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EVERARD

Delivering complete consultancy  
solutions across the built environment

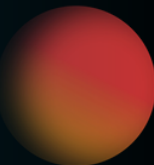
# Climate & Biodiversity **Emergency** Declaration

Climate Emergency and Zero Carbon: Status, needs and actions

[www.pickeverard.co.uk](http://www.pickeverard.co.uk)

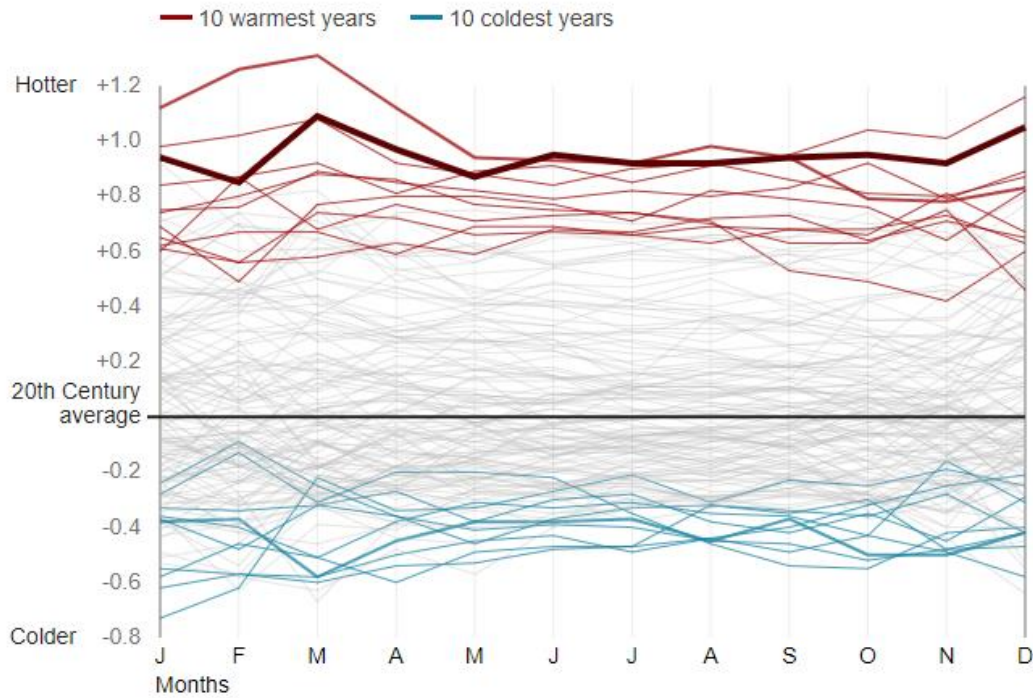
[josehernandez@pickeverard.co.uk](mailto:josehernandez@pickeverard.co.uk)

- Fully multi-disciplinary built environment design and consultancy practice
- Successful transition of 600+ employees nationally to working from home
- Working from home, flexible working, office (and home) layout
- Defining The New Normal, including refurbishment of the Leicester office
- Impact on carbon footprint (commuting and business travel ~75%)
- Improvements on air quality, noise reduction and nature
- Maintained or increased contact with clients
- Cautiously optimistic given our strong position
- Need for a Green Recovery included in our 2025 Business Plan



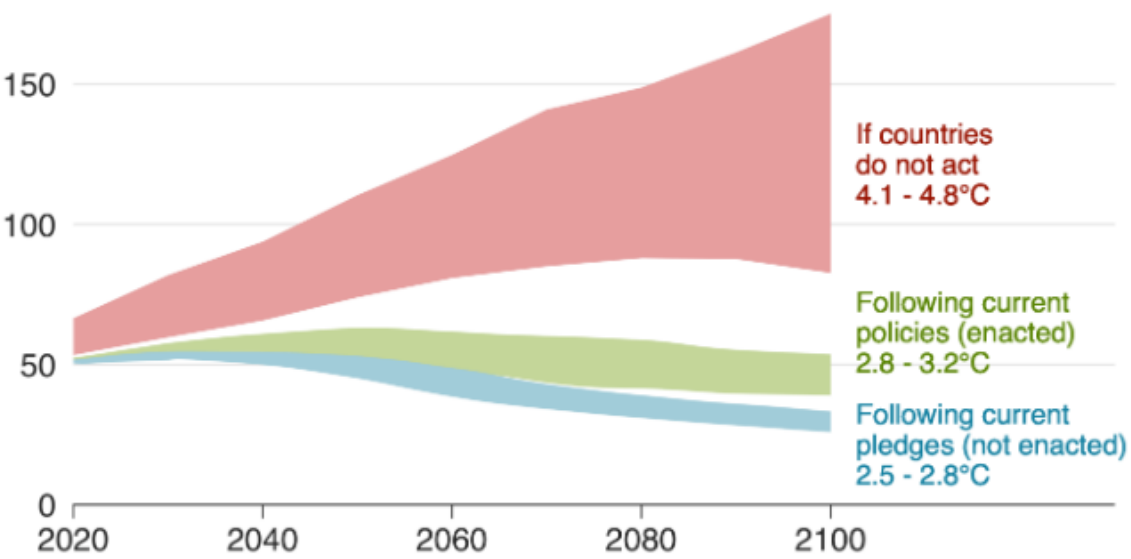
# How years compare with the 20th Century average

2019



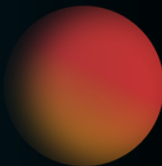
# How much worse will the problem get?

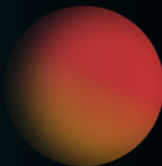
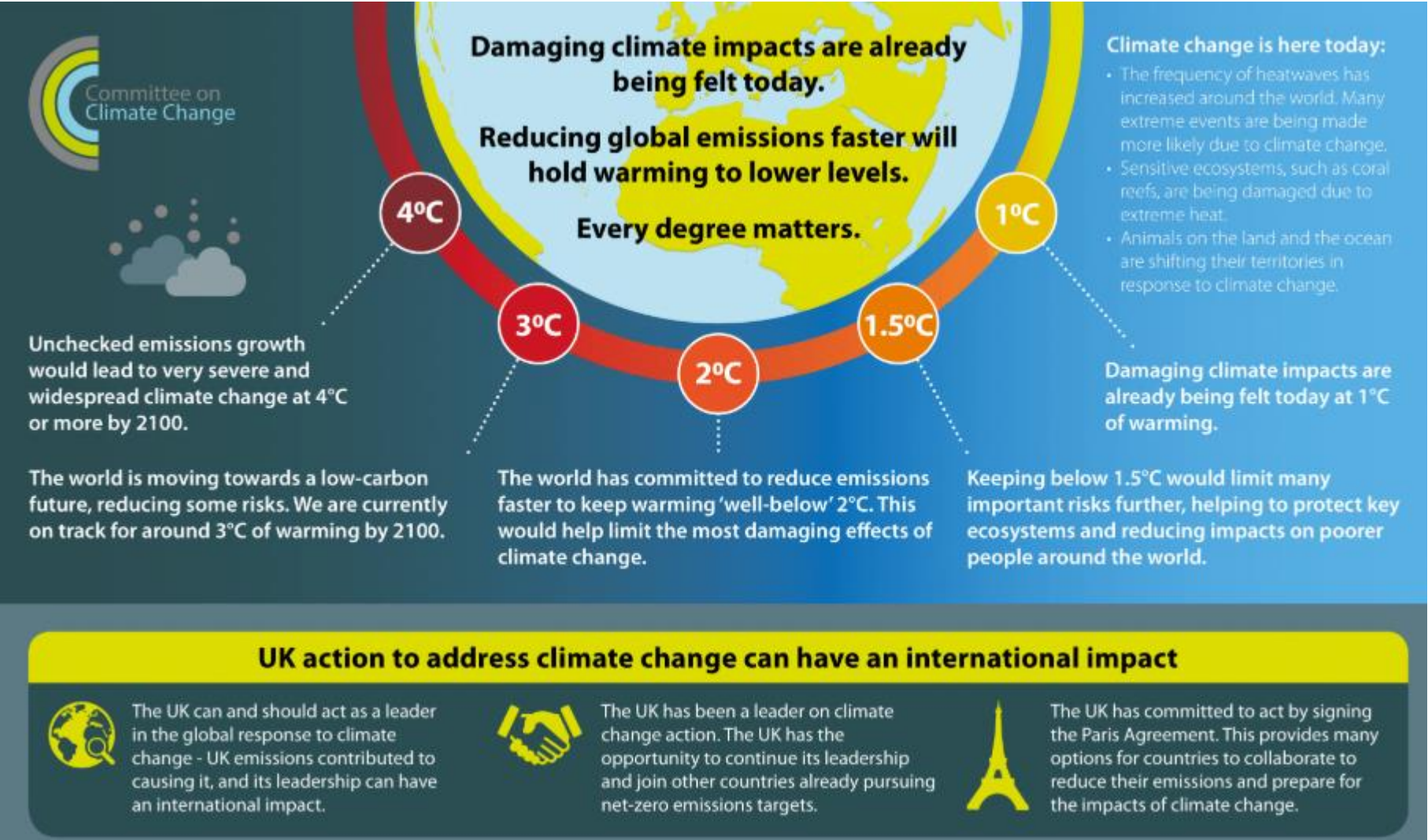
Emissions\* and expected warming by 2100



