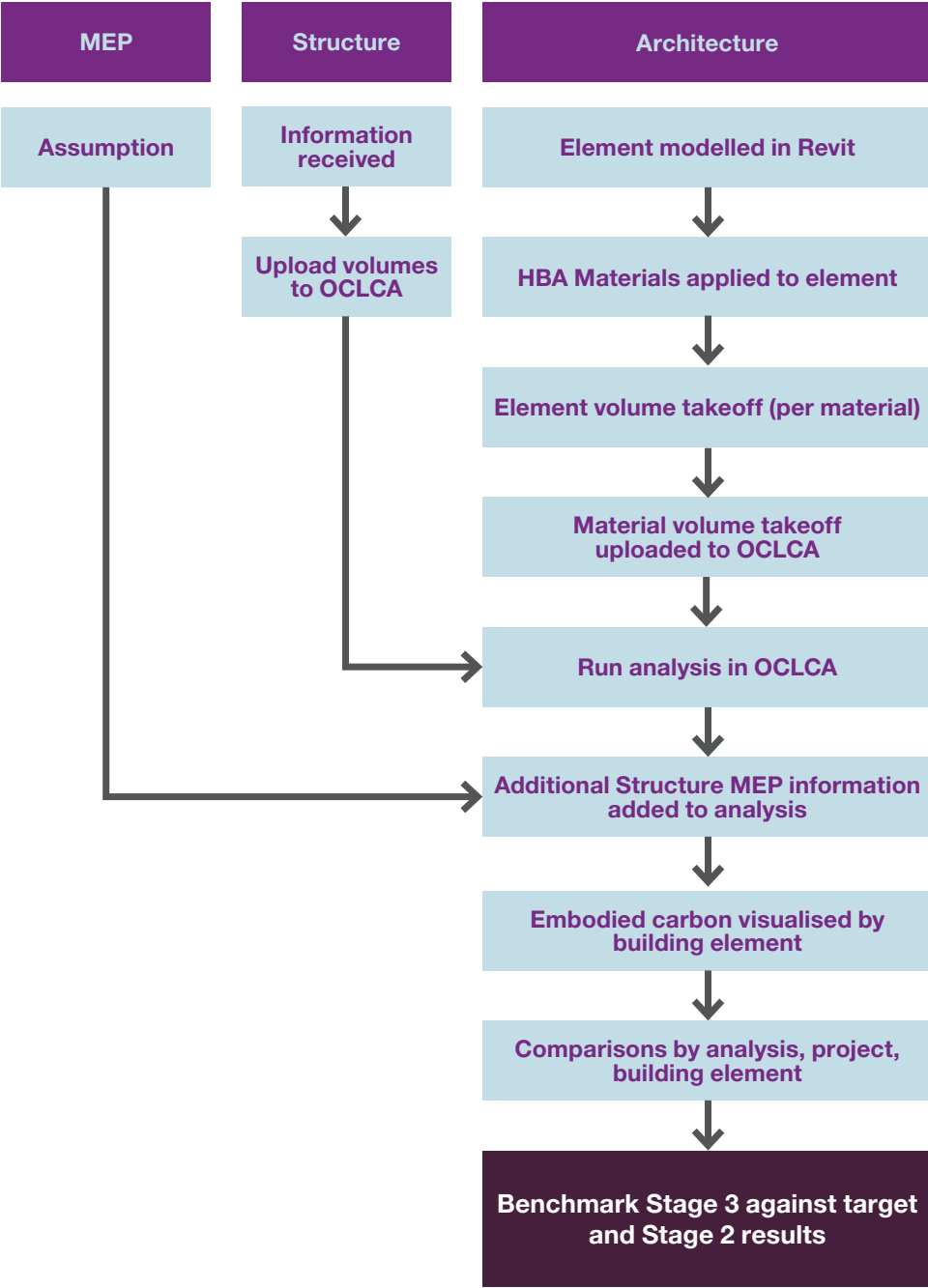
The data was then input into “One Click LCA” tool.

