Understanding Carbon in the Historic Environment

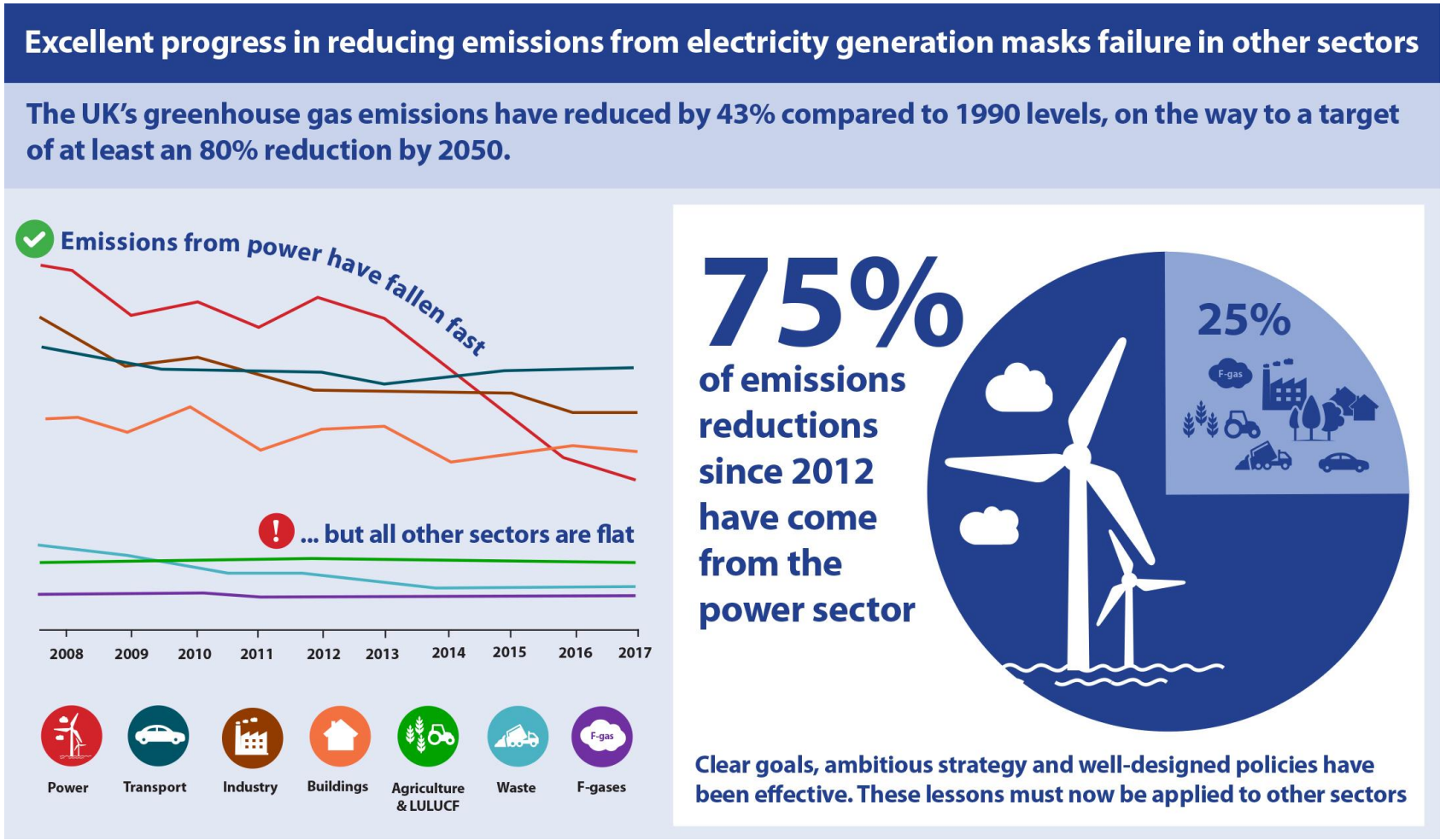
OPPORTUNITIES IN CLIMATE CHANGE MITIGATION