\*Emissions are in Gigatonnes of CO2 equivalent

Source: Climate Action Tracker

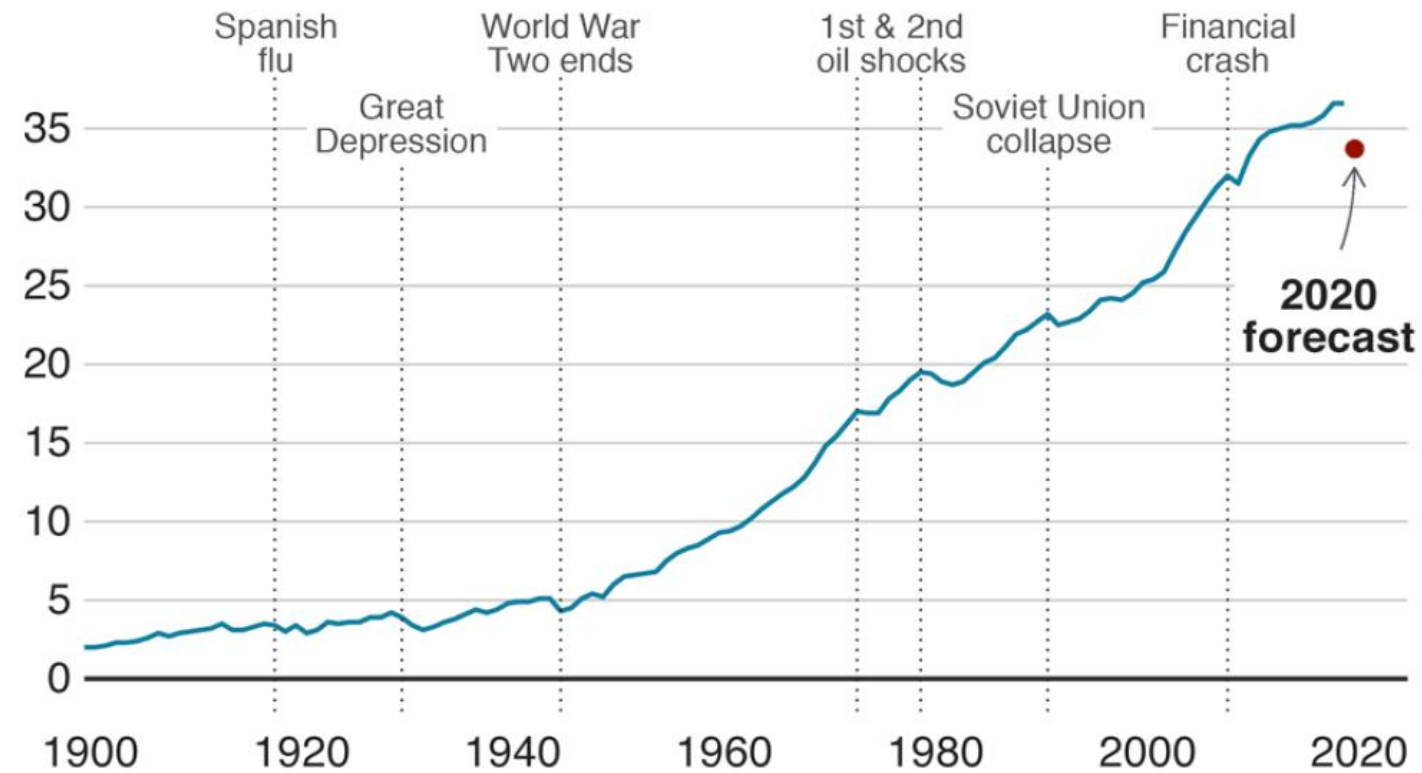






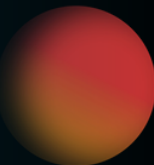
## Global CO<sub>2</sub> emissions, 1900-present

Billion tonnes of CO<sub>2</sub> per year



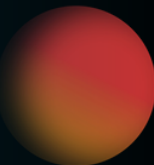
Source: Global Carbon Project, CDIAC & IEA

