



WELCOMES SPACES ENGINEERING HUB EASTERN REGION

Concertus Design & Property Consultants

SPACES HUB PRESENTATION - DESIGNING FOR CLIMATE CHANGE

18th September 2019

Nicola Booth – Principal Building Services Engineer



WELCOME TO CONCERTUS

Concertus is a vibrant multi-disciplinary design and property consultancy based in Ipswich, Suffolk.

We specialise in the delivery of quality, innovative, value-focused projects that bring our clients' vision to life.

We offer wide ranging professional expertise and knowledge, creating successful solutions that are tailor-made to meet our clients' needs.

Working across a number of specialisms, we are an enthusiastic, passionate and talented team of property specialists and designers who provide a range of services to clients in both the public and private sectors.

We strive to make places, properties and people be the best they can by working collaboratively with all parties to create effective and sustainably built environments.

Nicola Booth

Principal Building Services Engineer and current Chairman of CIBSE East Anglia Region

MCIBSE accredited Mechanical Engineer with 14 years of experience in the construction industry,

Delivered projects within the commercial, education, healthcare, residential, heritage and leisure sectors.

Passionate about working alongside both client and multidisciplinary design team to deliver cost effective, energy efficient systems that provide optimal comfort for their end users.

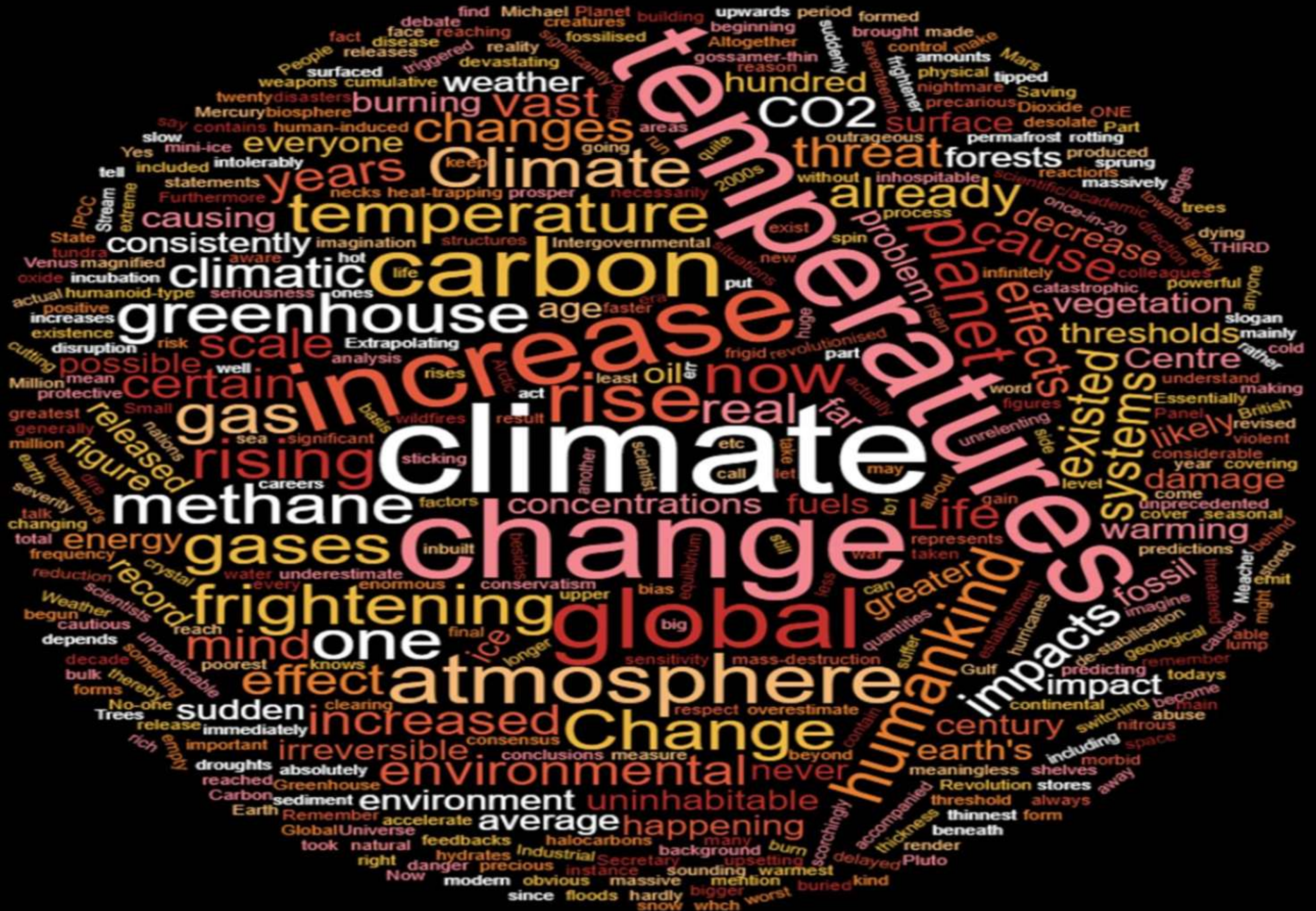
Manages a team of Mechanical and Engineers alongside two other Principals, ensuring that projects are resourced effectively, to deliver consistent, efficient, holistic and high standard designs.