For MEP, the GLA breakdown (21%) for the business as usual benchmark (1400kgCO2/m2) was used, resulting in A-C exc B6/B7 of 292kgCO2/m2.

Information regarding the retained building components were added into the calculation, considering its impact in stages B & C.

The embodied carbon of the materials was calculated in OneClick LCA, in accordance to the RICS PS.

Considering that this is a Stage 3 and the materials specifications are yet to be defined, it was considered an extra contingency of 5%. This is to reflect possible carbon factor disparities due to the use of different EPD’s in later stages.



Main materials & components input

Structure

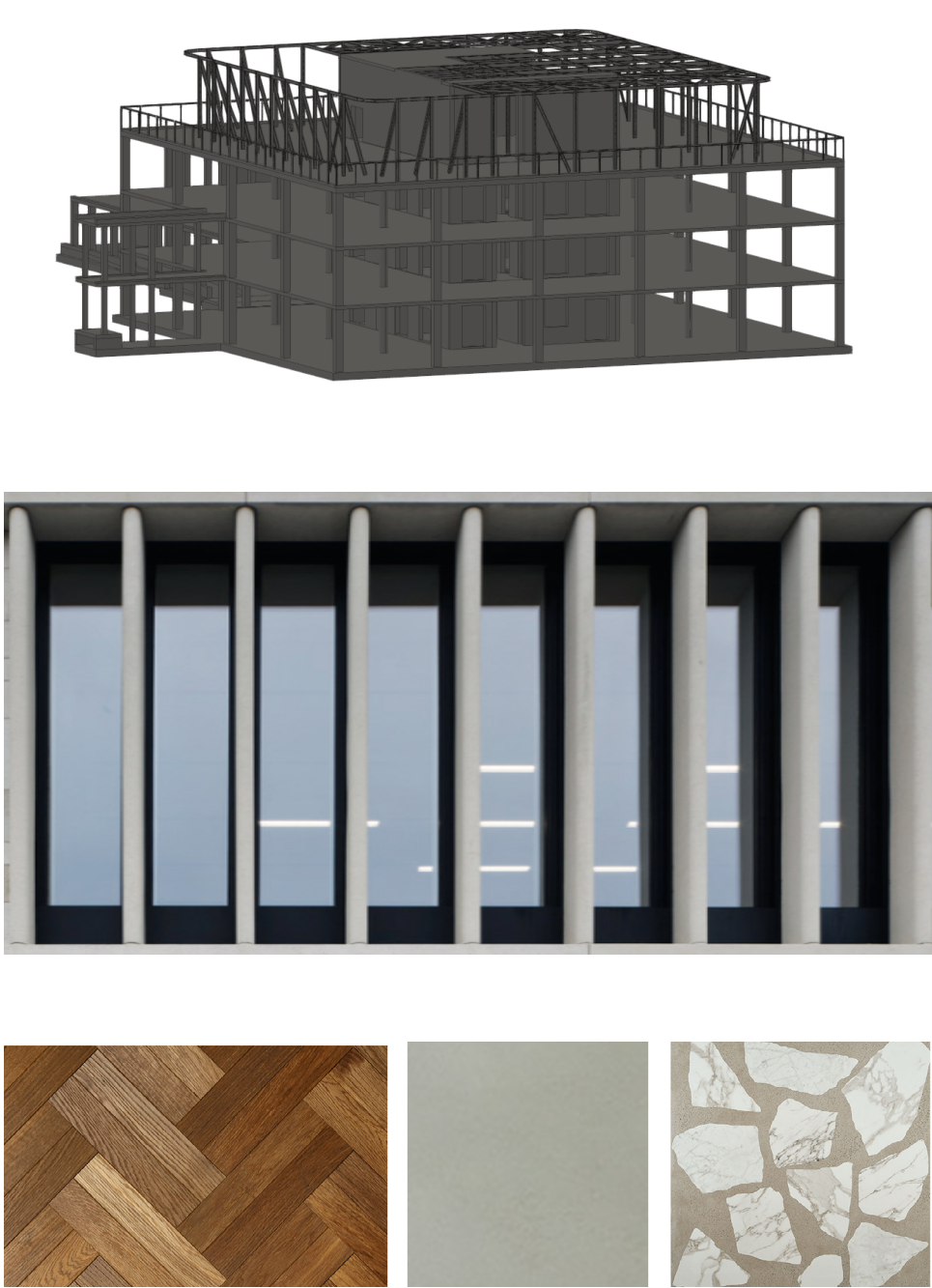
- Cement replacement is specified at 50% for all concrete elements
- PT slab (thinner slab than traditional RC flat slab)
- Optimised column grid
- Raft foundation
- Removal of the basement

