

# SUSTAINABILITY STRATEGY

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# CLIMATE CONTEXT & OUR ROLE IN IT

Architects are trained to take complex, often conflicting problems and develop beautiful & functional solutions. The issues surrounding sustainability are some of the most complex but also some of the most important to not only our society but the planet and all its beings at large.

The urgency of the climate crisis requires architects to be prepared to address the challenges we currently face. We need to evolve our sustainability competency and literacy into design strategies that sit at the core of our built environments. Sustainable design, done well, should result in a built environment that protects our planet and enhances human health while creating equitable and resilient communities; and that is what we strive for.

Undoubtedly, rising to these challenges means considerable changes in society, the economy and our relationship with the environment (built & natural). It also means considerable changes in how we perceive our role as architects, as human beings and caretakers of the planet.

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*“The construction sector generates almost 40% of Global CO2 emissions.” <sup>1</sup>*

*“25% of UK emissions are directly attributable to the built environment.” <sup>2</sup>*

*“Operational carbon emissions account for as much as 50% of a buildings total emissions over its life span.” <sup>3</sup>*

We are at a tipping point for climate action with an ever reducing time left to achieve our global and national climate targets. Radical and rapid transformation from businesses and global economies is essential. This includes us and our clients.

Our sustainability principles are guided by the RIBA 2030 Climate challenge, the LETI climate emergency design guide and the UN Sustainable development goals. Together alongside our clients, we are targeting net zero whole life carbon design by 2030.

- <sup>1</sup> World Green Building Council (2019). Bringing embodied carbon upfront, pg 16.
- <sup>2</sup> UKGBC (n.d.). Net Zero Carbon Buildings and Infrastructure - Explainer Guide. [online] UK: UKGBC. Available at: <https://ukgbc.org/resources/bitesize-learning-guides>
- <sup>3</sup> RIBA; Sturges, S. (2017). Embodied and whole life carbon assessment for architects. 66 Portland Place, London, W1B 1AD: RIBA. P.6.

# OUR COMMITMENTS

We are committed to leading sustainability initiatives as signatories of the RIBA 2030 Climate Challenge and Architects Declare.

Our goal is to ensure that all our buildings achieve a BREEAM Excellent accreditation and reach Net Zero Carbon status across all projects by 2030. To achieve this, we implement design strategies that reduce operational and embodied carbon in every project we undertake and work with clients and consultants who share the same vision.

To drive our net zero carbon vision, we have an in-house sustainability task force. This dedicated team focuses on strengthening our design process, educating our teams, clients, and stakeholders, fostering environmental awareness throughout our practice, staying updated on market knowledge, and reducing carbon emissions within our own studio .

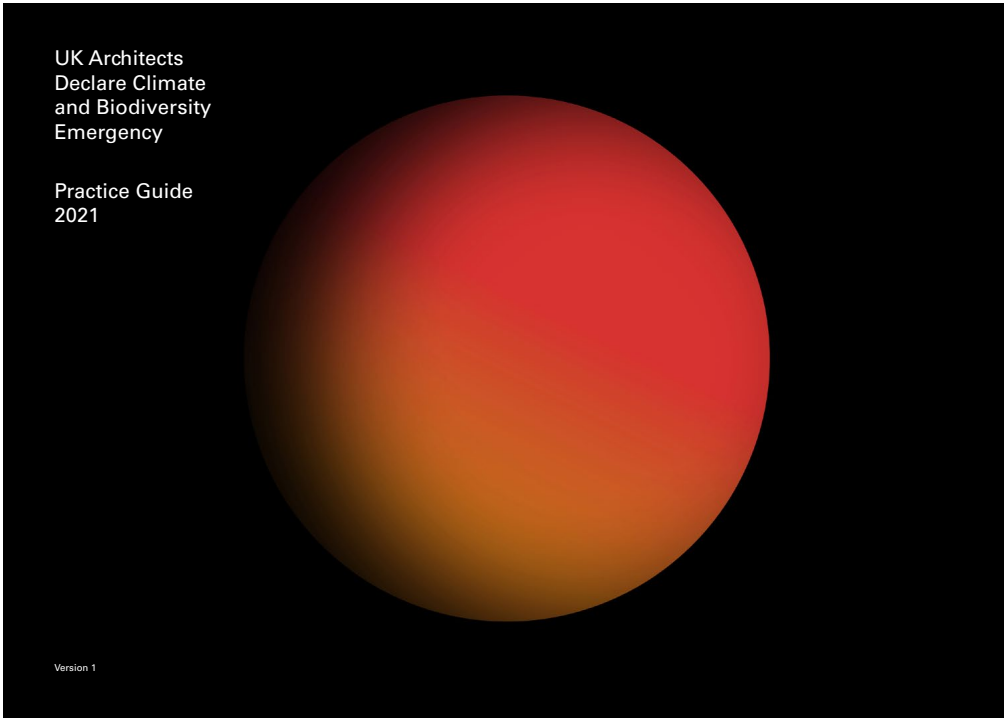
C A R B O N  
N E U T R A L  
W O R K P L A C E

ARCHITECTS  
D E C L A R E  
S I G N A T O R Y

B R E E A M  
accreditation to all our buildings  
N E T   Z E R O   S T A T U S  
across all projects by  
2030

R I B A   2 0 3 0  
C L I M A T E  
C H A L L E N G E  
S I G N A T O R Y

# ARCHITECTS DECLARE



Niazi Roden are signatories of Architects Declare.

It is both a public declaration of our planet’s environmental crises and a commitment to take positive urgent action in response to climate breakdown and biodiversity collapse.