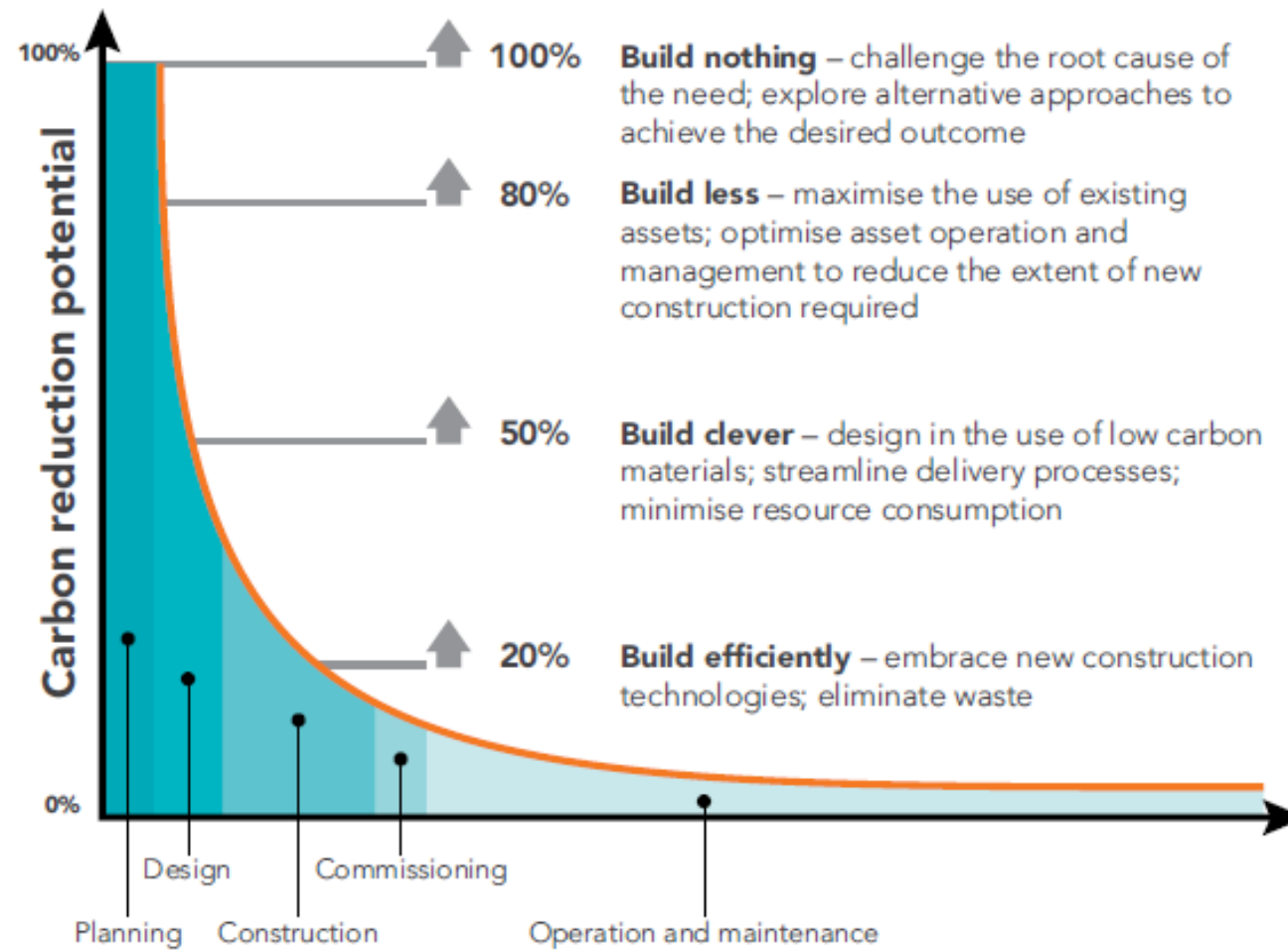
BBC



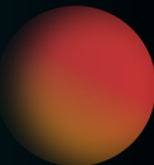
# For a Green Economic Recovery aligned with Climate Emergency

- Develop Climate Emergency and Zero Carbon Action Plans
- Build, Build, Build (as long as Better, Greener and Refurbish)
- National Buildings Refurbishment Programme
- Building Regulations, Local Planning, Minimum Energy Efficiency Savings (MEEES)
- National Energy Strategy: Low Carbon Technologies & Fuels
- Funding (Public and Private) and quick Routes to Market
- Modern Methods of Construction (MMC) & Design for Manufacturing and Assembly (DfMA)
- Smart Cities, Digital Twins
- Societal and Behavioural changes





Ref: HM Treasury, Green Construction Board 2020



The Public Sector has declared Climate Emergency:

- **274/408 (67%)** of District, County, Unitary & Metropolitan Councils have declared a Climate Emergency
- Also 8 Combined Authorities / City Regions
- Zero Carbon Plans (but only around 40 published):
  - 7 by 2025
  - 1 by 2028
  - **234 by 2030**
  - 12 by 2040
  - 20 by 2050
- Universities, NHS Trusts, etc. also developing their plans





# Construction Declares Climate and Biodiversity Emergency

Pick Everard becomes first UK firm to sign up to every discipline under the Construction Declares Climate and Biodiversity Emergency

12 February, 2020

FT  
FINANCIAL  
TIMES

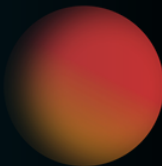
UK's Leading  
Management  
Consultants

statista

2019

#ConstructionDeclares

CONSTRUCTION DECLARES is a global petition uniting all strands of construction and the built environment. It is both a public declaration of our planet's environmental crises and a commitment to take positive action in response to climate breakdown and biodiversity collapse.



Dr Jose Hernandez  
5 Jun 2020

### World Environment Day 'Time for Nature' - What can each of us do?

The post-Covid19 economic recovery needs to be one that breaks the strong correlation between economic growth and CO2 emissions. It is to...

[Read More...](#)

Dr Jose Hernandez  
25 Aug 2019

### Surplus of energy generation, anyone?

Not a model I expect to be replicated everywhere but one to study and analyse to see where and to what extent local public energy...

[Read More...](#)

Dr Jose Hernandez  
22 Apr 2020

### The relevance of Circular Economy on Earth's Day

Taking the opportunity of today being 50th anniversary of Earth's Day, it is worth looking at the current status where only 9% of the...

[Read More...](#)

Dr Jose Hernandez  
13 Sep 2019

### Smart Cities - For people, not for technology

This very interesting event reaffirmed my view that Leicester is on the right track by focusing on smart cities as a concept that needs...

[Read More...](#)

Dr Jose Hernandez  
16 Aug 2019

### Building regulations – the need for change

Pick Everard are supporting CIBSE and the Building Performance Network in their letter to the Committee on Climate Change (CCC) to set...

[Read More...](#)

Dr Jose Hernandez  
16 Apr 2020

### Virtual COP26 preparations but still face-to-face for the crucial finishing touches

From music concerts and sporting events through to industry conferences, countless gatherings of all kinds have been cancelled or...

[Read More...](#)

Dr Jose Hernandez  
5 Sep 2019

### Glad to be in such strong company

Belatedly in reporting this but fantastic to see Pick Everard in such strong company in the Financial Times 2019 UK's leading management...

[Read More...](#)

Dr Jose Hernandez  
9 Aug 2019

### Don't take action at your own peril...

Dr Jose Hernandez  
12 Mar 2020

### Petrol, diesel and hybrid car sales ban brought forward to 2035

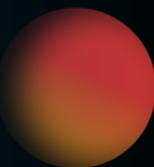
The government announced recently its plans to bring forward its ban on the sale of petrol, diesel or hybrid cars from 2040 to 2035, as...

[Read More...](#)

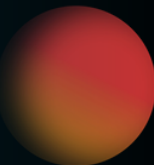
Dr Jose Hernandez  
30 Aug 2019

### On digital (t)wins

In the age of the Internet of Things (IoT), Artificial Intelligence (AI), Machine Learning (ML) and Big Data, the construction industry...

[Read More...](#)

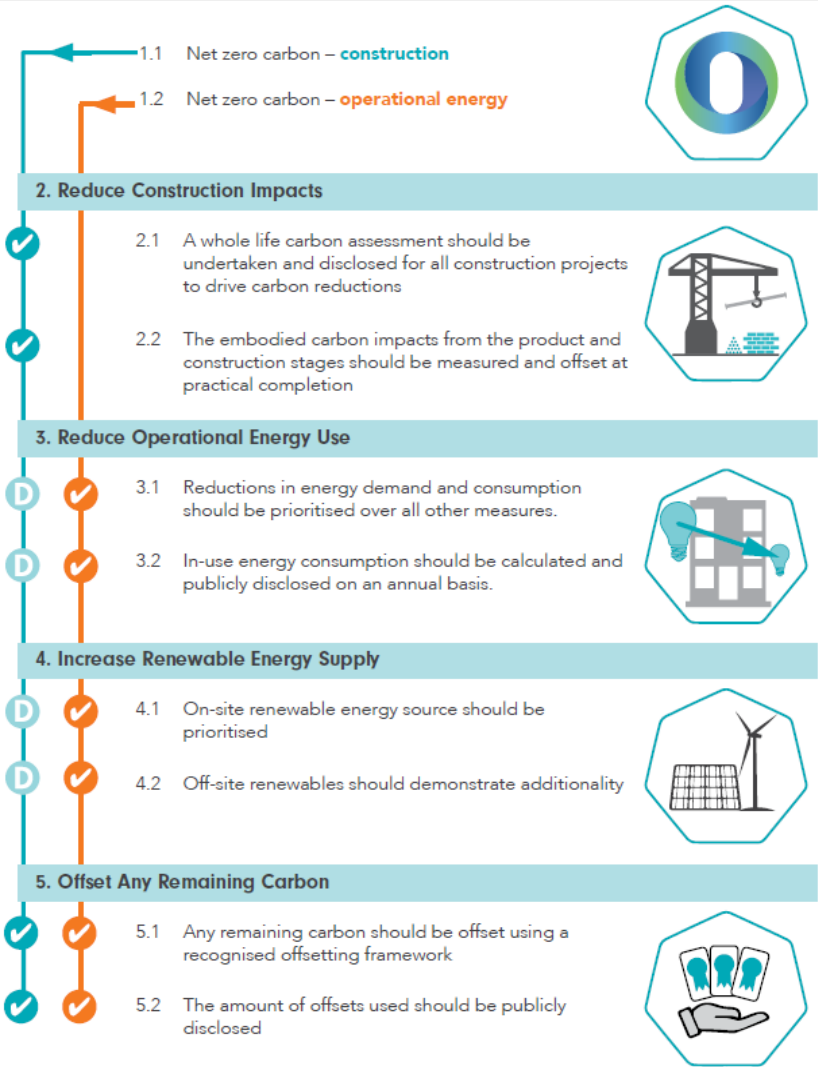
- As signatories, we will seek to:
  - **Raise awareness** of the climate and biodiversity emergencies and the urgent need for action
  - **Advocate for faster change** towards regenerative design practices and Government funding priority
  - **Establish climate and biodiversity mitigation principles** as a key measure of our work
  - **Share knowledge** and research to that end on an open source basis.
  - **Evaluate all new projects** to climate breakdown mitigation
  - **Upgrade existing buildings** for extended use as a more carbon efficient alternative
  - **Include life cycle costing, whole life carbon modelling and post occupancy evaluation**
  - **Collaborate** with contractors and clients to further reduce construction waste.
  - **Accelerate the shift to low embodied carbon materials** in all our work.