- **What is a Climate Emergency?**
- **What is happening Nationally?**
- **What is happening Locally?**
- **Potential Changes in Legislation?**
- **How does this Impact Design?**
- **Local Example**

WHAT IS A CLIMATE EMERGENCY?



WHAT IS THE CLIMATE EMERGENCY?



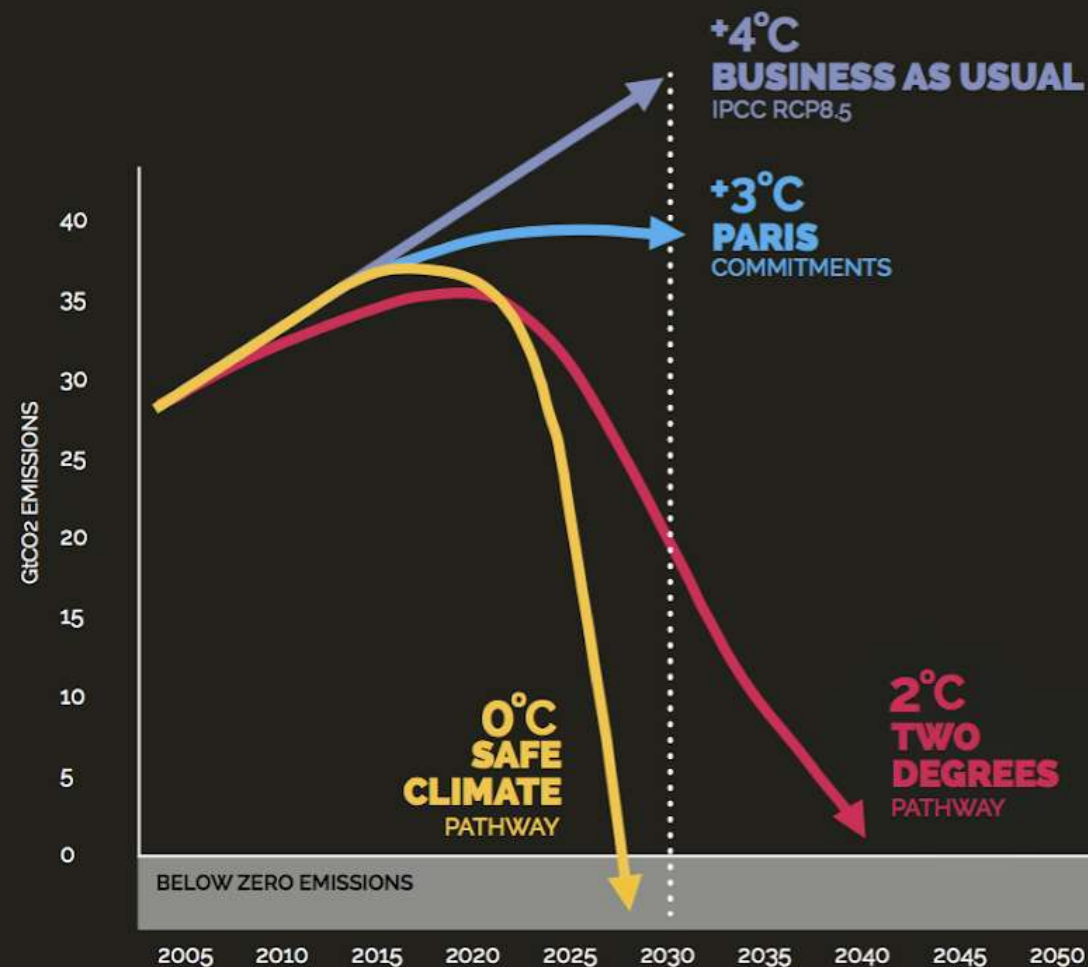
- <https://climate.nasa.gov/interactives/climate-time-machine>