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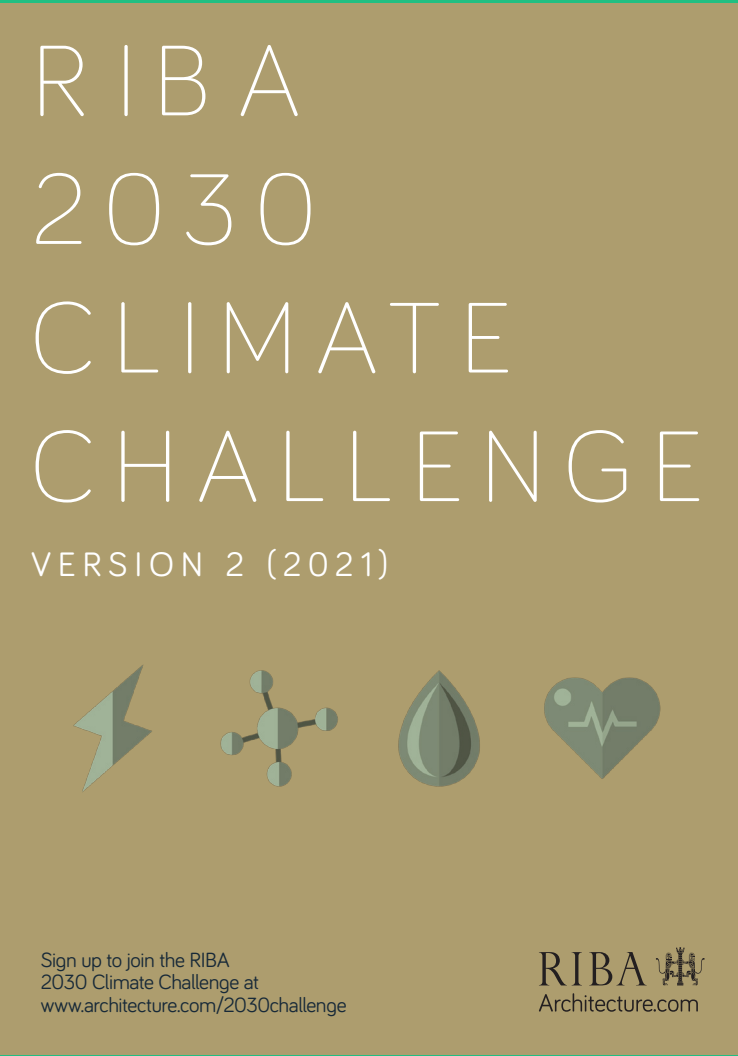
- 1 Raise awareness of the climate and biodiversity emergencies and the urgent need for action amongst our clients and supply chains.
- 2 Advocate for faster change in our industry towards regenerative design practices and a higher Governmental funding priority to support this.
- 3 Establish climate and biodiversity mitigation principles as the key measure of our industry’s success: demonstrated through awards, prizes and listings.
- 4 Share knowledge and research to that end on an open source basis.
- 5 Evaluate all new projects against the aspiration to contribute positively to mitigating climate breakdown and encourage our clients to adopt this approach.
- 6 Upgrade existing buildings for extended use as a more carbon efficient alternative to demolition and new build whenever there is a viable choice.
- 7 Include life cycle costing, whole life carbon modelling and post occupancy evaluation as part of your basic scope of work, to reduce both embodied and operational resource use.
- 8 Adopt more regenerative design principles in our studios, with the aim of designing architecture and urbanism that goes beyond the standard of net zero carbon in use.
- 9 Collaborate with engineers, contractors and clients to further reduce construction waste.
- 10 Accelerate the shift to low embodied carbon materials in all our work.
- 11 Minimise wasteful use of resources in architecture and urban planning, both in quantum and in detail.
- 12 Support those who are working for climate justice and strive to ensure equity and an improved quality of life for all.

# RIBA 2030 CLIMATE CHALLENGE

Niazi Roden are participants of the RIBA 2030 Climate Challenge

It presents a set of performance outcome targets for RIBA Chartered Practices to aim towards.

Its purpose is to encourage Practices to take action now and to collaboratively shift in the profession towards outcome orientated design approaches.



|                              | Non-domestic<br>(new build offices) | Domestic / residential      |
|------------------------------|-------------------------------------|-----------------------------|
| Operational energy (by 2030) | < 55 kWh/m²/yr                      | < 35 kWh/m²/yr              |
| Embodied carbon              | <750 kgCO <sub>2</sub> e/m²         | <625 kgCO <sub>2</sub> e/m² |
| Water use                    | <10 litres/person/day               | <75 litres/person/day       |

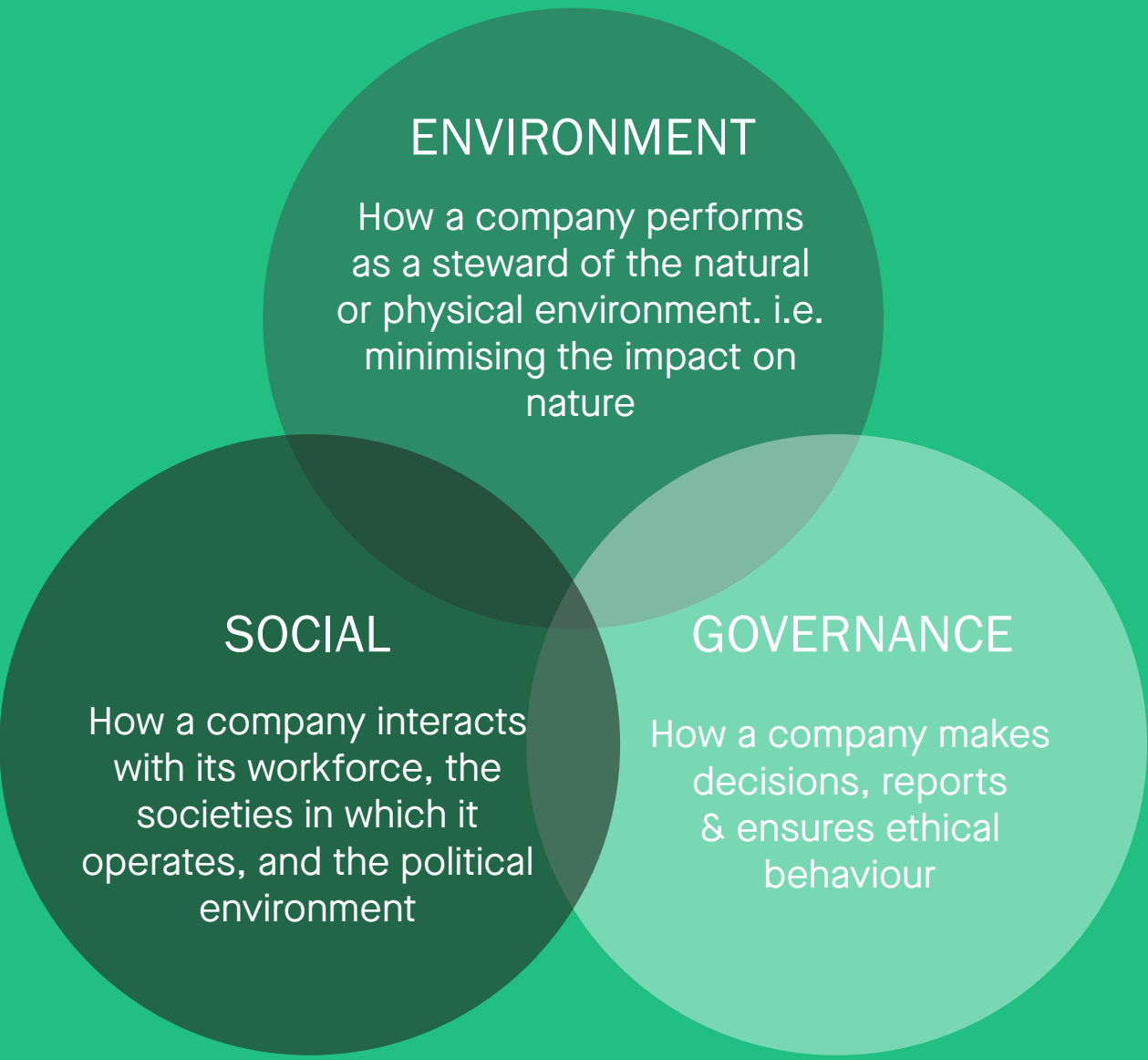
The RIBA 2030 challenge has several commitments, summarised above.