Facade

- GRC facade with optimised modules to avoid excessive fixings points

Finishes

- Material efficiency: self-finishing and natural materials with long lifespan, robustness and low maintenance



10 Carbon Analysis & Sustainability

10.6 Embodied Carbon

10.6.2 Results

Embodied carbon comparison between stages

Analysis was undertaken using One Click LCA software and based on the Stage 3 design freeze for both the refurbishment and new build parts of the project to track the current design against the targets proposed.

The results of the embodied carbon for the Trinity and Civic Centre buildings are shown opposite alongside with the comparison between previous stage 2 and the benchmarks.

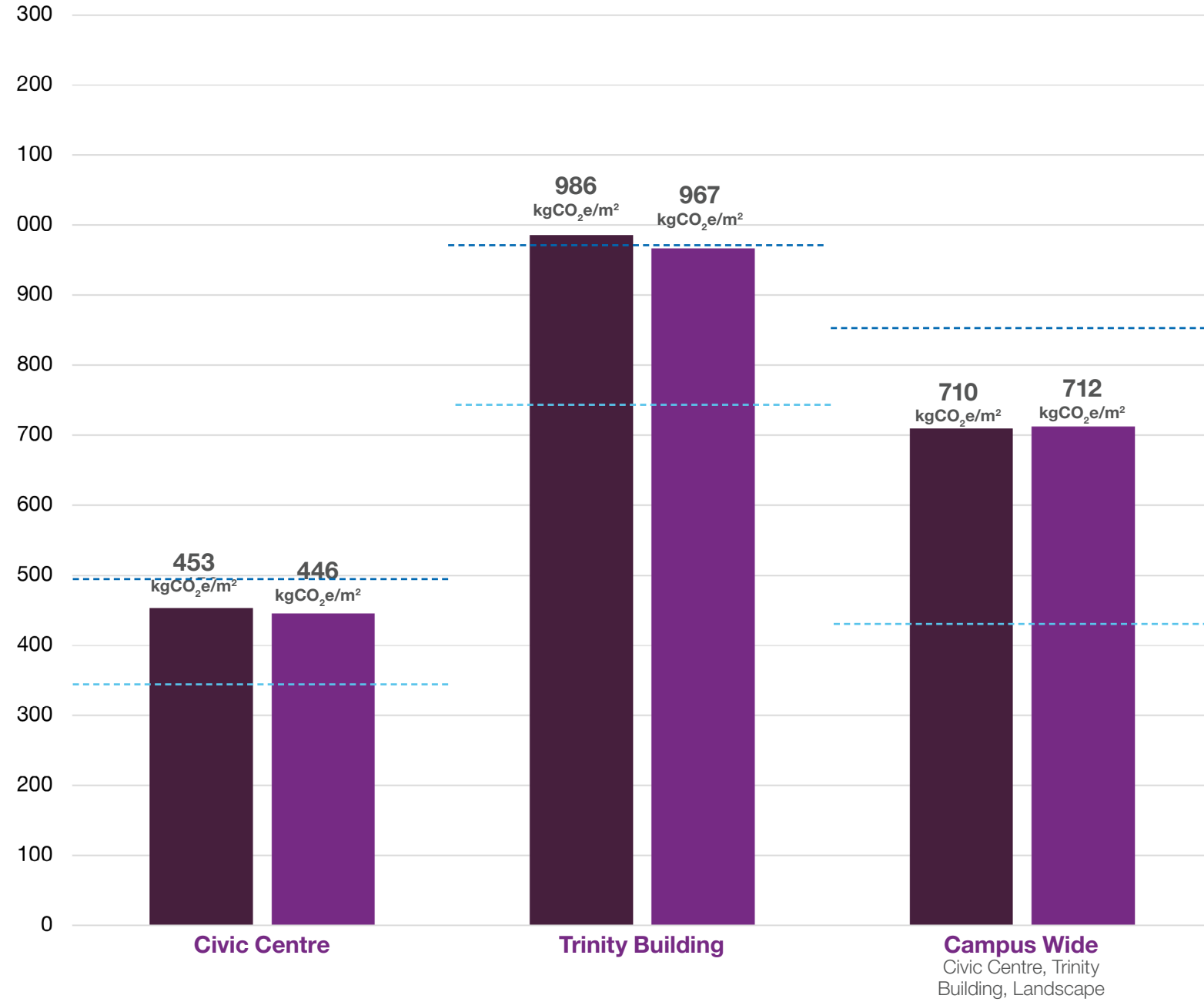
The Stage 3 design results show that the embodied carbon of both buildings remained similar to the Stage 2 design results Both Trinity building and Civic Centre are achieving the best practice embodied carbon ‘minimum’ target.

