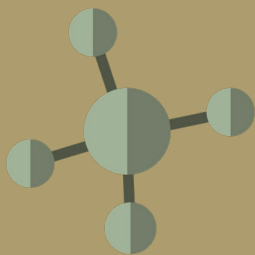
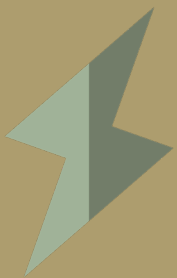


# RIBA 2030 CLIMATE CHALLENGE

VERSION 2 (2021)



Sign up to join the RIBA  
2030 Climate Challenge at  
[www.architecture.com/2030challenge](http://www.architecture.com/2030challenge)

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# RIBA 2030 Climate Challenge

The RIBA has developed voluntary performance targets for operational energy use, water use and embodied carbon.<sup>1</sup> These performance targets form the basis of the 2030 Climate Challenge which the RIBA has been developed in consultation with other professional UK construction bodies. The performance targets align with the future legislative horizon and set out a challenging but achievable trajectory to realise the significant reductions necessary by 2030 in order to have a realistic prospect of achieving net zero carbon for the whole UK building stock by 2050.

The RIBA 2030 Climate Challenge does not seek to replace or replicate a building environmental assessment and there is no associated RIBA 2030 Climate Challenge certification procedure. Instead, the RIBA presents a set of performance outcome targets for RIBA Chartered Practices to aim towards. The 2030 Climate Challenge is voluntary and is based on trust, there is no penalty imposed on Practices or projects that fall short of the Challenge.

**The purpose of the RIBA 2030 Climate Challenge is to encourage Practices to take action now and to collaboratively shift in the profession towards outcome orientated design approaches.**

## Joining the RIBA 2030 Climate Challenge

The 2030 Climate Challenge is currently open to all RIBA Chartered Practices. Signatories who join the Challenge commit to **attempt** to meet the targets on all their new and major refurbishment projects and commit to **submitting data** on these projects<sup>2</sup> to the RIBA, when available. Submitted data will be anonymised and used only for specific purposes as outlined below. Whilst becoming a 2030 Climate Challenge signatory is currently restricted to RIBA Chartered Practices, the targets themselves are open source and can be used and embedded into projects or even in business plans.

There is no penalty or consequence for projects that miss the Challenge's voluntary performance targets. Equally by joining the Challenge, Practices are not mandated to submit data on each and every single project.

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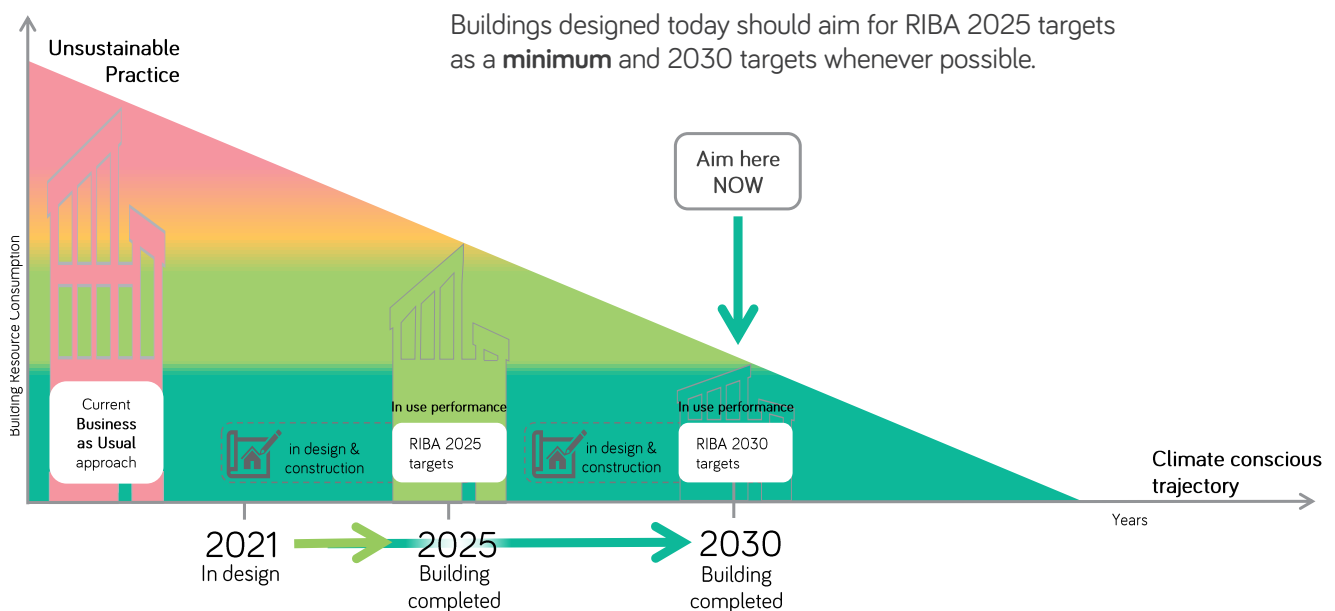
<sup>1</sup> Further guidance can be found in the RIBA Sustainable Outcomes Guide (November 2019)