# SUPPORTING ESG

Architects assume a significant amount of responsibility when it comes to considering designs that will be successful for not just their clients, but any person and environment who inhabits or is impacted by their spaces.

Naturally, we are committed to assisting our clients and partners with delivering on their Environmental, social, and corporate governance (ESG) goals where we can.



E

CARBON NEUTRALITY

BIODIVERSITY

CLIMATE RESILIENCE

LOW CARBON MOBILITY

S

HEALTH & WELLBEING

SOCIAL VALUE & PLACEMAKING

G

CERTIFICATION ROUTE

MATERIAL EFFICIENCY & CIRCULAR ECONOMY

PARTNERSHIP

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# OUR PILLARS OF SUSTAINABLE DESIGN

1 DESIGN  
RESPONSIBLY

2 DESIGN FOR  
IMPROVED  
PERFORMANCE

3 DESIGN TO REDUCE  
CARBON IMPACT

4 DESIGN THROUGH  
COLLABORATION &  
ENGAGEMENT

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# 1 DESIGN RESPONSIBLY

Thoroughly integrating sustainability principles into a design response and specification from the outset and throughout every stage is crucial. By prioritizing this early on, we aim to establish the project's vision and ensure the integrity of sustainability and ESG initiatives.

Our design approach considers the site's microclimate and emphasises sustainable site development. We strive to cultivate mutually beneficial relationships with local amenities, establish connections to public transport corridors, and leverage existing ecological value to foster a thriving and well-connected project.

## OUR SUSTAINABILITY TOOLKIT

**AIM** We are committed to incorporate a consistent methodology for incorporating sustainability in each of our projects for design and decision making. Our toolkit will provide our teams with a guide to inform key considerations that should be made at each stage of design including project conception which holds the highest potential for impact. Our design approach will prioritise holistic & sustainable design principles, considering factors such as energy efficiency, passive design strategies, water conservation, material selection and the use of renewable resources. By aiming for excellence, we will raise the bar and encourage innovation in sustainable design.

## WORKSHOPPING

**AIM** Hold workshops with clients and the design team to set sustainability initiatives at project conception. Support this with regular reviews at each design stage to engage, report on, encourage, discuss projects sustainability commitments and propose solutions that will enhance the projects sustainability performance.

## SPECIFY RESPONSIBLY

**AIM** Develop an in-house database of low-carbon products or products with environmental credentials to support better understanding and decision making on product specific environmental impacts and risks.



# 2 DESIGN FOR IMPROVED PERFORMANCE

Our goal is to create cost-effective built environments while minimizing their environmental impact. This can be achieved through active and passive methods. We integrate circular economy principles to eliminate waste and prioritise longevity in our designs.

At the core of our design process is also the well-being of individuals. We strive to achieve the highest industry standards and metrics, with all our projects aiming to achieve BREEAM certification to design buildings that exemplify excellence.

## DESIGN TO NET ZERO OPERATIONAL CARBON PERFORMANCE STANDARDS

**AIM** To go beyond mere compliance with existing energy standards and actively contribute to a more sustainable future. We strive to create architectural solutions that not only minimise energy consumption but also produce or offset the remaining carbon emissions, ultimately achieving net-zero operational carbon performance.

## PERFORMANCE ANALYSIS

**AIM** To advocate for the conduction of rigorous performance analysis. Through comprehensive performance analysis, we will evaluate and optimise building energy use, emissions, and operational efficiency. By utilising advanced modelling and simulation tools, we will identify opportunities to reduce carbon emissions, enhance occupant comfort, and improve overall building performance.

## STRIVE TO IMPROVE PERFORMANCE WITH EVERY PROJECT

**AIM** We are committed to continuously monitoring and evaluating the performance of our buildings throughout their life-cycle with the aim to improve each projects performance from the last project. This will enable us to identify areas for improvement, share lessons learned, and provide valuable feedback to our clients.



# 3 DESIGN TO REDUCE CARBON IMPACT

Our approach focuses on minimizing carbon emissions in new developments, refurbishments, and associated operational systems. We prioritise material efficiency in design and encourage the use of onsite renewables to advance towards Net Zero goals.

From the project's inception, we consider whole life carbon analysis to guide our decision-making and have an in-house team guiding these discussions. We are also signatories of the RIBA 2030 challenge.

## DESIGN TO NET ZERO EMBODIED CARBON STANDARDS

**AIM** Our aim is to design buildings that adhere to Net Zero embodied carbon standards, effectively minimising carbon emissions associated with construction materials and processes. Through careful material selection, efficient construction methods, and innovative design strategies, we strive to create sustainable buildings that reduce embodied carbon and contribute to a more environmentally conscious built environment.

## UNDERTAKE WHOLE LIFE CYCLE ASSESSMENTS

**AIM** To undertake whole life cycle assessments for our projects, evaluating the environmental impacts from inception to demolition. By considering the full life cycle, including material sourcing, construction, operations, and end-of-life scenarios, we gain a comprehensive understanding of our buildings' sustainability performance. This enables us to make informed decisions, minimise environmental impacts, and maximise the long-term benefits of our designs.

## STRIVE TO IMPROVE PERFORMANCE WITH EVERY PROJECT

**AIM** We are committed to continuously monitoring and evaluating the performance of our buildings throughout their life-cycle with the aim to improve each projects performance from the last project. This will enable us to identify areas for improvement, share lessons learned, and provide valuable feedback to our clients.