This shows the importance of the embodied carbon monitoring throughout design stages. To continue the aim to be an exemplary net zero carbon building, it would be important to continue this work of embodied carbon analysis in the next stage.

Life cycle embodied carbon (A-C exc B6&B7) (kgCO2/m2)				
	Targets		Results	
	Minimum	Aspirational	Stage 2	Stage 3
Civic Centre	500	350	453	446
Trinity Building	970	750	986	967
Campus Wide	428*	864*	710	712

- Key**
- Stage 2
 - Stage 3
 - Minimum target
 - Exemplary Target

Life Cycle Embodied Carbon Intensity
(A-C exc. B6&B7)
(kilograms of embodied carbon emitted per sqm.)



10 Carbon Analysis & Sustainability

10.6 Embodied Carbon

10.6.2 Results

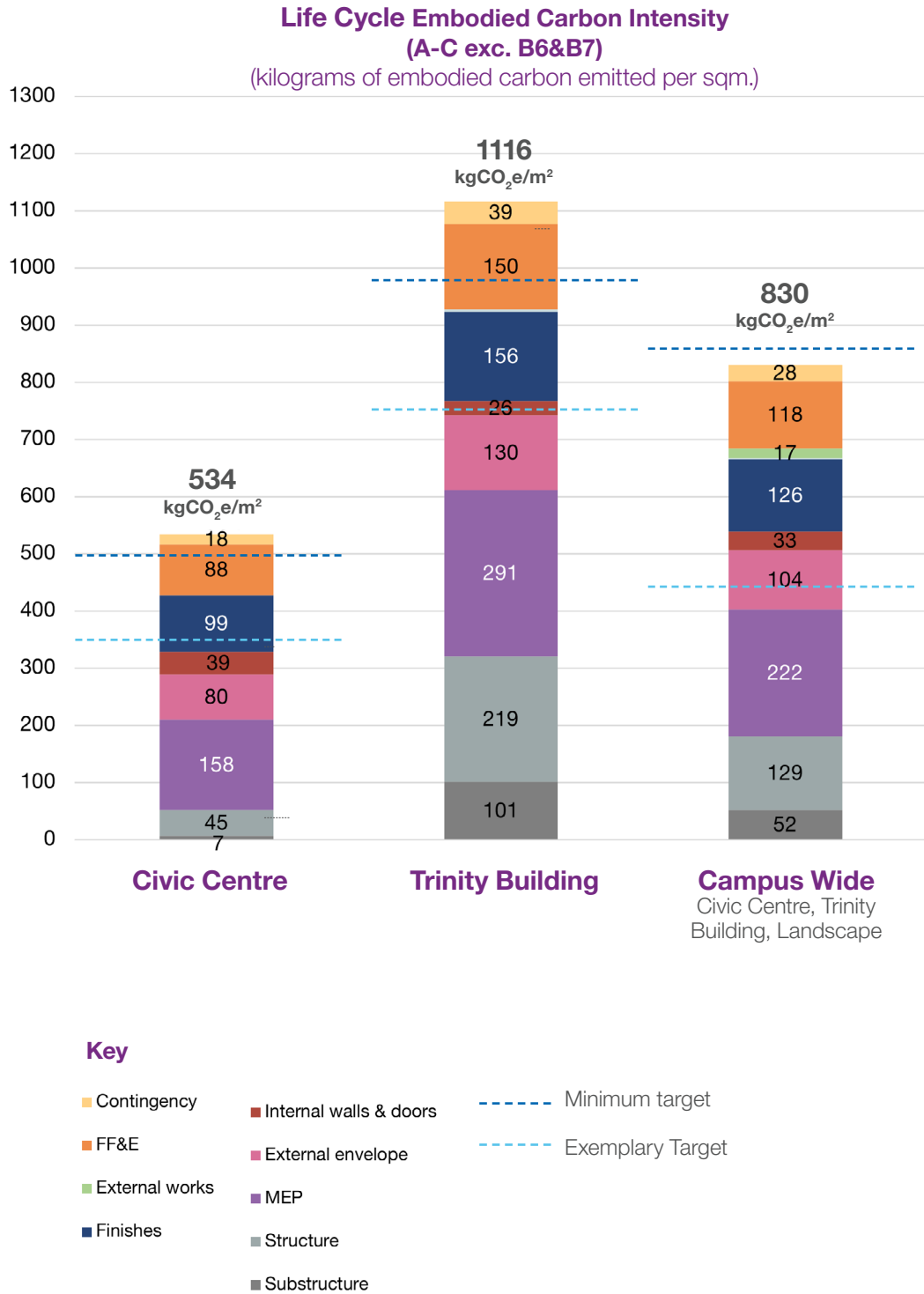
Embodied carbon results by building categories

The graph on this page shows the results of embodied carbon per building categories. It must be noted that in this analysis it was included the 'FF&E' (furniture, fixtures and equipment) carbon emissions, which was not included in the previous Stage 2 embodied carbon analysis. This element is responsible for a considerable amount of the life cycle emissions because it was considered the RICS default replacement rate of 10 years.

The RICS with the indicative component lifespan considered in this study can be seen in this page.