<sup>2</sup> The size of 'new and major' projects will vary between Practices, depending on Practice size, location etc. The RIBA requests that as a minimum, signatories submit data relating to their significant projects; 'significance' may be reflected in project complexity or cultural value, not necessarily only by project size and cost.

# Take Action Now

The climate emergency demands urgent action and leadership by architects and the wider construction industry. The last decade (2011-2020) was the warmest on record.<sup>3</sup> We must act now and play our part in limiting the further exacerbation of climate change. In 2019 the UK Government passed a law to require the UK to end its contribution to global warming by 2050 by bringing all greenhouse gas emissions to net zero. The built environment sector must do its part to meet this ambition and ensure that new and retrofit buildings deliver net zero whole life carbon in advance of incoming regulation. The 2019 Green Construction Board Buildings Mission 2030 report<sup>4</sup> shows that net zero operational carbon is already possible. The challenge for the profession is to extend good practice to all future work, as highlighted by the World Green Building Council's report on net zero embodied carbon.<sup>5</sup>

Net zero whole life carbon should be prioritised in lower density areas using on-site renewables. In urban areas net zero whole life carbon will likely require additional offsite renewable energy generation, with certified woodland offsetting<sup>6</sup> in the UK as a last resort. Energy demand reduction and energy efficiency must lead all approaches irrespective of geographical location.



## RIBA 2030 Climate Challenge as built target trajectories

The RIBA joined the global 'declare' movement in June 2019 and to ensure that the strong words of the declaration of a climate emergency are matched by actions, the RIBA has set RIBA Chartered Practices a challenge of achieving the following reductions **as soon as possible** but as a minimum for projects in operation in 2030:

1. Reduce operational energy demand by at least 60% from current business as usual baseline figures, before offsetting
2. Reduce embodied carbon by at least 40% from current business as usual baseline figures, before offsetting
3. Reduce potable water use by at least 40% from CIRIA benchmark/ Building Regulation figures
4. Achieve all core health and wellbeing metrics (set out in the table below)

These reductions will also form the basis of RIBA's recommendations to Government for future Building Regulations requirements.

<sup>3</sup> State of the Global Climate 2020 (WMO-No. 1264), WMO (2021)

<sup>4</sup> Buildings Mission 2030: Background Report to Recommendations from the Green Construction Board in response to the 2030 Buildings Mission (2019)

<sup>5</sup> World Green Building Council Advancing Net Zero embodied carbon call to action report (2019)

<sup>6</sup> Net Zero Carbon Buildings: A Framework Definition (2019)

# The Targets v2 (2021)

The voluntary operational energy and water use and embodied carbon performance targets that are set out in the 2030 Climate Challenge have been developed by the RIBA consultation with experts across the industry. The targets take into account the latest recommendations from the Green Construction Board<sup>7</sup> and are aligned with other built environment professional bodies.