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# 4 DESIGN THROUGH COLLABORATION & ENGAGEMENT

We acknowledge the limitations of individual knowledge but recognise the power of collaboration within our industry. We actively work alongside our consultants and suppliers, ensuring the project meets the necessary standards of environmental management.

By combining the collective expertise of the industry, our partners, and our own teams, we strive to achieve comprehensive and exemplary sustainable outcomes for our clients.

## INCREASE OUR CLIMATE LITERACY

**AIM** Increase practice investment in sustainability research, development and training. We are committed to fostering a culture of sustainability within our firm and the broader architectural community. We will invest in ongoing education and professional development for our team members, ensuring they have the knowledge and skills to deliver sustainable design solutions.

## SUSTAINABILITY WORKING GROUP

**AIM** We have a dedicated sustainability working group within our office who passionately champion the subject. This group is committed to driving sustainable practices, researching innovative solutions, and fostering a culture of sustainability throughout our firm. By actively engaging with colleagues, sharing knowledge, and leading by example, we ensure that sustainability remains at the forefront of our design process and decision-making, empowering us to create buildings that align with our environmental values.

## PARTNERSHIP & EARLY ENGAGEMENT

**AIM** We will actively collaborate with clients, stakeholders, industry experts, and research institutions to exchange ideas and share knowledge. By fostering a culture of collaboration, we will tap into diverse perspectives, leverage collective expertise, and find creative solutions to sustainability challenges. We will also actively contribute to industry forums, conferences, and publications to disseminate our learnings and inspire others to improve their performance.



# REDUCING OUR STUDIO IMPACT

In our studio, we strive to operate in a carbon neutral manner by measuring and offsetting our emissions whenever possible. We try to practice what we preach.

## REDUCE STUDIO ENERGY CONSUMPTION

**AIM** Reduce energy consumption associated with our studio operations. Energy is one of the largest controllable factors in office building which means there are many opportunities to reduce energy demand. By implementing improvement strategies such as night-time shut-down, energy efficient IT equipment etc. we will be able to reduce the energy load our operations place on the local grid.

## REDUCE WASTE

**AIM** Reduce waste to landfill associated with our practice operations. This will include waste separation systems within the office. Office waste is more expensive than just the cost of disposal, it involves loss of resources such as energy, water and labour. As a result, the real cost of waste can be several times higher than the cost of disposal. Reducing waste in our office will involve both change in behaviours as well as equipment. Limiting use of paper, waste separation and reporting on waste generated are all examples of actions to be taken to reach this goal.

## REDUCE CARBON EMISSIONS

**AIM** Reduce and/or offset carbon emissions associated with business operations and travel. The carbon footprint of workplaces - big or small - are contributors to greenhouse gasses. Limiting actions that have a related carbon footprint and encouraging our employees and collaborators to do the same will help reduce our collective impact. Where possible, we will engage in carbon offsetting en-route to Net Zero.

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# OUR PROJECTS



# CASE STUDY

## TRINITY BY BREAKTHROUGH

OXFORD BUSINESS PARK, UK

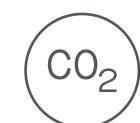
A shell & core Life Science building with wet/dry lab enabled facilities and flexible floor-spaces; including ancillary office space and supporting meeting/social areas. Spread over six floors, the building is capable of being let in various tenancy modes with a baseline of one tenancy per floor.

|                       |                         |
|-----------------------|-------------------------|
| Client                | Breakthrough Properties |
| Project Sector & Type | Lifescience, New Build  |
| GIA                   | ~24,500m <sup>2</sup>   |
| Levels                | Basement (1) + G + 5    |
| Lab / Office Ratio    | 60 / 40                 |
| RIBA Work Stage       | 5                       |



### Certification Targets

- Baseline BREEAM ‘Excellent’ rating, aiming for ‘Outstanding’
- WELL ‘Platinum’ rating
- EPC Asset Rating - ‘A’
- Wired Score ‘Platinum’ credit



### Carbon Targets

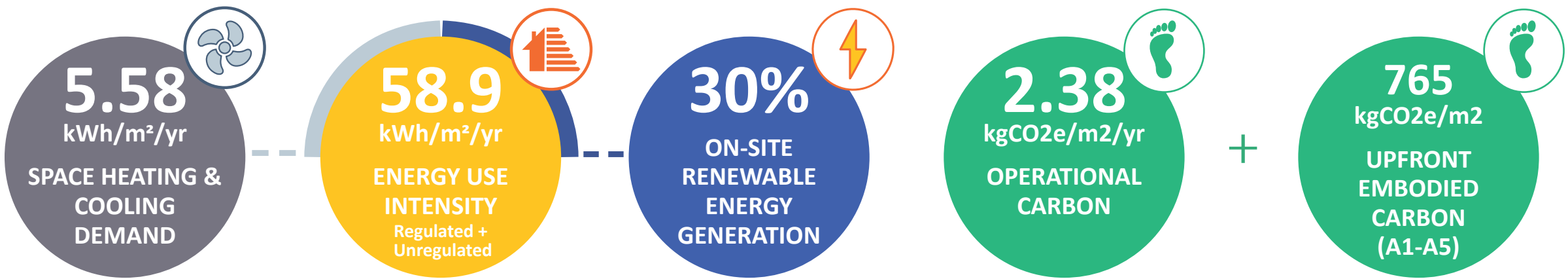
- Net Zero Carbon in construction (UKGBC)
- Net Zero Carbon in operation for landlords (NABERS)



### Achievements

- 45% reduction in operational Carbon against a business-as-usual scenario; exceeding Oxford City Council targets and in line with LETI carbon reduction targets for operational carbon
- 60% reduction in energy demand associated with heating and cooling against LETI guidelines
- 60% reduction in EUI against a typical Lab building in the UK
- 17% Biodiversity Net Gain (BNG) delivered, exceeding the Oxford BNG policy

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Systems  
Performance

## 60% Reduction in heating & Cooling demands

The space heating & cooling demands (SHCD) demonstrates the efficiency of the building envelope. Trinity House achieves >60% reduction with SHCD of 5.58 kWh/m<sup>2</sup>/yr against LETI guidance for commercial offices to achieve an SHCD of 15 kWh/m<sup>2</sup>/yr.



Building  
Performance

## 60% Reduction in energy use intensity (EUI)

The EUI is a measure of the total energy consumed in a building annually. It includes both regulated (fixed systems for lighting, heating, hot water, air conditioning and mechanical ventilation) and unregulated (cooking and all electrical appliances, and other small power) energy. The EUI demonstrates the efficiency of the building and systems combined. This project achieves an EUI of 58.9 kWh/m<sup>2</sup>/yr against industry targets of ~150 kWh/m<sup>2</sup>/yr (75% reduction on typical lab buildings).