Similar to the FF&E, the finishes embodied carbon have significant impact due to the replacement rate, which was considered the RICS default rates. As the client will be occupying the building, this mean there will be a higher level of control over the finishes replacement and maintenance. Assumptions can be updated in future embodied carbon analysis to reflect this, and should be liaised with the client.

In both buildings, the biggest contributor is MEP. As mentioned previously, this is an assumption based on GLA guidance breakdown for a business as usual office building. This assumption should be revised with the service engineer in the next design stage, and a TM65 analysis should be considered.



Building part	Building elements/components	Expected lifespan
Roof	Roof coverings	30 years
Superstructure	Internal partitioning and dry lining	30 years
Finishes	Wall finishes: Render/Paint	30/10 years respectively
	Floor finishes: Raised Access Floor (RAF)/Finish layers	30/10 years respectively
	Ceiling finishes: Substrate/Paint	20/10 years respectively
FFBE	Loose furniture and fittings	10 years
Services/MEP	Heat source, e.g. boilers, calorifiers	20 years
	Space heating and air treatment	20 years
	Ductwork	20 years
	Electrical installations	30 years
	Lighting fittings	15 years
	Communications installations and controls	15 years
	Water and disposal installations	25 years
	Sanitaryware	20 years
Facade	Lift and conveyor installations	20 years
	Opaque modular cladding e.g. rain screens, timber panels	30 years
	Glazed cladding/Curtain walling	35 years
	Windows and external doors	30 years