Historic England

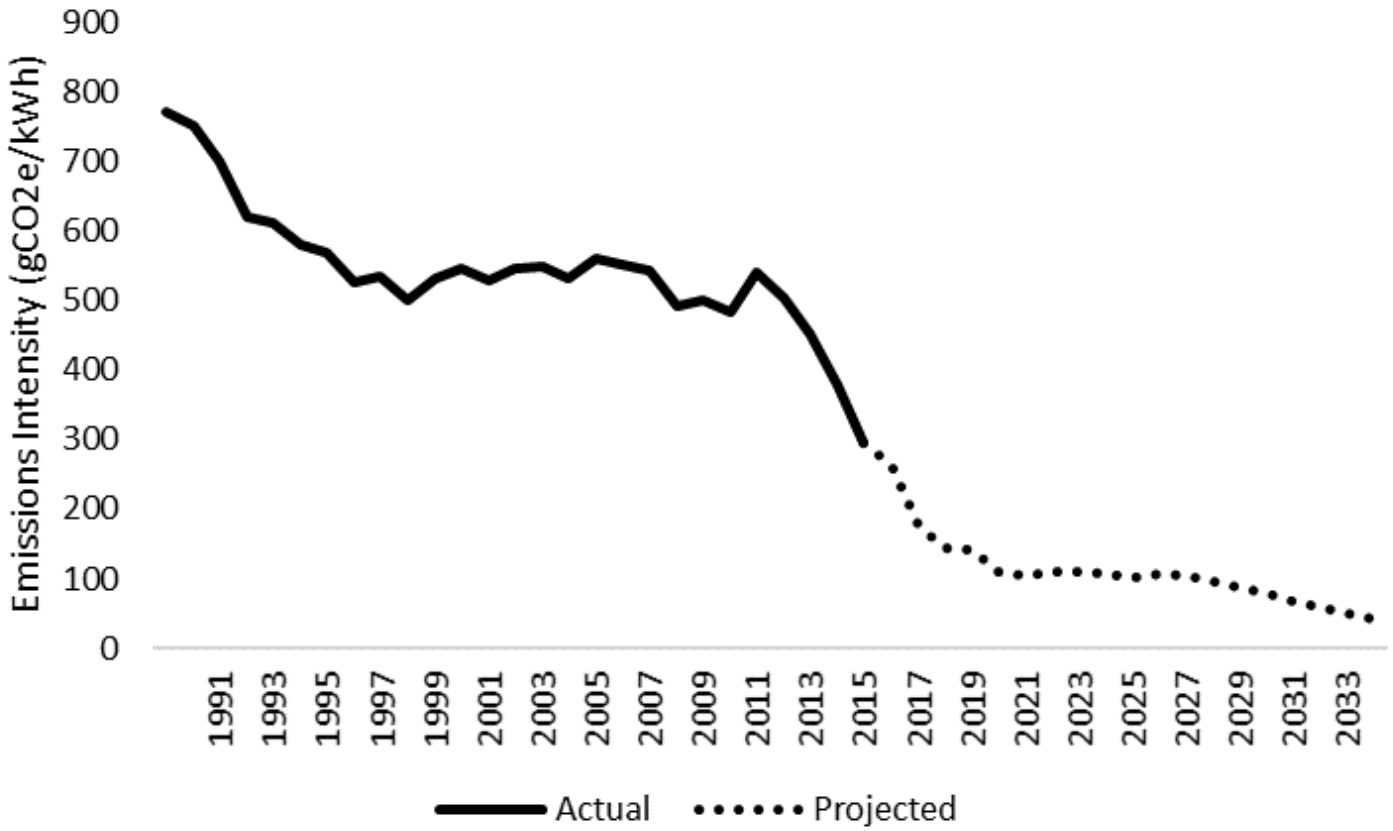
CARRIG conservation international

Climate Change & Embodied Carbon

The UK has committed to reducing GHG emissions by 80% compared to 1990s levels by 2050 – this requires a 3% reduction every year.