Note: RIBA 2030 and LETI EUI targets for typical office buildings is 55 kWh/m<sup>2</sup>/yr. However, lab buildings are generally more energy intensive than office buildings - largely due to their higher demand on mechanical service performance and equipment used.



Renewables

## 30% of Regulated Energy demand generated on-site

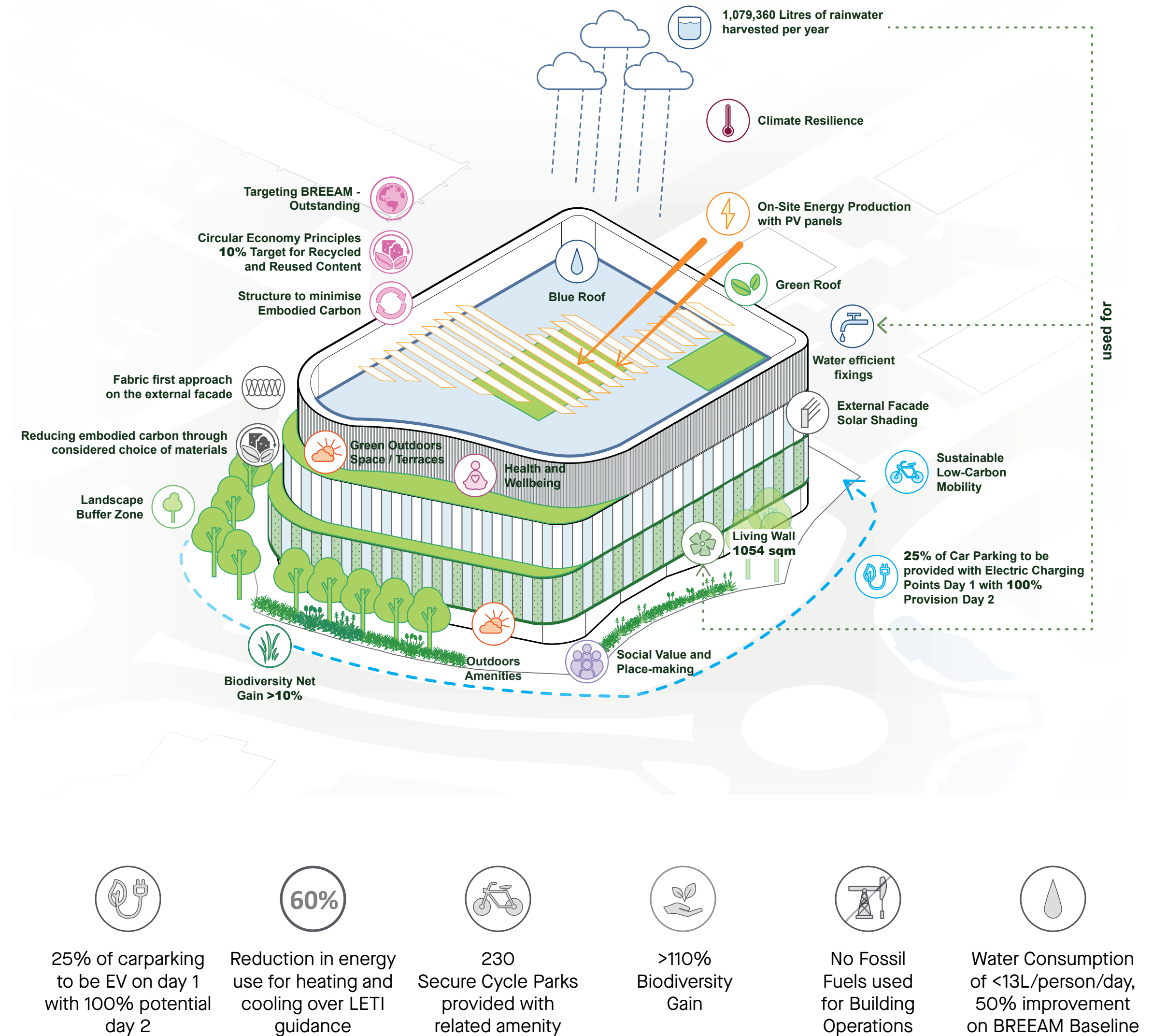
Renewable energy generation on-site should ideally be equivalent to the total energy use on-site. At Trinity House, 165,470 kWh/yr (~30% of regulated Energy Use) will be met by on-site renewable energy generation via Photovoltaic systems mounted above the plant equipment on the roof. This is higher than expected UK wide target of 15% by 2020.



Carbon  
Performance

## 45% Reduction in Operational Carbon & 23% reduction in Upfront Embodied Carbon

The consumption of materials and resources contributes to the carbon footprint of a development and therefore should be minimised. There is currently no operational or embodied carbon benchmark for a lab building. Looking at alternative benchmarks, the LETI guide shows that an embodied carbon figure from A1-A5 of 1,000 kgCO<sub>2</sub>e/m<sup>2</sup> is closer to the business-as-usual scenario for a commercial office. To be in line with 2030 targets, a value closer to 500 kgCO<sub>2</sub>e/m<sup>2</sup> should be targeted. On average the Trinity House scheme is expected to emit around 765 kgCO<sub>2</sub>e/m<sup>2</sup>, significantly less than business-as-usual scenarios and exceeds Oxford City Councils 40% operational carbon reduction requirement against a Part L compliant baseline.





# CASE STUDY

## ONE GRANTA

GRANTA PARK, CAMBRIDGE, UK

The latest addition to Granta Park Campus. This new state of the art laboratory and office accommodation will help to create a new building that works well for the users and the environment.