Table 9: Indicative component lifespans
Table 9 contains conservative generic assumptions for the lifespan of items based on information from BCIS Life expectancy of building components (2006); CIBSE Guide M; Scheuer, Keoleian, and Reppe (2003). Life cycle energy and environmental performance of a new university building: modelling challenges and design implications. Energy and Buildings, 35, pp.1049–1064.

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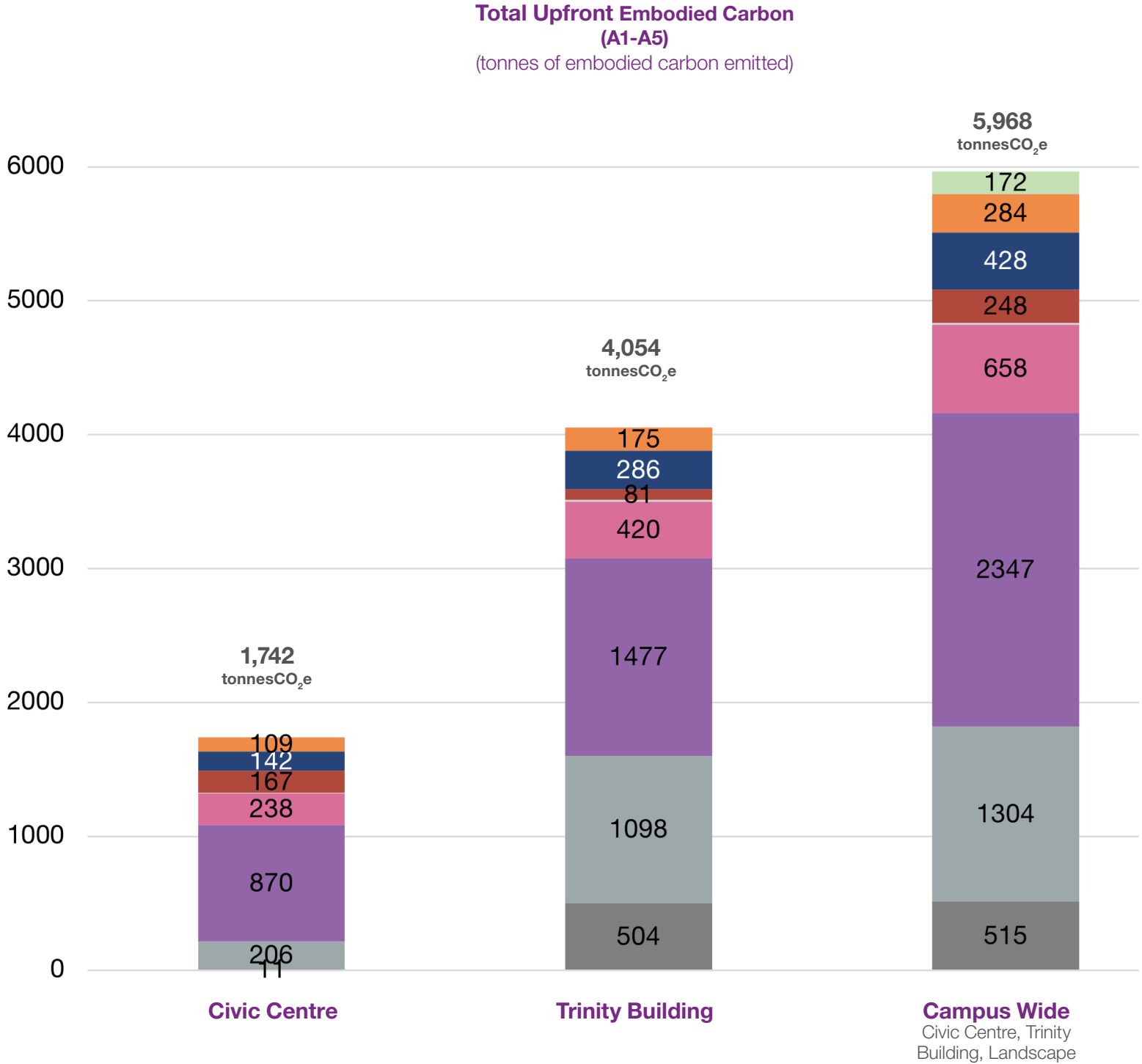
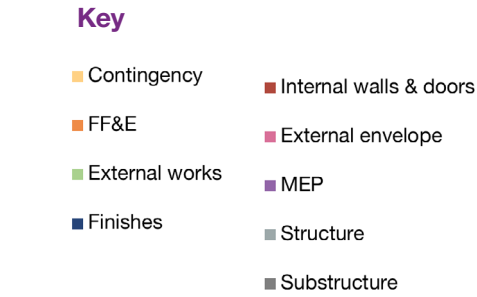
10.6 Embodied Carbon