Originally launched in October 2019, the RIBA 2030 Climate Challenge has now been re-issued as Version 2 (2021) with refined and updated targets that encompass development in the knowledge base of performance trajectories – particularly in the embodied carbon field. The embodied carbon targets in Version 2 are now aligned with LETI, the Whole Life Carbon Network and others, and follow the latest jointly authored guidance. Version 2 of the Climate Challenge presents ambitious but achievable forward-facing performance outcomes, set against business-as-usual compliance approaches.



**As the targets are for performance outcomes of buildings in operation, the RIBA advocates that buildings in design today should, as a *minimum*, adopt the 2025 targets.**

These targets are based on domestic and commercial buildings, the RIBA recognises that there may need to be further refinement by sector and building type in the future. In addition, the targets themselves may need further revision in the coming years as more detailed data and further work in sectoral contributions to carbon emissions in line with science-based targets is undertaken by the industry. The RIBA therefore acknowledges the imperfect nature of the targets but give the urgency for action on carbon emissions, there is no time to wait for the perfect set of figures to be developed.

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<sup>7</sup> Buildings Mission 2030: Background Report to Recommendations from the Green Construction Board in response to the 2030 Buildings Mission (2019)



**RIBA 2030 Climate Challenge target metrics for non-domestic (new build offices)**

RIBA Sustainable Outcome Metrics	Business as usual (new build, compliance approach)	2025 Targets	2030 Targets	Notes
<b>Operational Energy</b>  kWh/m <sup>2</sup> /y	130 kWh/m <sup>2</sup> /y DEC D (90)	< 75 kWh/m <sup>2</sup> /y DEC B (50) and/or NABERS Base build 5	< 55 kWh/m <sup>2</sup> /y DEC B (40) and/or NABERS Base build 6	Targets based on GIA. Figures include regulated & unregulated energy consumption irrespective of source (grid/renewables).  1. Use a 'Fabric First' approach 2. Minimise energy demand. Use efficient services and low carbon heat 3. Maximise onsite renewables
<b>Embodied Carbon</b>  kgCO <sub>2</sub> e/m <sup>2</sup>	1400 kgCO <sub>2</sub> e/m <sup>2</sup>	< 970 kgCO <sub>2</sub> e/m <sup>2</sup>	< 750 kgCO <sub>2</sub> e/m <sup>2</sup>	Use RICS Whole Life Carbon (modules A1-A5, B1-B5, C1-C4 incl sequestration). Analysis should include minimum of 95% of cost, include substructure, superstructure, finishes, fixed FF&E, building services and associated refrigerant leakage.  1. Whole Life Carbon Analysis 2. Use circular economy strategies 3. Minimise offsetting & use as last resort. Use accredited, verifiable schemes (see checklist).  BAU aligned with LETI band E; 2025 target aligned with LETI band C and 2030 target aligned with LETI band B.
<b>Potable Water Use</b>  Litres/person/day	16 l/p/day (CIRA W11 benchmark)	< 13 l/p/day	< 10 l/p/day	CIBSE Guide G.