The design has looked to respond to the wider context and its park settings. The entrance location of this parcel of land has created an opportunity to signpost Granta Park on A11 and feature a ‘marker’ welcoming building at the arrival to the Park. The scheme has been carefully developed to ensure cohesion with the family of existing buildings within the park - bulk and mass, height, materials, amenities, landscape etc.

|                       |                        |
|-----------------------|------------------------|
| Client                | Biomed Realty          |
| Project Sector & Type | Lifescience, New Build |
| GIA                   | ~11,200 m <sup>2</sup> |
| Levels                | G + 3 + Plant Roof     |
| Lab / Office Ratio    | 66 / 33                |
| RIBA Work Stage       | 5                      |



### Certification Targets

- Baseline BREEAM ‘Excellent’ rating
- WELL enabled
- Wired Score ‘Gold’ credit

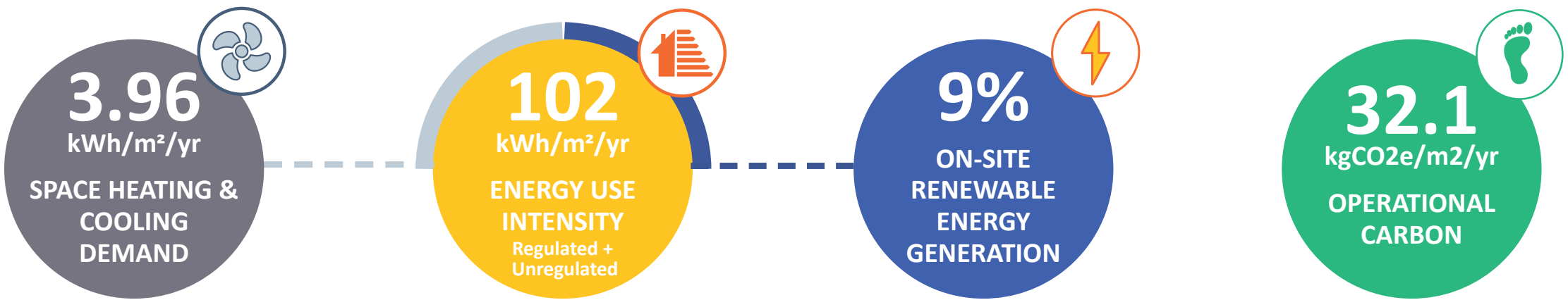


### Achievements

- An overall reduction of 35% operational CO2 emissions against part L notional baseline, a significant uplift to the 10% reduction required under current Cambridge policy
- 67% reduction in energy demand associated with heating and cooling against LETI guidelines
- 23% Biodiversity Net Gain
- 10% of carparking to be EV on day 1 with 50% EV provision for day 2
- No Fossil Fuels used for general Building Operations



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Systems  
Performance

### 67% Reduction in heating & Cooling demands

The space heating & cooling demands (SHCD) demonstrates the efficiency of the building envelope. One Granta achieves a 67% Reduction with SHCD of 4.98 kWh/m<sup>2</sup>/yr against LETI guidance for commercial offices to achieve an SHCD of 15 kWh/m<sup>2</sup>/yr.



Building  
Performance

### 29% Reduction in energy use intensity (EUI)

The EUI is a measure of the total energy consumed in a building annually. It includes both regulated (fixed systems for lighting, heating, hot water, air conditioning and mechanical ventilation) and unregulated (cooking and all electrical appliances, and other small power) energy. The EUI demonstrates the efficiency of the building and systems combined. This project achieves an EUI of 106 kWh/m<sup>2</sup>/yr against industry targets of ~150 kWh/m<sup>2</sup>/yr (75% reduction on typical lab buildings).

Note: RIBA 2030 and LETI EUI targets for typical office buildings is 55 kWh/m<sup>2</sup>/yr. However, lab buildings are generally more energy intensive than office buildings - largely due to their higher demand on mechanical service performance and equipment used.



Renewables

### 9% of Regulated Energy demand generated on-site

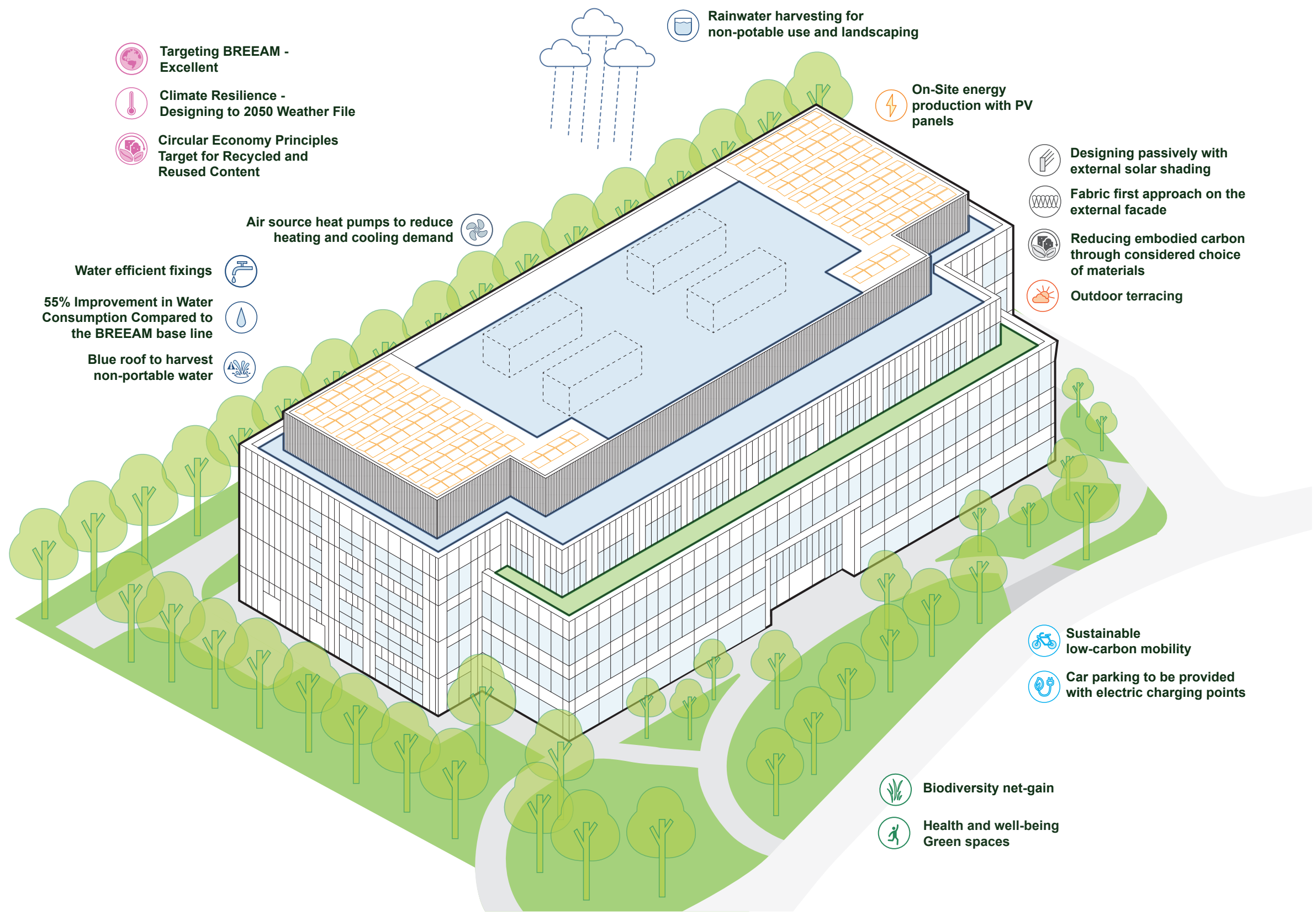
Renewable energy generation on-site should ideally be equivalent to the total energy use on-site. At One Granta, 5.98 kWh/m<sup>2</sup>/yr (9% of the regulated energy use) will be met by on-site renewable energy generation via Photovoltaic systems mounted above the plant equipment on the roof.