10.6.2 Results

Upfront embodied carbon emissions

The graph on this page shows the results of upfront embodied carbon total emissions per building categories.

If the development does aim to be Net Zero Carbon in Construction, then the upfront carbon should be responsibly offset at practical completion through recognised offsetting framework.



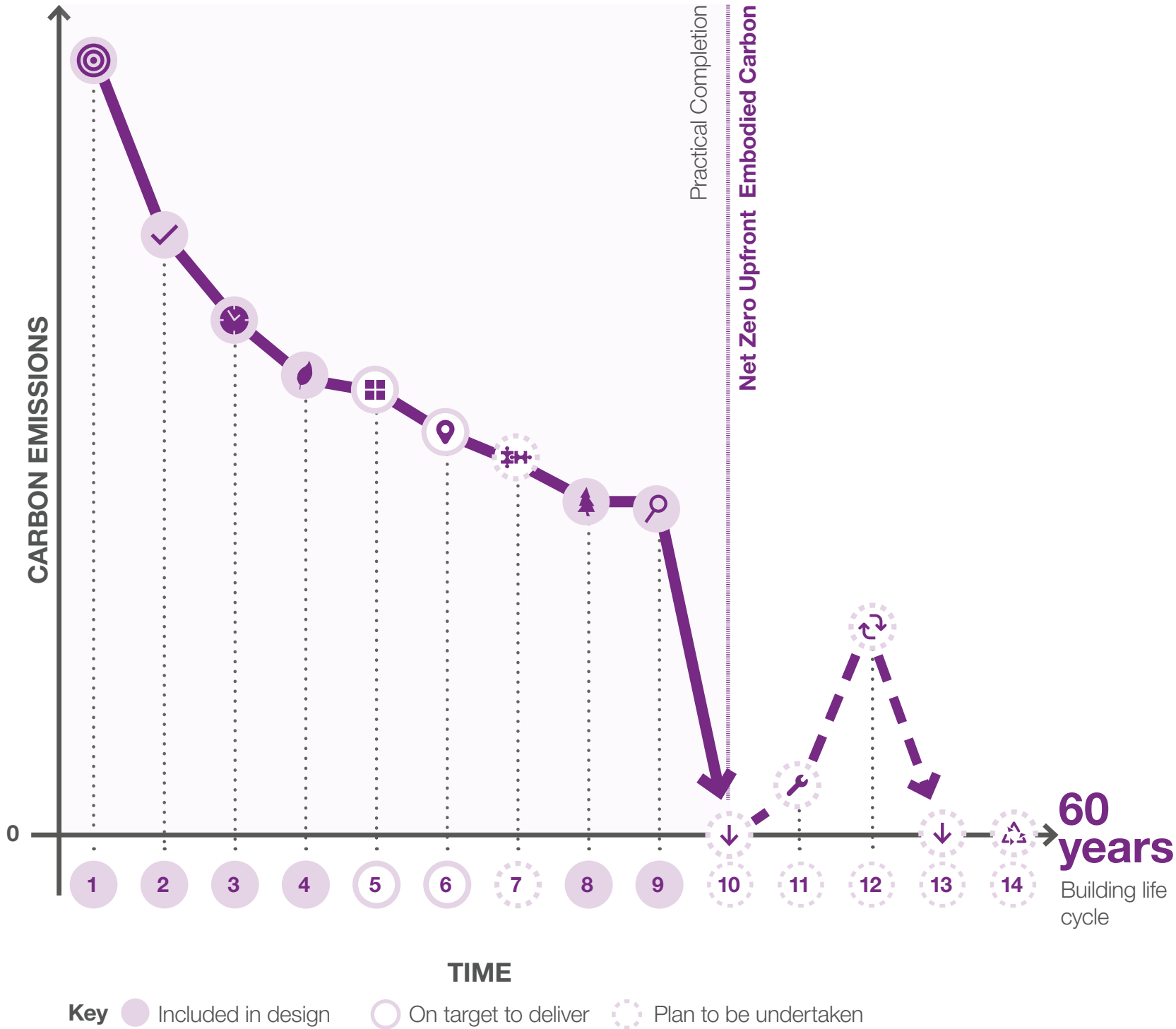
10 Carbon Analysis & Sustainability

10.6 Embodied Carbon

10.6.3 Roadmap to net zero embodied carbon

This graph is an illustrative roadmap showcasing the key steps needed for the project to reach Net Zero Embodied Carbon. This extrapolates for a 60 years period as per LCA guidance.

Steps towards Net Zero Embodied Carbon	
	1. Define targets based on benchmarks
	2. Design efficiency
	3. Design for robustness and longevity
	4. Specify low-embodied carbon materials
	5. Specify self-finish materials
	6. Specify local materials
	7. Design for disassembly
	8. Maximise biogenic carbon storage
	9. Embodied carbon monitoring and optimisation throughout design stages
	10. Responsible off-setting of upfront carbon
	11. Maintenance to promote longevity
	12. Replacement of materials
	13. Responsible off-setting of carbon from replacement / refurb