WHAT HAS HAPPENED SO FAR?

- **Darebin Victoria declared a Climate Emergency in December 2016**
- **Since then more than 1000 councils across Australia, Canada, US and Europe have declared a climate emergency**
- **These councils have developed or are in the process of developing a Climate Emergency Plan**
 - Leadership and advocacy
 - Education
 - Zero Emissions
 - Drawdown
 - Resilience and Adaptation

WARMING PREDICTIONS

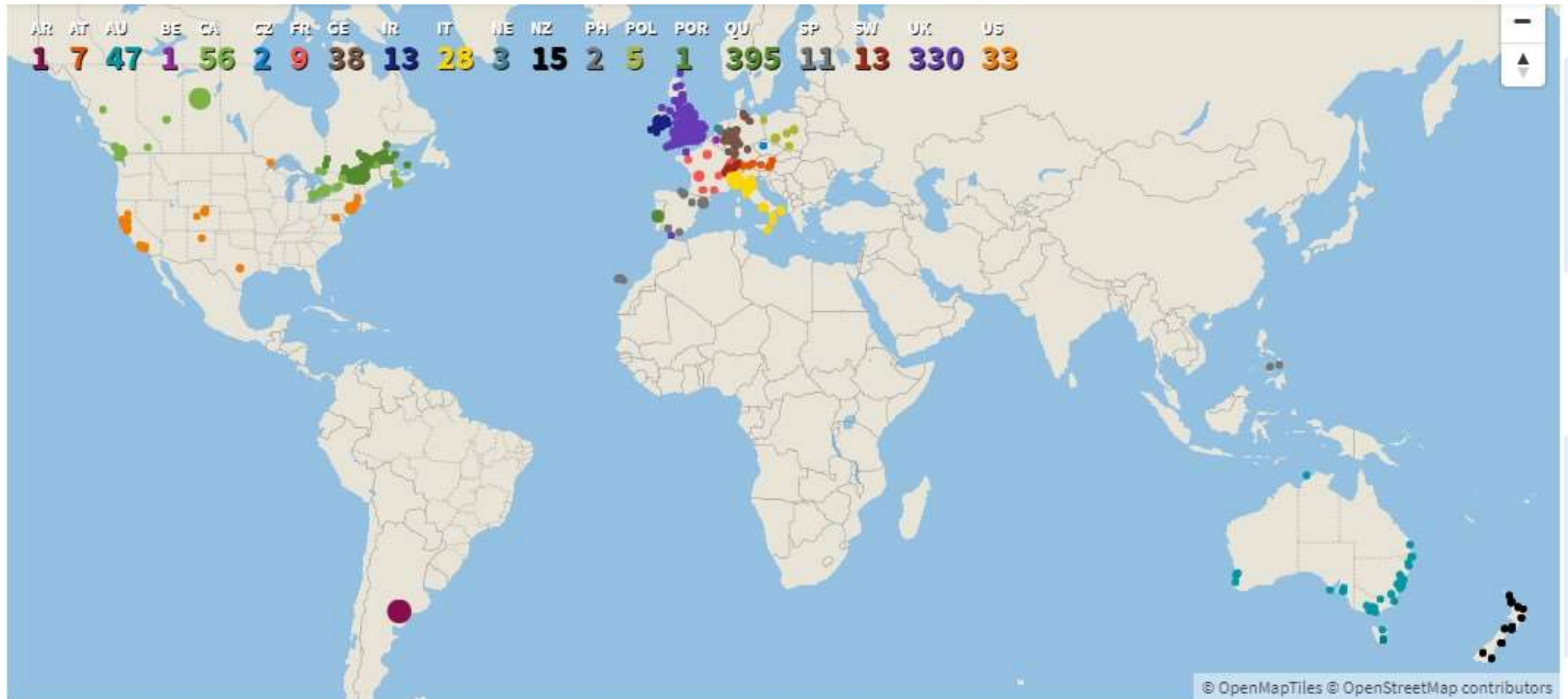
STRIKING COMPARISONS TRACKING EMISSIONS PATHWAYS