Embodied  
Carbon

### 30% Reduction in Operational Carbon Emissions

The consumption of resources and energy contributes to the carbon footprint of a development and therefore should be minimised. One Granta achieves 30% reduction in operational carbon emissions with a carbon emission rate of 34.3 kgCO<sub>2</sub>e/m<sup>2</sup> against a comparative notional London Part L 2021 compliant building with 49.4 kgCO<sub>2</sub>e/m<sup>2</sup>. This is significantly greater than the 10% reduction required by South Cambridgeshire Local Plan (September 2018);Policy CC/3.



50% of carparking to be EV on day 1

70% Reduction in energy use for heating and cooling over LETI guidance

122 Secure Cycle Parks provided with related amenity

123% Biodiversity Gain

No Fossil Fuels used for general Building Operations

Water Consumption of 30.6L/person/day



# CASE STUDY

## FRANKLIN BUILDING

GRANTA PARK, CAMBRIDGE, UK

Originally destined for demolition, the Franklin Building redevelopment is set to add to the emerging state-of-the-art life science community within Granta Park delivering a modern, fit-for-purpose and highly sustainable accommodation.

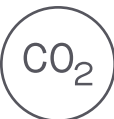
Built in 1990s, the two-storey Franklin Building is an existing research and development building sited in the north-western corner of Granta Park in Cambridge. Our proposal recycles the existing building by stripping it back to its frame, maximising the potential accommodation and providing a much improved, thermally-efficient external envelope.

|                       |                                 |
|-----------------------|---------------------------------|
| Client                | Biomed Realty                   |
| Project Sector & Type | Lifescience, Re-use & New Build |
| GIA                   | 5,400m <sup>2</sup>             |
| Levels                | G + 2 + Plant Roof              |
| Lab / Office Ratio    | 65 / 35                         |
| RIBA Work Stage       | 2                               |



### Certification Targets

- Baseline BREEAM ‘Excellent’ rating
- EPC Asset Rating - ‘A’



### Carbon Targets

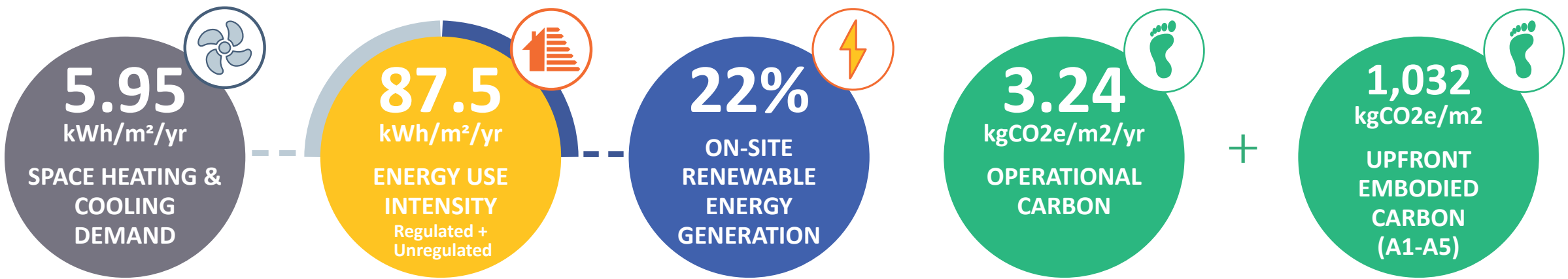
- Reduction in upfront carbon by retaining existing building structure and fabric improvement
- Reduction in operational carbon and total carbon emissions from renewable, Low or Zero Carbon sources (>10%)
- On-site PV generation



### Achievements

- 19% Reduction in Carbon emission rate against a part L notional baseline
- 55% improvement in water consumption compared to BREEAM’s notional baseline through rainwater harvest and reuse

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Systems  
Performance

## 60% Reduction in heating & Cooling demands

The space heating & cooling demands (SHCD) demonstrates the efficiency of the building envelope. The Franklin building achieves 60% Reduction with a SHCD of 5.95 kWh/m<sup>2</sup>/yr against LETI guidance for commercial offices to achieve an SHCD of 15 kWh/m<sup>2</sup>/yr.



Building  
Performance

## 40% Reduction in energy use intensity (EUI)

The EUI is a measure of the total energy consumed in a building annually. It includes both regulated (fixed systems for lighting, heating, hot water, air conditioning and mechanical ventilation) and unregulated (cooking and all electrical appliances, and other small power) energy. The EUI demonstrates the efficiency of the building and systems combined. This project achieves an EUI of 87.5 kWh/m<sup>2</sup>/yr against industry targets of ~150 kWh/m<sup>2</sup>/yr (75% reduction on typical lab buildings).

Note: RIBA 2030 and LETI EUI targets for typical office buildings is 55 kWh/m<sup>2</sup>/yr. However, lab buildings are generally more energy intensive than office buildings - largely due to their higher demand on mechanical service performance and equipment used.