	14. End of life: disassemble, reuse, recycle



10 Carbon Analysis & Sustainability

10.7 Whole Life Carbon

10.7.1 Results

Whole Life Carbon

The results of the Whole Life Carbon analysis for the project are shown here, using the same conversion strategy of operational energy to carbon as earlier studies.

Civic Centre		
Area: 5,505m ²	Overall Carbon (tonnesCO ₂ eq)	Carbon per m2 GIA (kgCO ₂ eq/m ²)
Upfront Carbon (A1-A5)	1,742	316
Embodied Carbon (A-C exc. B6&B7)	2,840	516
Contingency (5%)	99	18
Operational Energy (B6)	1,807	328
Operational Water (B7)	44	8
WLC Carbon A-C	4,790	870

Trinity Building		
Area: 5,075m ²	Overall Carbon (tonnesCO ₂ eq)	Carbon per m2 GIA (kgCO ₂ eq/m ²)
Upfront Carbon (A1-A5)	4,054	799
Embodied Carbon (A-C exc. B6&B7)	5,465	1077
Contingency (5%)	199	39
Operational Energy (B6)	922	182
Operational Water (B7)	66	13
WLC Carbon A-C	6,653	1,311

Campus wide (Civic Centre, Trinity Building, Landscape)		
Area: 10,580m ²	Overall Carbon (tonnesCO ₂ eq)	Carbon per m2 GIA (kgCO ₂ eq/m ²)
Upfront Carbon (A1-A5)	5,796	548
Embodied Carbon (A-C exc. B6&B7)	8,305	785
Contingency (10%)	298	28
Operational Energy (B6)	2,729	258
Operational Water (B7)	110	10
WLC Carbon A-C	11,442	1,081