Source: *Reducing UK Emissions: 2018 Progress Report to Parliament* (CCC, 2018)



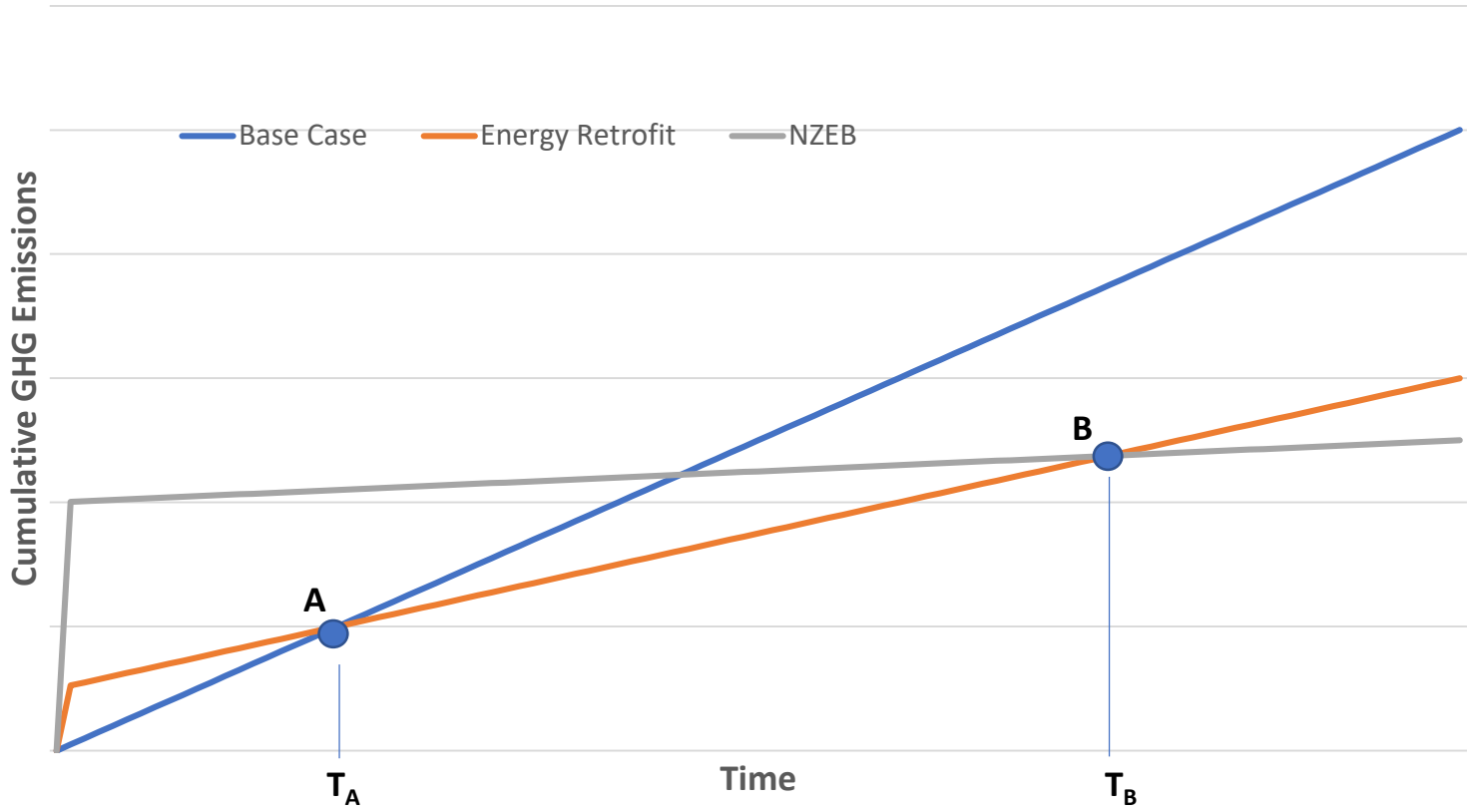
Decarbonising Electricity

Study Objective

…to provide historic environment professionals with the evidence and data required to advocate for heritage, make decisions and influence policy about the historic environment.