Renewables

## 22% of Regulated Energy demand generated on-site

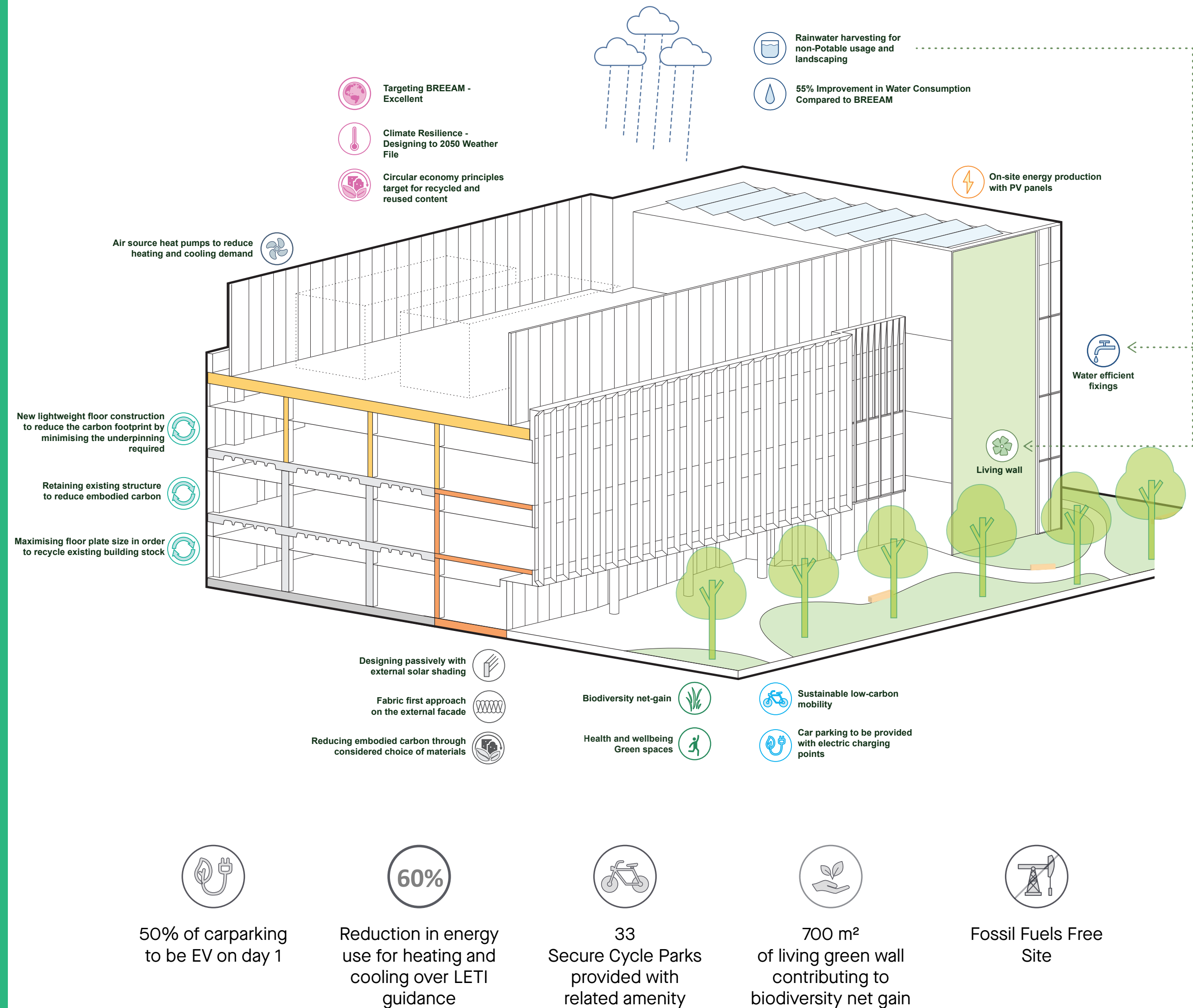
Renewable energy generation on-site should ideally be equivalent to the total energy use on-site. At Franklin building, 6.63 kWh/m<sup>2</sup>/yr (22% of regulated Energy Use) will be met by on-site renewable energy generation via Photovoltaic systems mounted above the plant equipment on the roof. This is higher than expected UK wide target of 15% by 2020.



Embodied  
Carbon

## 19% Reduction in Operational Carbon Emissions

The consumption of resources and energy contributes to the carbon footprint of a development and therefore should be minimised. The Franklin building achieves 19% reduction in operational carbon emissions with a carbon emission rate of 3.24 kgCO<sub>2</sub>e/m<sup>2</sup> against a comparative notional London Part L 2021 compliant building with 4.01 kgCO<sub>2</sub>e/m<sup>2</sup>.



# OUR CARBON COLLABORATORS

While there is ample data, support and guidance provided by institutions such as RIBA, LETI and local authorities for commercial and residential buildings, here are no industry benchmarks for science and lab buildings. Speculative labs pose a further challenge in understanding what the final building use, infrastructure and fit out requirements will be, resulting in carbon calculations also being speculative.

As a result, we collaborate with industry partners and specialists to truly understand the carbon impact and performance of our projects in order to continue to drive change. We have a research based benchmarks to assess project performance.

ScotchPartners

## Performance benchmarks

Low & Net Zero Carbon

- No industry benchmarks for science buildings
- LETI & RIBA 2030 used as reference guide
- Spec labs pose challenges for WLCA benchmarking
- UK NZC Buildings Standard – likely to set carbon limits for science; delineation between landlord & tenant carbon

Typical lab

Low carbon lab

‘NZC lab’

- Upfront Embodied Carbon: <600 kg/CO2e/m2 (LETI 2020)
- Op energy (EUI): c450 kWh/m2/yr

- Upfront EC: 600 – 350 kg/CO2e/m2
- EUI: c250 kWh/m2/yr

- Upfront EC: <350 kg/CO2e/m2 (LETI 2030)
- EUI: 150 kWh/m2/yr (Based on Cambridge emerging policy)

Carbon benchmarks for energy use and upfront embodied carbon for lab buildings developed by Scotch Partners using RIBA and LETI guidance as reference

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## CARBON BENCHMARKING FOR LAB BUILDINGS

TYPICAL LAB BUILDING OPERATIONAL CARBON

Typical Lab building vs. RIBA Challenge 2030 75% target reductions over baseline. Benchmark in EUI (kWh/m²/yr)

TYPICAL LAB BUILDING UPFRONT EMBODIED CARBON

Typical Lab building vs. RIBA Challenge 2030 65% target reductions over baseline. Benchmark in kg/CO2/m2

| Building          | Operational Carbon EUI (kWh/m²/yr) |
|-------------------|------------------------------------|
| ONE GRANTA        | 102                                |
| FRANKLIN BUILDING | 87.5                               |
| TRINITY HOUSE     | 58.9                               |

Industry benchmarks:  
Typical Lab: ~450 kWh/m²/yr  
'Low Carbon' Lab: ~150 kWh/m²/yr  
'NZC' Lab: ~100 kWh/m²/yr  
LETI 2030 75% reduction against Typical Lab: ~100 kWh/m²/yr  
LETI 2030 Commercial Building target: ~50 kWh/m²/yr

Operational Carbon performance of Niazi Roden Projects against industry benchmarks

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