# Net Zero Carbon Buildings: A Framework Definition


Ref: UKGBC, 2019






# RIBA Plan of Work 2020


## RIBA Plan of Work 2020 Overview



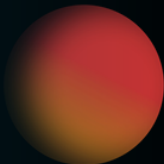
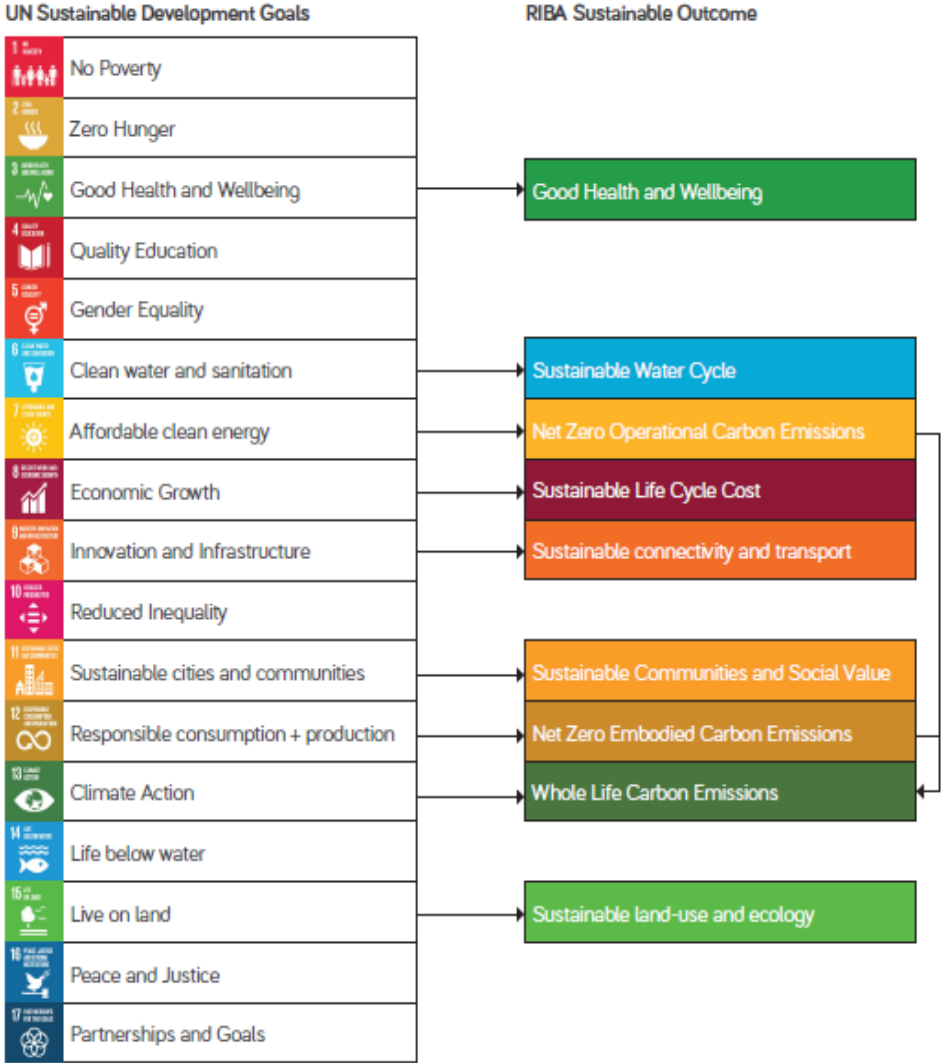


RIBA  
Plan of Work

[www.ribaplanofwork.com](http://www.ribaplanofwork.com)