**RIBA 2030 Climate Challenge target metrics for non-domestic (new build schools)**

RIBA Sustainable Outcome Metrics	Business as usual (new build, compliance approach)	2025 Targets	2030 Targets	Notes
<b>Operational Energy</b>  kWh/m <sup>2</sup> /y	130 kWh/m <sup>2</sup> /y	< 70 kWh/m <sup>2</sup> /y	< 60 kWh/m <sup>2</sup> /y	Targets based on GIA. Figures include regulated & unregulated energy consumption irrespective of source (grid/renewables).  Refer to Department for Education Output Specifications for schools: 2025: Primary <55 kWh/m <sup>2</sup> /y, 2030: Primary <45 kWh/m <sup>2</sup> /y  1. Use a 'Fabric First' approach 2. Minimise energy demand. Use efficient services and low carbon heat 3. Maximise onsite renewables
<b>Embodied Carbon</b>  kgCO <sub>2</sub> e/m <sup>2</sup>	1000 kgCO <sub>2</sub> e/m <sup>2</sup>	< 675 kgCO <sub>2</sub> e/m <sup>2</sup>	< 540 kgCO <sub>2</sub> e/m <sup>2</sup>	Use RICS Whole Life Carbon (modules A1-A5, B1-B5, C1-C4 incl sequestration). Analysis should include minimum of 95% of cost, include substructure, superstructure, finishes, fixed FF&E, building services and associated refrigerant leakage.  1. Whole Life Carbon Analysis 2. Use circular economy strategies 3. Minimise offsetting & use as last resort. Use accredited, verifiable schemes (see checklist).  BAU aligned with LETI band E; 2025 target aligned with LETI band C and 2030 target aligned with LETI band B.
<b>Potable Water Use</b>  m <sup>3</sup> /pupil/year	4.5 m <sup>3</sup> /pupil/y	< 1.5 m <sup>3</sup> /pupil/y	< 0.5 m <sup>3</sup> /pupil/y	Refer to Department for Education Output Specifications for schools.

### RIBA 2030 Climate Challenge target metrics for domestic / residential

RIBA Sustainable Outcome Metrics	Business as usual (new build, compliance approach)	2025 Targets	2030 Targets	Notes
<b>Operational Energy</b>  kWh/m <sup>2</sup> /y	120 kWh/m <sup>2</sup> /y	< 60 kWh/m <sup>2</sup> /y	< 35 kWh/m <sup>2</sup> /y	Targets based on GIA. Figures include regulated & unregulated energy consumption irrespective of source (grid/renewables). BAU based on median all electric across housing typologies in CIBSE benchmarking tool.  1. Use a 'Fabric First' approach 2. Minimise energy demand. Use efficient services and low carbon heat 3. Maximise onsite renewables
<b>Embodied Carbon</b>  kgCO <sub>2</sub> e/m <sup>2</sup>	1200 kgCO <sub>2</sub> e/m <sup>2</sup>	< 800 kgCO <sub>2</sub> e/m <sup>2</sup>	< 625 kgCO <sub>2</sub> e/m <sup>2</sup>	Use RICS Whole Life Carbon (modules A1-A5, B1-B5, C1-C4 incl sequestration). Analysis should include minimum of 95% of cost, include substructure, superstructure, finishes, fixed FF&E, building services and associated refrigerant leakage.  1. Whole Life Carbon Analysis 2. Use circular economy strategies 3. Minimise offsetting & use as last resort. Use accredited, verifiable schemes (see checklist).  BAU aligned with LETI band E; 2025 target aligned with LETI band C and 2030 target aligned with LETI band B.
<b>Potable Water Use</b>  Litres/person/day	125 l/p/day (Building Regulations England and Wales)	< 95 l/p/day	< 75 l/p/day	CIBSE Guide G.

For reference purposes current (2021) Good Practice for new build projects in-use now are as follows:

**Non-Domestic (new build office):**

Operational Energy 90 kWh/m<sup>2</sup>/y (GIA) and/or DEC C(65) and/or NABERS Base build 5; Embodied Carbon LETI Band D 1180 kgCO<sub>2</sub>e/m<sup>2</sup>; Potable Water Use 16 l/p/day


**Non-Domestic (schools):**

Operational Energy 75 kWh/m<sup>2</sup>/y (GIA); Embodied Carbon LETI Band D 870 kgCO<sub>2</sub>e/m<sup>2</sup>; Potable Water Use 3m<sup>3</sup>/pupil/yr

**Domestic/Residential:**

Operational Energy 60 kWh/m<sup>2</sup>/y (GIA) no gas boilers; Embodied Carbon LETI Band D 1000 kgCO<sub>2</sub>e/m<sup>2</sup>; Potable Water Use 110 l/p/day