SOURCES: WBGU special report 2009, Boyd, Stern & Ward (May 2015), IPCC 2014, Climate Action Tracker, Philip Sutton



GOVERNMENTS INTERNATIONALLY



GOVERNMENTS NATIONALLY



East Anglia

- **Norwich City Council – 29th January 2019**
- **Cambridge City Council – 21 February 2019**
- **Suffolk CC – 21st March 2019**
- **North Norfolk District Council – 24th April 2019**
- **Cambridgeshire County Council – 14th May 2019**
- **Ipswich BC – 9th July 2019**
- **Woodbridge Town Council – 9th July 2019**
- **Chelmsford City Council – 16th July 2019**
- **Colchester BC – 17th July 2019**
- **Braintree District Council - 22nd July 2019**
- **Babergh District Council – 23rd July 2019**
- **East Suffolk County Council – 24th July 2019**
- **Peterborough City Council – 24th July 2019**
- **Mid-Suffolk District Council – 25th July 2019**
- **Uttlesford District Council – 30th July 2019**
- **Tendring District Council 6th August 2019**
- **Hunstanton Town Council – 16th August 2019**

CHANGES IN LEGISLATION

- **2008 Climate Change Act – reduce greenhouse gas emissions by at least 100% of 1990 levels (net zero) by 2050 (amendment 27th June 2019)**
- **2015 Paris Agreement – EU Member States agreed to a 2030 target of at least a 40% reduction in emissions below 1990 to hold increase to 2 degC and pursue to limit to 1.5 degC**
- **Leaving the EU does not change the need to cut greenhouse gas emissions, the level of carbon budgets (which are set in UK Law), or the duty on the UK Government to tackle climate change**