RIBA  
Architecture.com

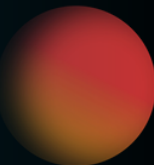


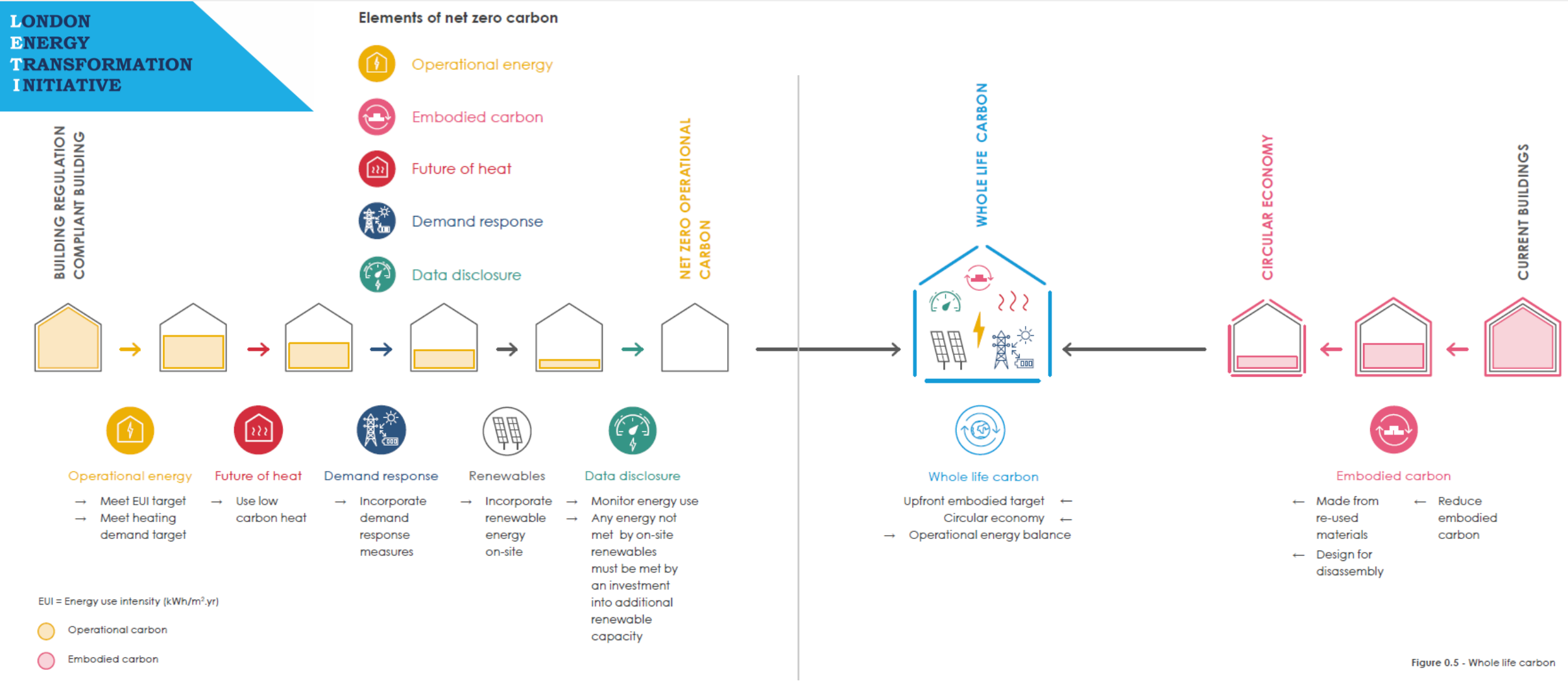


# RIBA Sustainable Outcomes Guide

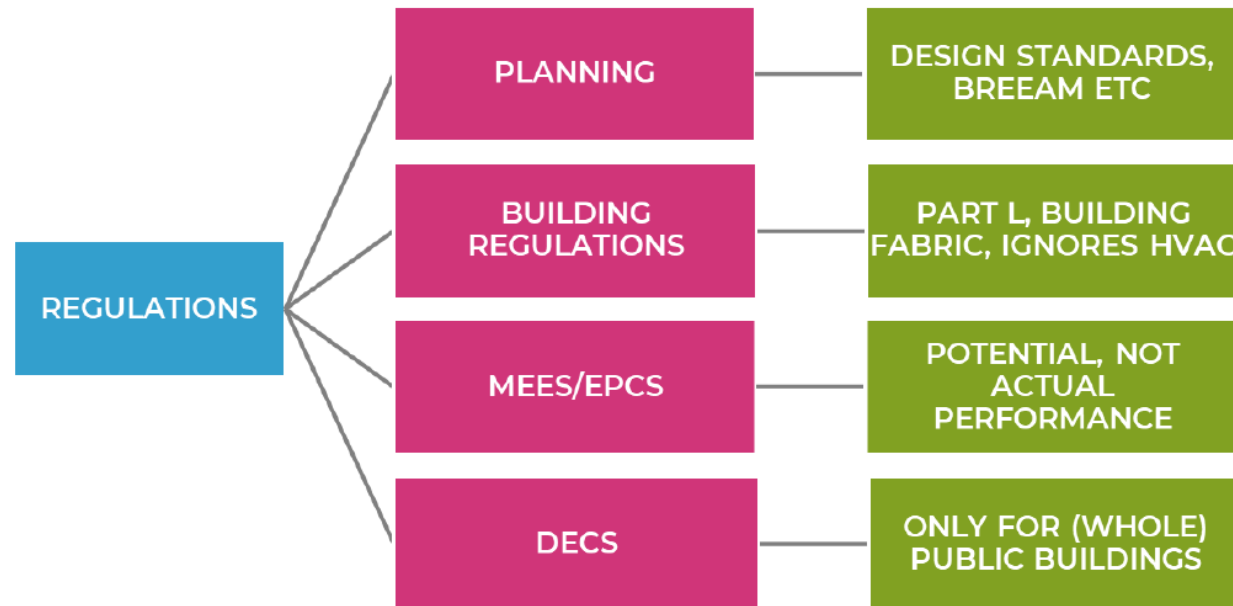
1. Commit to **RIBA 2030 Challenge**
2. Use **core sustainable outcomes** through all stages of the RIBA Plan of Work
3. Commit to **performance in use verification**
4. Deliver **net zero operational carbon** as soon as practical, or by 2030 at the latest.
5. Deliver all other sustainable outcomes as soon as possible
6. Use **appropriate sustainability assessment tools** during the design process that promote in-use performance verification
7. Follow the **Soft Landings Principles** or Methodology to create a collaborative and outcomes focused project ethos to deliver better outcomes
8. Commit to completing a 'Light Touch **POE at the end of Stage 6**
9. If required, carry out level 2 or 3 POE on projects post completion during Stage 7
10. Encourage the client and the design team to commit to **disclose outcomes performance data**

	0	1	2	3	4	5	6	7
	Strategic Definition	Preparation and Brief	Concept Design	Spatial Coordination	Technical Design	Manufacturing and Construction	Handover	Use
Operational Energy and CO2	Consider conditioning strategies.	Options for renewables and implications on building and site design.	Develop an operational and seasonal energy strategy.	Audit design against operational energy outcome target.	Detail seasonal strategies.	Check the construction quality.	Review the seasonal commissioning process.	Gather POE data to evaluate the energy use for the building.
Embodied Energy and CO2	Prioritise the reuse of existing facilities.	Assess site or existing buildings for reusable parts or components.	Prioritise low carbon and recycled materials.	Test relative impacts of design options.	Integrate and communicate detailed design strategies.	Update embodied energy and carbon assessment.	Assess the Sustainability Outcomes for embodied energy.	Gather POE data.
Sustainable Connectivity and Transport	The proximity of public transport to site.	Create a green travel plan.	Incorporate the aspects of the green travel plan into the emerging design.	Incorporate the aspects of the green travel plan into the emerging design.	Coordinate aspects of the green travel plan into the technical design.	Check the green travel plan is implemented during the construction process.	Support the assessment of the Sustainability Outcomes.	Gather POE data.
Sustainable Water Cycle	Possibility of on-site water recycling.	Define water use target outcomes.	Incorporate water use target outcomes.	Coordinate design to deliver outcomes for water use.	Coordinate technical design to deliver outcomes for reduced water use.	Check installations meet sustainable water cycle outcomes.	Assess the Sustainability Outcomes.	Gather POE data.
Sustainable Land Use and Biodiversity	Prioritise brownfield site selection.	Commission necessary surveys to understand existing ecology.	Develop the design against targets.	Consider ecological health in procurement strategy.	Integrate and communicate detailed design strategies.	Check that quality and installation are in line with Sustainability Outcomes.	Support the assessment of the Sustainability Outcomes for sustainable land use.	Gather POE data.
Good Health and Well-being	Connection of external spaces, occupancy, daylight and thermal comfort.	Requirements for internal environmental conditions.	Review the design against outcomes.	Encourage active circulation and travel.	Illustrate how the proposals deliver Sustainability Outcomes.	Check that quality and installation are in line with Sustainability Outcomes.	Support the assessment of Sustainability Outcomes for well-being.	Gather occupant feedback.
Sustainable Communities and Social Value	Enhance existing social and community structures.	Plan for community consultation.	Consider the need for and scale of private and public external spa.	Coordinate proposals to deliver Sustainability Outcomes.	Integrate social and economic aims into the technical design.	Check the sustainable communities' strategy is delivered on site.	Support the assessment of Sustainability Outcomes.	Gather POE data.
Sustainable Life Cycle Value	Prioritise passive design principles.	Plan for community consultation.	Consider resilience to future changes in climate.	Review the expected building lifespan.	Integrate and communicate strategies.	Prepare for commissioning of controls.	Support the assessment of the Sustainability Outcomes.	Gather operational cost data.