### RIBA 2030 Climate Challenge target metrics for all buildings

Best Practice Health Metrics 		References
Overheating	25-28 °C maximum for 1% of occupied hours	CIBSE TM52, CIBSE TM59
Daylighting	> 2% av. daylight factor, 0.4 uniformity	CIBSE LG10
CO <sub>2</sub> levels	< 900 ppm	CIBSE TM40
Total VOCs	< 0.3 mg/m <sup>3</sup>	Approved Document F
Formaldehyde	< 0.1 mg/m <sup>3</sup>	BREEAM

With this Challenge, the RIBA seeks to encourage outcome-based approaches to design.

The RIBA advocates that buildings designed today should ideally aim for the 2030 targets now, but as a minimum adopt the 2025 performance targets.

The RIBA appreciates that some projects may be impeded in delivering these targets by factors outside the Chartered Practices control. Progress above business as usual approaches should therefore be recorded and recognised as an achievement in the right direction along the trajectory towards better performance outcomes.

# 2030 Climate Challenge Data Collection

Signatories who join the Challenge commit to submit data relating to their significant projects.<sup>8</sup> It is the signatories' responsibility to submit the data to the RIBA. The RIBA appreciates that some projects may be impeded in meeting the Challenge targets for reasons that are outside of the Chartered Practices control. Data should be recorded and submitted irrespective of this. Progress towards better performance outcomes above business as usual approaches is recognised as an achievement in the right direction along the Challenge trajectory.

A data form is available for signatories to complete and includes the in-use energy and water performance data of the building one year after completion. This information needs to be obtained from the client and should be taken from energy/water meter readings (or energy/water bills) for the building over a year, so that both winter and summer seasons feature in the calculation. A Client Guide and Client letter template is available for 2030 Climate Challenge signatories to use to assist in gathering the required client commitment.

The RIBA provides assurance that all submitted data will remain anonymous and will only be used by the RIBA to:

- a) grow industry knowledge of trends in building performance
- b) identify trends in building performance gaps between predicted design targets and actual building performance data
- c) identify opportunities for improvements for sectoral carbon reductions
- d) deliver targeted research and knowledge development to the profession
- e) inform future engagement activity for the RIBA membership

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<sup>8</sup> 'Significant' projects will vary between Practices, depending on Practice size and significance may be reflected in project cost or size or complexity/cultural value.

# RIBA 2030 Climate Challenge Checklist

Meeting the RIBA 2030 Climate Challenge targets is essential if architects are to play their part in mitigating climate change and limiting the rise of global temperature to below 1.5°C.

Action from The Government is also critical and the RIBA will campaign for UK Planning and Building Regulations to meet and/or exceed these targets as soon as possible.

The RIBA's 2030 Climate Challenge Checklist sets out the actions that Chartered Practices will need to take to meet the Challenge targets.

The Challenge focuses on the three environmental sustainability outcomes that all new or refurbished buildings contribute to: energy use, embodied carbon and water use with an overall aim to target net zero whole life carbon emissions (or better) by 2030 at the latest.

**Are you ready to take the RIBA 2030 Climate Challenge and commit to attempt to meet the targets and willing to submit project data to the RIBA?**

Sign up at [www.architecture.com/2030challenge!](http://www.architecture.com/2030challenge)

## Client commitment

- ✓ Seek Client buy-in for submitting operational energy and water data to the RIBA one year after project completion. RIBA Challenge signatories can access the following tools to assist with engaging clients via the 2030 Challenge portal.