CHANGES IN LEGISLATION

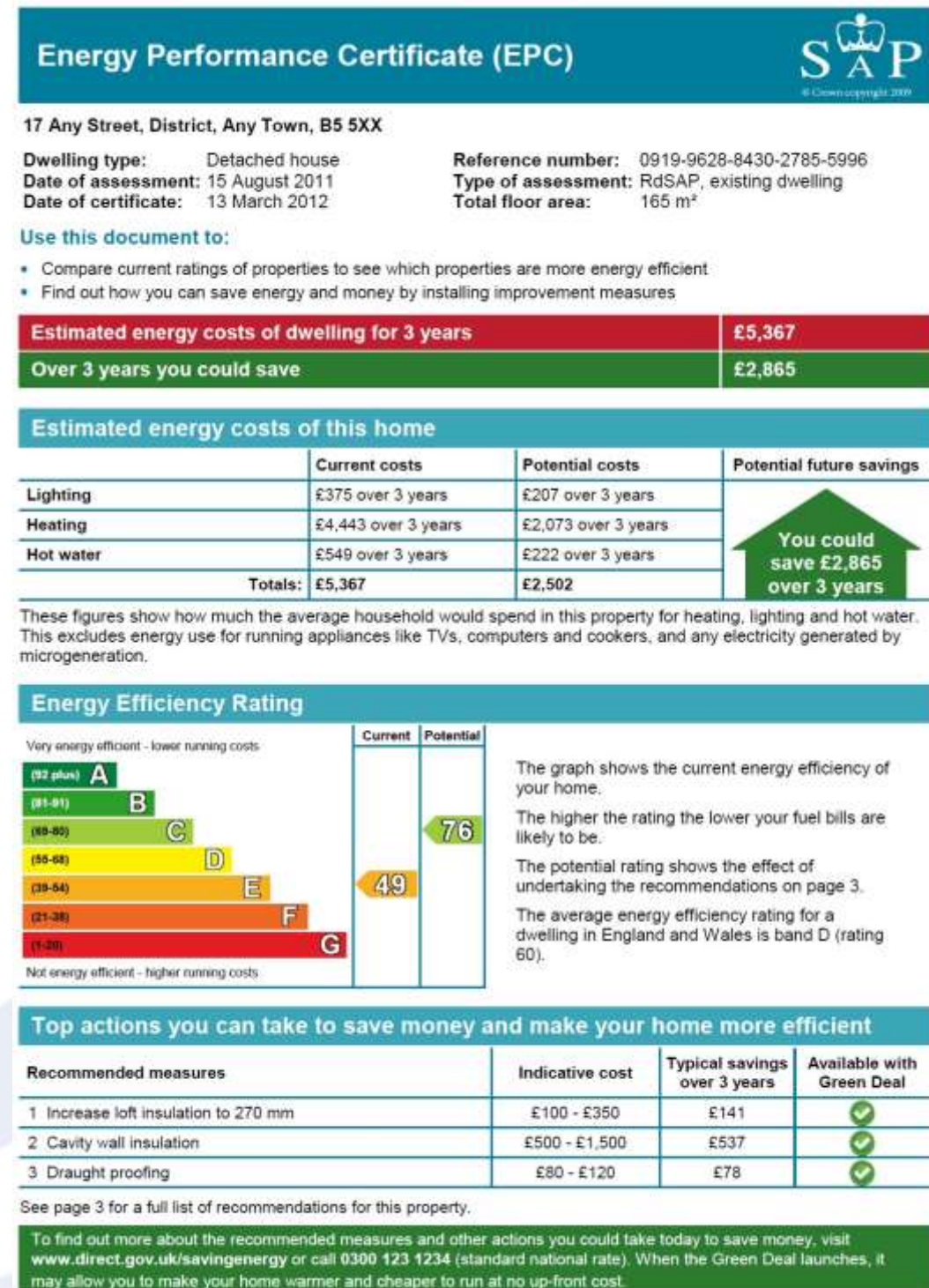
- **IPCC Report infers that in order to stay under the 2 degC limit, it will require a wide range of changes including changes in technology, institutions and behaviours.**
- **It highlights the need to reduce emissions through implementation of more stringent energy efficiency measures to reduce demand.**
- **It highlights that there needs to be a massively scaled up investment in clean technology and that mitigation policies need to be integrated into broader political considerations.**
- **De-carbonisation of electricity.**
- **Dame Judith Hackitts report in May 2018 highlighted systematic compliance issues in the current Building Standards Regime**