## The Challenge: UK's approach to energy efficiency in buildings



Resulted in *Design for Compliance* not performance

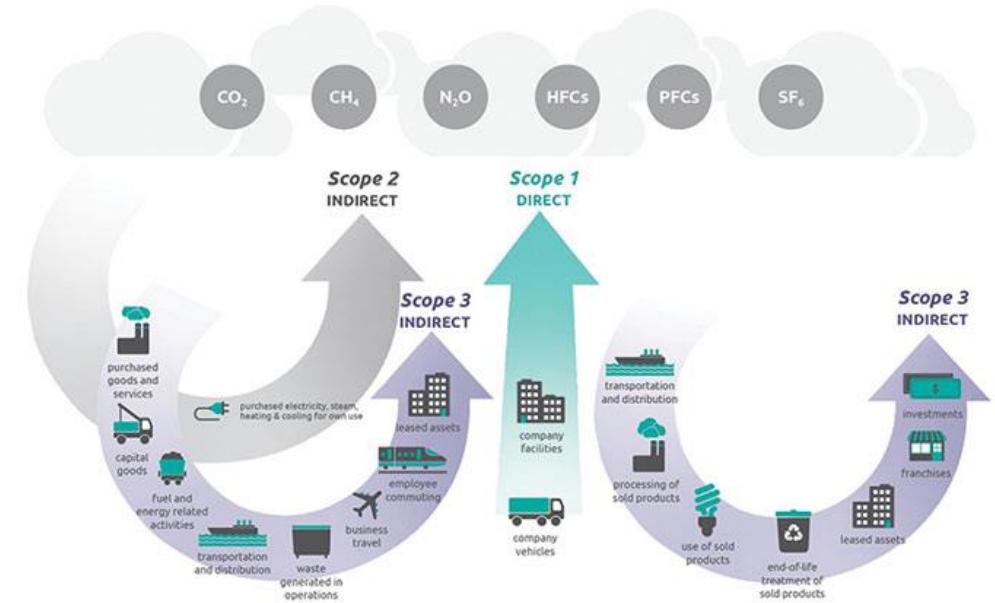
**BBP** | BETTER BUILDINGS PARTNERSHIP

Design for Performance

Ref: BBP, 2020

## Developing Zero Carbon Action Plans

- **Stage 1:** Net Zero Action Plan evidence base
  - Define scope, boundaries, requirements, targets and KPIs
  - Establish links to other existing work and projects
  - Identify Baseline (transport, domestic, non-domestic) and Metrics
  - Carbon Trajectories and Carbon Budgets
  - Identify Specific Interventions and Planning Powers
- **Stage 2:** Communications and Engagement
- **Stage 3:** Evaluating Interventions and Drafting Net Zero Action Plan
  - Role of the Council in each intervention and scope of influence (public /private sector, citizens)
  - Stakeholder groups in each intervention including who would need to take action
  - Barriers and benefits including novel financial mechanisms (taxation incentives, climate funds)
  - Best practice examples from other localities for example with procurement, engagement, planning policy etc.
- **Stage 4:** Projects Identification and Feasibility
- **Stage 5:** Cabinet and final Action Plan Documents



Ref: Carbon Trust, 2020



Ref: Siemens, 2020

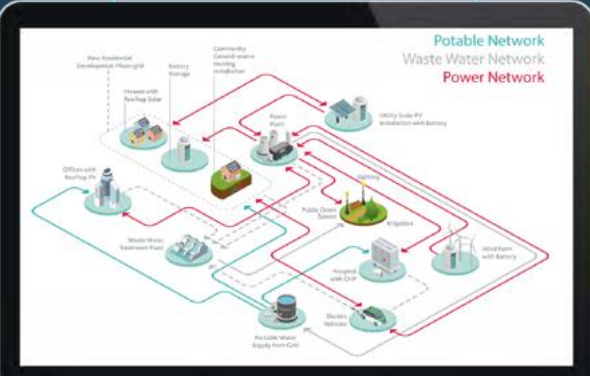


# iVN: Intelligent Virtual Networks

Assess and **compare** different scenarios e.g. batteries, electric vehicles, renewable technologies

Simulate the resource **networks** (electricity, heating or cooling) and its interactive components such as buildings, prosumers, renewables, batteries, electric vehicles (EV's), etc.

Create **virtual network model** for electricity, district heating, district cooling, waste heat and CHP



Assess the **feasibility of microgrids**: match supply and demand for buildings, prosumers, renewables and the grid

Perform **energy balance calculations** across networks

Generate the **energy demands** through simulation in the iCD or VE or get actual time-series data from iSCAN if available

Initially **Design Mode** (optimise design and retrofit upgrades) and **eventually Operation Mode** (real time community operational management)

# iSCAN: Intelligent Data Analysis

Improve building **operation and management**

Quickly identify faults and define alerts and alarms using AI/ML

Combine real measured time-series data with virtual data

The user can collect, compare and interrogate data using **AI and Machine Learning (ML)** to find correlations



Automated '**Insights**' rules to save energy and reduce costs using AI/ML

A **single platform** to manage all time-series building data from your community

Data from **any source**: BMS systems, utility meters, sensors, IoT devices, portable data loggers and web services such as weather

Help **reduce energy use** and carbon emissions, increases maintenance efficiencies, etc.

# iCD: Intelligent Community Design

3D Urban Design and Master Planning Tool

Generated data can be incorporated into other ICL tools

Effective Team and Client Collaboration

Generates **masterplanning metrics**

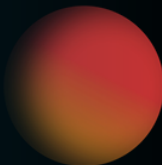
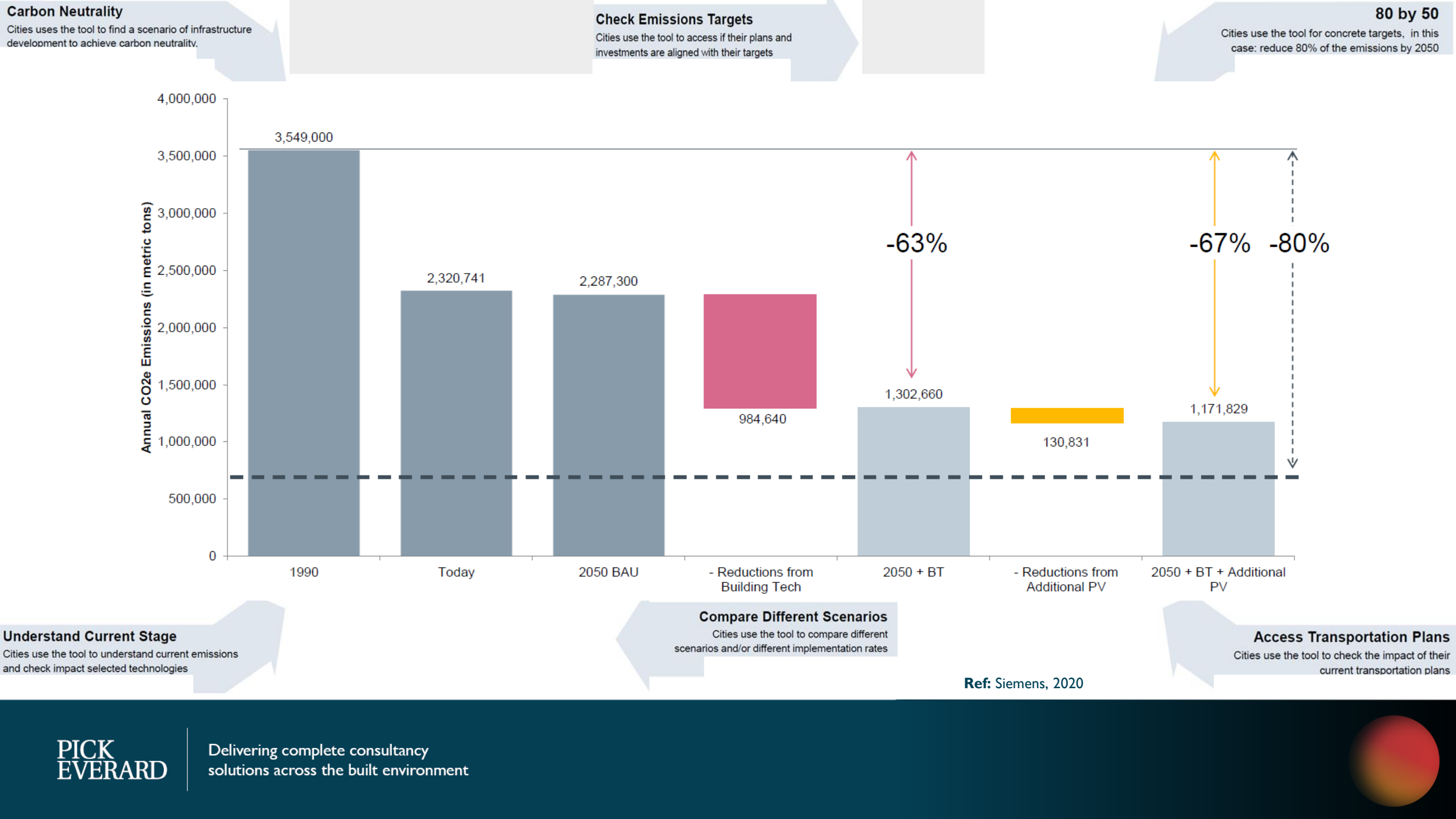