## Whole life carbon

- ✓ Consider whole life carbon implications of design decisions, and target net zero whole life carbon<sup>9</sup> for new and retrofit building projects by 2030. Follow RIBA's Sustainable Outcomes guide and LETI guidance.<sup>10</sup>

## Operational energy and carbon emissions

- ✓ Target < 55kWh/m<sup>2</sup>/year operational energy use for non-domestic buildings by 2030 (60% reduction in operational energy from current business-as-usual baseline figures and maximise the use of on-site renewables).
- ✓ Use low carbon heating, for example heat pumps or connections to non-fossil fuel district heat networks and target no new connections to the gas grid for non-domestic building projects by 2025.
- ✓ Target < 35kWh/m<sup>2</sup>/year operational energy use for domestic buildings by 2030 (minimum 50% reduction from current business-as-usual baseline figures).
- ✓ Design for low carbon heating with no fossil fuel boilers installed in new homes by 2025 at the latest, in line with the Future Homes Standard and as recommended in the Committee of Climate Change's 'UK housing: Fit for the future?'<sup>11</sup> report.
- ✓ Design using realistic predictions of the operational energy targets to avoid the performance gap and report the energy use by fuel type. Disclose the full breakdown of regulated and unregulated energy use. The RIBA recommends the use of rigorous design for performance methods such as CIBSE TM54<sup>12</sup> or Better Building Partnership Design for Performance.<sup>13</sup>
- ✓ Use offsetting as last resort, and use a recognised offsetting framework. Offsetting should be follow the 8. Principles as set out in UKGBC's Renewable Energy Procurement & Carbon Offsetting report (March, 2021).<sup>14</sup>

<sup>9</sup> Net Zero Carbon Buildings: A Framework Definition (2019)

<sup>10</sup> RIBA Sustainable Outcomes Guide LETI Net Zero 1 pager and Climate Emergency Design Guide

<sup>11</sup> CCC's UK housing: Fit for the future? (2019)

<sup>12</sup> CIBSE TM54: Evaluating Operational Energy Performance of Buildings at the Design Stage (2013)

<sup>13</sup> Better Buildings Partnership Design for Performance (2019)

<sup>14</sup> UKGBC's Renewable Energy Procurement & Carbon Offsetting report (2021)



## Existing building stock

- ✓ Assist existing clients with carrying out post occupancy evaluation and suggest strategies for fine-tuning existing buildings to reduce energy use and operational carbon emissions.<sup>15</sup>
- ✓ Prioritise the retention, reuse and repurposing of existing buildings where possible and where retrofit upgrades make carbon sense from a whole life perspective.

## Embodied energy and carbon emissions

- ✓ Prioritise the refurbishment and retrofit of existing buildings where possible.
- ✓ Target an embodied carbon performance of <750 kgCO<sub>2</sub>e/m<sup>2</sup> for non-domestic office buildings and <625 kgCO<sub>2</sub>e/m<sup>2</sup> for domestic buildings by 2030 (minimum 40% reduction in embodied carbon compared to the current business as usual benchmarks) by using low carbon materials that are responsibly and ethically sourced.
- ✓ Evaluate embodied carbon using the RICS Whole Life Carbon Assessment for the Built Environment professional statement 2017<sup>16</sup> methodology and approach and include modules A1-5, B1-5, C1-4 (including sequestration), including a minimum of 95% of the cost allocated to each building element category (0-7 of Table 3, page 11 of RICS Whole Life Carbon Assessment).
- ✓ Embodied carbon assessments should reflect all items listed in the project's Bill of Quantities, since RIBA Challenge are out as-built performance targets.
- ✓ Reasonable assumptions need to be made in terms of level of detail of the project, in line with EN 15978. Any Whole Life Carbon Assessment report should clearly state which RIBA stage it was undertaken in and should therefore reflect the appropriate level of detail.
- ✓ On projects where Whole Life Carbon assessments are not being undertaken as part of the project team's core services, effort should be focussed on reducing embodied carbon following the hierarchy in LETI design guidance,<sup>17</sup> and reasonable endeavours should be made to quantify the embodied carbon savings achieved. Analysis tools such as H\B:ERT or FCBS CARBON may be used assist the process.<sup>18</sup>
- ✓ Offset remaining carbon emissions either through renewable energy projects and/or certified woodland afforestation or peatland projects, using a recognised offsetting framework. Offsetting should be follow the 8. Principles as set out in UKGBC's Renewable Energy Procurement & Carbon Offsetting report (March, 2021).<sup>19</sup>