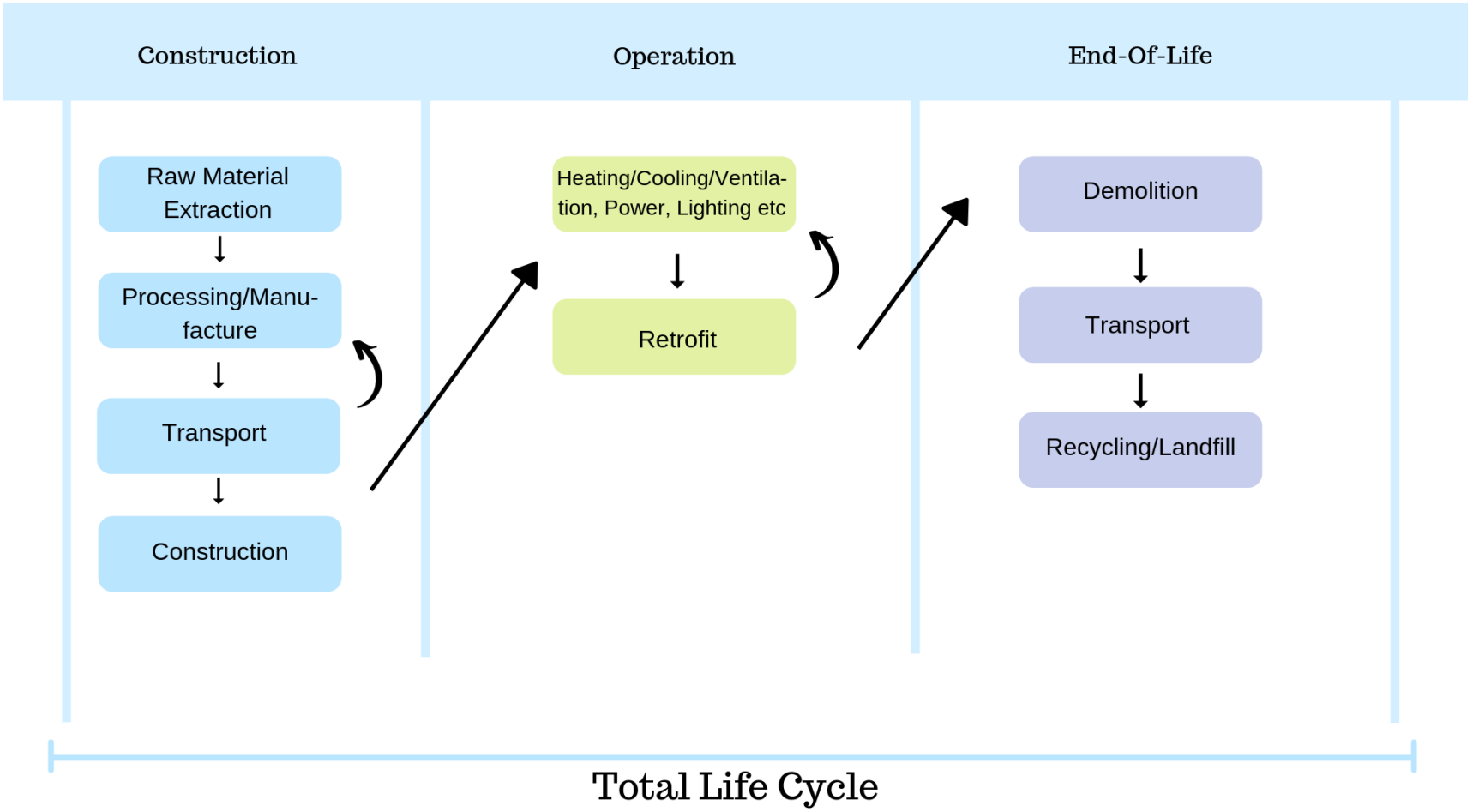
To Understand Carbon in the Historic Environment, we must:

1. *Assess carbon emissions for 3 phases of a building's life cycle: construction, operation and end-of-life*
2. *Compare energy use and carbon emissions of 3 scenarios: refurbishment, new build and demolition*
3. *Consider what will be best for historic buildings and the environment over the long-term*