Compare scenarios: test ways to improve your community

Real data can be imported such as BMS, metered or utility data

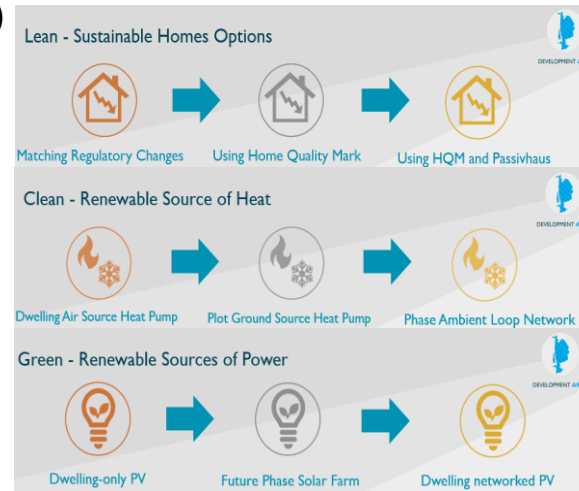
ICD model can be analysed in the **IESVE**

Evaluate the **potential for renewable energy**

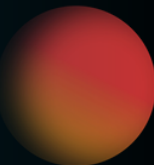


# Current project examples

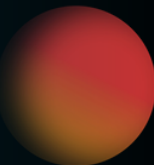
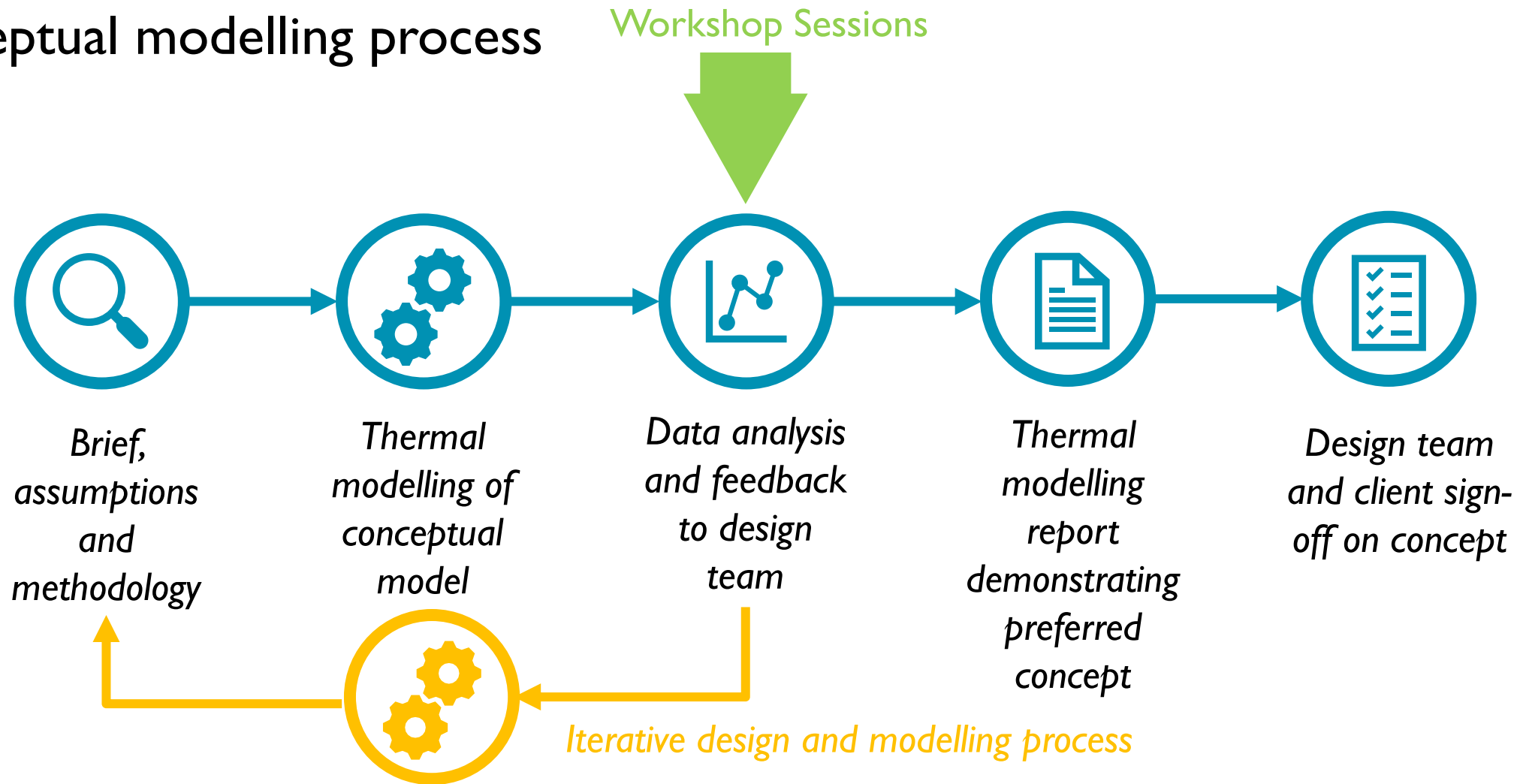
- Modular MMC Net Zero Carbon School (Department for Education pathfinder)
- Net Zero Carbon BREEAM 2018 Outstanding (Government Agency)
- Masterplan sustainability and energy options (Leicestershire County Council)
- Energiesprong housing refurbishment (Nottingham City Council)
- Zero Carbon housing project (Government Department)
- University of Birmingham campus (with tech/finance partner)
- Scottish and Southern Energy EV charging (national)
- Western Way Development (West Suffolk County)
- Zero Carbon Plans (two research bodies)



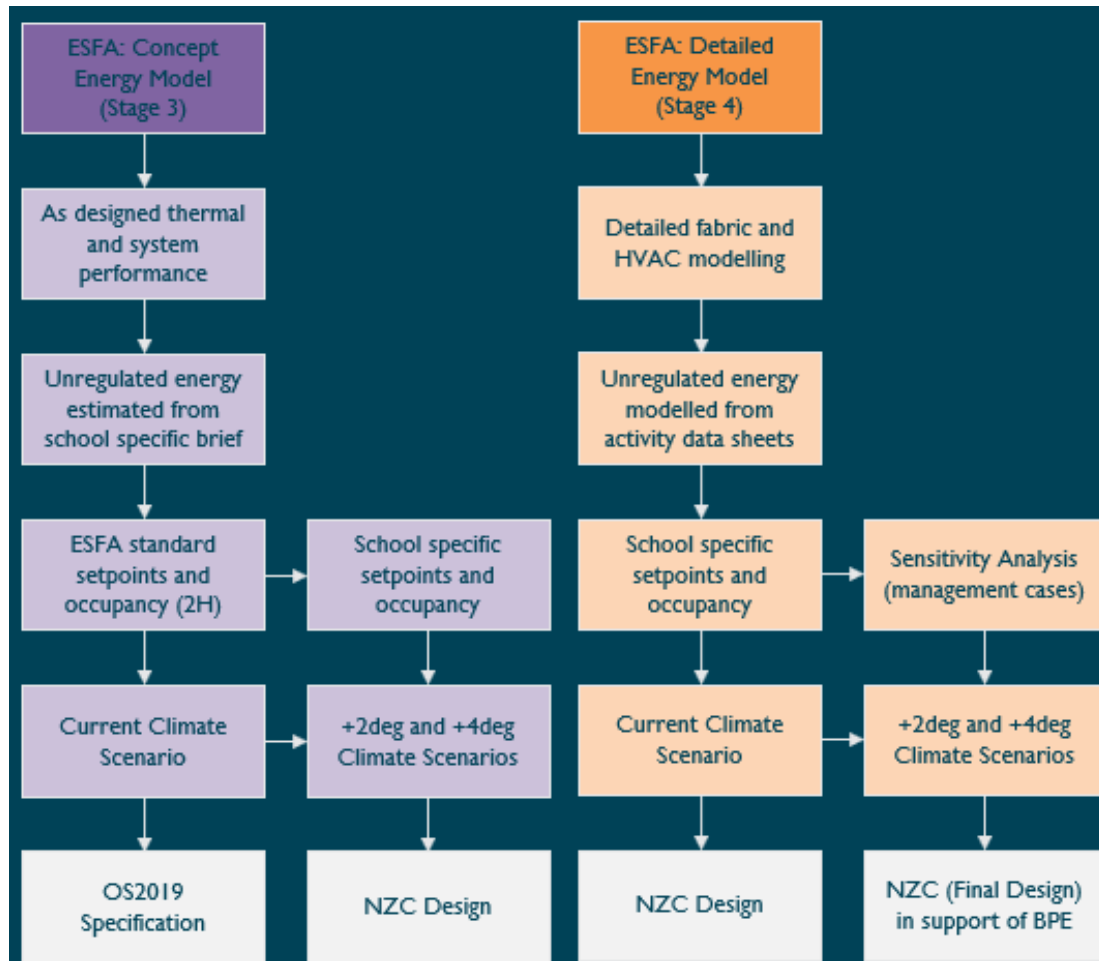
	OS 19 with MMC SSB		Waste water management
	UK GBC methodology and definitions		Reduction in embodied carbon
	Design to include regulated energy		+2 and +4 Degree weather file
	Design to include unregulated energy		SAP 10.1 carbon factors
	Whole life cost model		Health and wellbeing targets
	Fabric first approach		Robust BIM environment