## Water use

- ✓ Target 10 litres/person/day for non-domestic buildings and 75 litres/person/day for domestic buildings (minimum 40% reduction in potable water use compared to CIRIA guidance<sup>20</sup> and UK Building Regulations requirements<sup>21</sup>), by minimising water demand, optimising building systems, and harvesting rainwater as well as recycling and reusing water on-site.

## Indoor health

- ✓ Avoid unintended consequences of poor health and wellbeing by meeting key health and wellbeing metrics set out in the RIBA 2030 Climate Challenge.

<sup>15</sup> RIBA Plan for Use Guide (March 2021)

<sup>16</sup> RICS Whole Life Carbon Assessment for the Built Environment Professional Statement (2017). Design tools exist that embody the RICS embodied carbon categories to help ensure consistency and equivalence of measurement. See also: [RIBA Embodied and Whole Life Carbon Assessment for Architects \(2017\)](#).

<sup>17</sup> LETI Embodied Carbon one-pager

<sup>18</sup> H\B:ERT or FCBS CARBON

<sup>19</sup> Offset schemes must follow a recognised scheme e.g. CDM (Clean Development Mechanism), Verra's Verified Carbon Standard (VCS) scheme or the Gold Standard. In the UK afforestation and peatland projects should be certified either through the [UK Woodland Carbon Code](#) or the [UK Peatland Code](#)

<sup>20</sup> CIRIA W11: Key Performance Indicators for water use in offices

<sup>21</sup> Building Regulation 36, guidance can be found in [Approved Document Part G](#).

## Biodiversity

- ✔ Significantly enhance the project site's biodiversity net gain and green cover compared to pre-development levels.<sup>22</sup>  
Plan for ongoing maintenance and management of green/blue infrastructure on site, to ensure biodiversity net gain is remains a continued legacy.

## Delivery

- ✔ Follow the RIBA Plan of Work Sustainability Strategy<sup>23</sup> and RIBA Plan for Use Guide<sup>24</sup> and undertake at least light touch post occupancy evaluation<sup>25</sup> to gather predicted and actual performance of existing and new building projects.
- ✔ Submit energy, water and embodied carbon data to the RIBA For further guidance on additional sustainability metrics see the RIBA Sustainable Outcomes Guide.<sup>5</sup>

## Data Submission

- ✔ Submit energy, water and embodied carbon project performance data to the RIBA.
- ✔ Compile and collate data using the RIBA 2030 Challenge data submission form. Data required includes the in-use energy and water performance data of the building one year after completion. This information needs to be obtained from the client and should be taken from energy/water meter readings (or energy/water bills) for the building over a year, so that both winter and summer seasons feature in the calculation.
- ✔ It is the 2030 Challenge signatories' responsibility to submit the data to the RIBA.

## Data Protection

- ✔ The RIBA provides assurance that all submitted data will remain anonymous and will only be used by the RIBA in accordance with the principles set out above in this document.

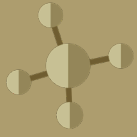
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<sup>22</sup> Biodiversity Net Gain approach

<sup>23</sup> RIBA Plan of Work 2020

<sup>24</sup> RIBA Plan for Use Guide (March 2021). Members may wish to use formal BSRIA Soft Landings processes

<sup>25</sup> In addition to the RIBA Plan for Use Guide see Housing Fit for Purpose, Performance, Feedback and Learning, Fionn Stevenson (2019) for domestic post occupancy evaluation



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Royal Institute of British Architects  
66 Portland Place, London W1B 1AD

Tel: +44 (0)20 7580 5533 Email: [info@riba.org](mailto:info@riba.org)

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Architecture.com