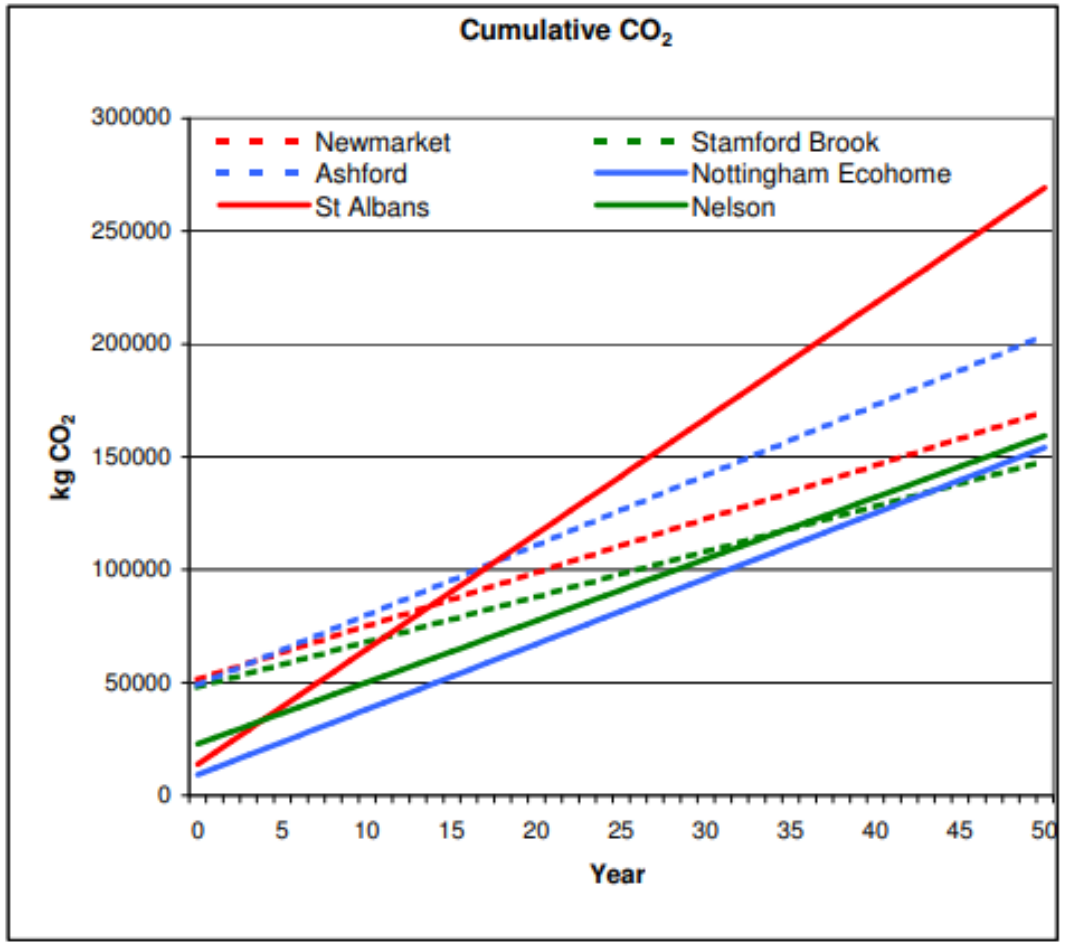


Indicative cumulative construction and operational emissions for 3 different refurbishment options

Life Cycle Assessment



Case Studies: Refurbishment vs. New Build



Refurbish

New Build

Source: *New Tricks with Old Bricks* (Bull, J., 2005)

Case Study Data Requirements for Refurbishment, Demolition & New Build

Information Type	Data Required
General	Building use, age, location, surrounding environment (overshadowing etc).
Building Geometry and location.	Dimensions of building envelope, rooms and elements such as windows, walls, doors, chimneys, vents. Orientation. Building location.
Construction Materials and Systems	Types of materials and construction details employed including thicknesses and thermal specifications where available.
Heating, Cooling and Electrical Services	Description of the heating, cooling, ventilation and electrical systems including any technical details and efficiency data.
Occupancy	Number of occupants. Any available socio-economic data (age, occupation, etc.) Typical occupancy hours.
Management	Any information on energy management practices. Any measures of thermal comfort.
Energy End Use	Quantities used by fuel type (gas, oil, coal, electricity, etc.). Smallest time step available.

Required Highly Desirable Desired

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THANK YOU

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