CHANGES IN LEGISLATION

- **Energy Savings Opportunity Scheme (ESOS)** has already become more stringent. ISO50001 Compliance
- **Energy and carbon Reporting (SECR) Framework** is now a requirement for all businesses.
- **SAP10 for domestic properties**
 - Recalibration of fuel factors
 - Elemental standards for existing buildings
 - Limiting efficiencies for fixed building services
 - Switch from CO2 to a primary energy metric
- **SBEM changes to deliver new minimum standards and to accommodate any ventilation and overheating changes.**
 - Fuel notional building
 - Elemental standards for existing buildings
 - Limiting efficiencies for fixed building services
 - Switch from CO2 to a primary energy metric
- **Part F – simpler calculations and sufficient air for air quality plus heat recovery method to minimise energy loss.**
- **European Building Performance Directive**
 - Setting standards for new build and refurbished buildings
 - Aim to make all new build nearly zero-energy (NZEBS)
 - New Public Buildings by Jan 2019
 - All other buildings by Jan 2021
 - Change minimum energy performance standards in Primary Energy NOT CO₂ emissions
- **Minimum Energy Efficiency Standards (MEES)**
 - Landlords unable to privately rent out a property which is less than an E
 - This changes to a C by 2030
- **Every home Counts Framework**

HOW DOES THIS IMPACT DESIGN?

- Part L
 - Homes overheating
 - Focus on airtightness has led to poor indoor air quality
 - Energy Performance Gaps
- Update in 2020
 - Primary Energy
 - Fabric First Approach
 - Designing for energy efficiency from the start.
 - Not bolting on renewables as a quick fix.
 - Maximising the performance of the building before considering the M&E.



HOW DOES THIS IMPACT DESIGN?

- **Building Services input is evermore so important during RIBA stages 0 - 2**
- **Evaluations of Property Portfolios for building owners/landlords to achieve minimum EPC ratings of E**
- **Evaluations of Corporate Property Portfolios to identify energy efficiency measures and develop a plan for net zero.**
- **Undertake thermal modelling as part of the RIBA Stage 2 design process to determine the fabric and orientation requirements of a building to maximise the building fabric performance.**
- **Apply an holistic Lean, Clean and Green approach to Building Services design to achieve net zero.**

CASE STUDY – SUFFOLK COUNTY COUNCIL

- We carried out an energy appraisal 5 years ago of all properties owned by SCC which identified the energy consumption of their portfolio and made proposals for energy savings measures in order to reduce the energy consumption and carbon footprint of the County Council to aim for the 80% reduction in greenhouse gas emissions by 2050.
- Some of these recommendations were taken forward including energy efficiency improvements, battery storage, electrical generation and a waste to energy plant in Great Blakenham which produces enough power to accommodate Lowestoft through burning of all non recyclable waste in Suffolk, mitigating greenhouse emissions from landfill as well as offsetting fossil fuels.
- We are currently undergoing a review to update the energy information on the sites in addition to reviewing the recommendations implemented and the effect these have on the county's carbon footprint as well as laying further, more stringent recommendations to take forward in order to meet the county councils pledge of zero carbon by 2030.
- This report will be presented to the Policy Development Panel in October making recommendations to be included in their Climate Emergency Action Plan

- **There is still much work to be done with institutions such as CIBSE involved in critiquing the proposals put forward by CCC and BEIS to ensure clarity and the influence on legislation.**
- **Through good asset analysis and reporting, an energy saving/carbon reduction action plan can be drafted with recommendations for net zero targets and the measures to be implemented.**
- **Ensure all of our existing buildings are up to date with their EPC's and ensure they meet the Energy Performance criteria.**
- **We have a social responsibility to impact change through Lean, Clean and Green design, using the tools we have to maximise the building fabric performance before implementing the services.**

“It’s no good saying you’re going to do your best. You have got to succeed in doing what is necessary.”

-Winston Churchill

THANK YOU, ANY QUESTIONS?