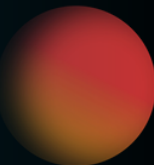
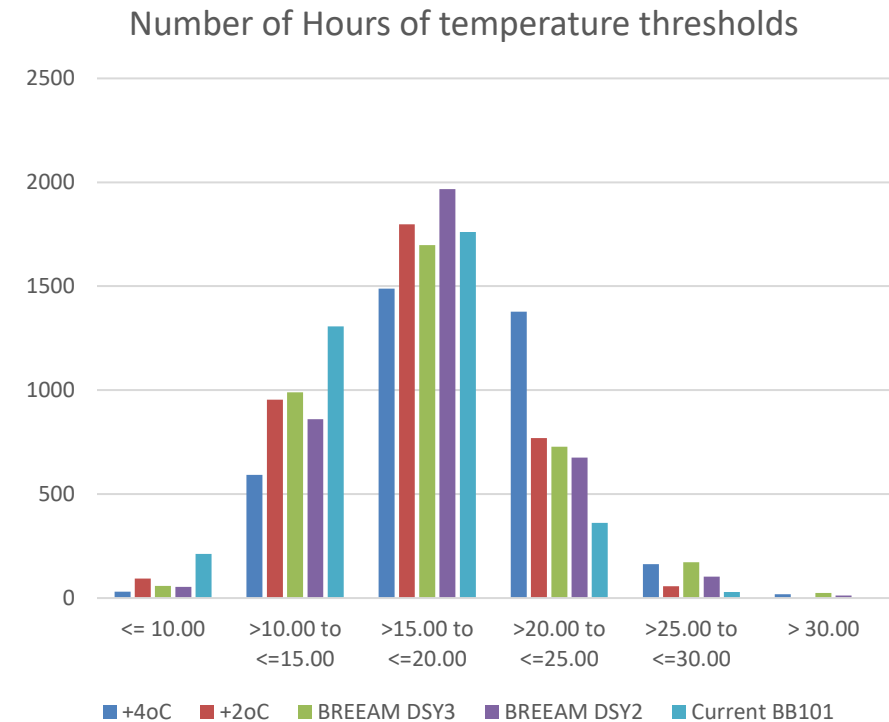
# Conceptual modelling process







**+4°C** CIBSE DSYI 2080 High 50 Plymouth  
**+2°C** CIBSE DSYI 2080 Low 50 Plymouth





# ACHIEVING CARBON ZERO

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## STEP 0: SET SUSTAINABILITY TARGETS

- Set sustainability targets with the client and design team.
- Challenge targets if you believe they need to go further or manage expectations.
- Agree on Net Zero Carbon boundaries and metrics.

## STEP 1: UNDERTAKE PARAMETRIC PASSIVE DESIGN ANALYSIS

- Develop a fabric first approach.
- Use metrics to compare passive design including mitigation and adaptation to climate change.

## STEP 2: REDUCE EMBODIED CARBON

- Undertake a life cycle analysis to assess the embodied carbon of construction elements.
- Set a target limit including construction waste, consider MMC and DfMA.

## STEP 3: REDUCE OPERATIONAL ENERGY DEMAND

- Undertake detailed TM54 energy use forecasts.
- Work with the client and the design team through options, challenge design proposals and embed Soft Landings principles.

## STEP 4: USE EFFICIENT SYSTEMS AND CLEAN FUELS

- Favour solutions that avoid combustion of fossil fuels.

## STEP 5: MAXIMISE RENEWABLE ENERGY AND STORAGE

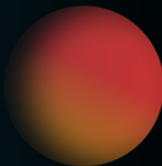
- Where possible supply all remaining energy demand using on-site renewable energy systems or certified off-site systems.
- Understand timing and capacity of renewable energy generation and use.

## STEP 6: WHOLE LIFE COSTING

- Bring together all embodied and operational carbon.
- Review if that changes the proposed system thinking approach.

## STEP 7: CARBON OFFSETTING AND DATA DISCLOSURE

- Ensure the use of any offsetting schemes is not used as a buy-out clause.
- Report annual results and review the potential for further reductions.



## OUR FIVE STRATEGIC PILLARS



### ASSET RATIONALISATION

We can help you undertake a thorough review of your portfolio to ensure assets are fit for purpose and are being used efficiently. The aim here is to maximise the use of existing resources, whilst helping you to identify cost savings and assets to be released for sale or redevelopment. You can also identify value creation by looking at creating more flexible spaces in your buildings and extending their lifecycles.



### ENERGY EFFICIENCY AND RENEWABLES

Here we can assist you to ensure that assets are designed, built, operated and maintained in the most energy efficient way possible. With this also brings cost efficiencies.

Minimising the use of energy which relies on carbon emitting fuels is vital for reversing the affects of climate change – but it also creates a significant business opportunity both on and off site. With our experience we are positioned to find those strategic opportunities for you.



### MATERIALS AND RESOURCES

This is an area where we can support you in your quest to decarbonise the operating and construction process from off site DfMAD to the specification of 'circular' materials, meaning they can be reused over a longer term and reduce wastage.

Our qualified experts can support the delivery of 'green' infrastructure which works in harmony with natural systems to create regenerative and restorative solutions. Working to zero waste and zero pollution objectives.



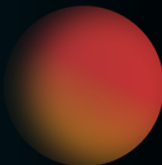
### OFFSETTING

It may seem that offsetting is the end game, when in fact it's an essential stepping stone and part of a managed journey to achieve carbon positive. Offsetting can play a part in all of those key pillars aforementioned and we will ensure that optimal offsetting measures are strategically placed to reduce your carbon footprint at all stages.



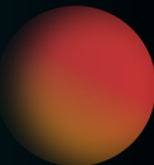
### BEHAVIOURS


In a world where our entire economic system is built upon our reliance on fossil fuels, changing the way people think about the planet is no mean feat. But it has to be done. The future wellbeing of our nation and beyond is of paramount importance. Perfect Circle can provide crucial support throughout this transition to you and your communities with the qualified experts in place to bring about this social change. Social behaviour is perhaps the only thing standing between you and meeting your commitment to the carbon neutral agenda.



# Supporting a Green Economic Recovery aligned with Climate Emergency

- Fully multi-disciplinary practice
- Assist with Climate Emergency and Zero Carbon Action Plans
- Expertise in Zero Carbon and Sustainable Masterplans
- Assist with funding bids
- Identify and engage suitable supply chain
- Offer quick and reliable routes to market
- Propose and bring in suitable supply chain, technological and financial partners
- Bring insights from industry and organisations

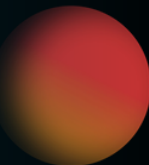




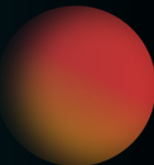
Nature provides a free  
lunch, but only if we  
control our appetites.

William Ruckelshaus

“ quote fancy ”











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Delivering complete consultancy  
solutions across the built environment

# Climate & Biodiversity **Emergency** Declaration

Climate Emergency and Zero Carbon: Status, needs and actions

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