

Reducing Energy Demand in Bradford

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Energy Team Manager



Approach, Actions and Impacts

- Introduction
- Structure and team
- Approach
- Actions
- Impacts
- Challenges
- Next steps



Introduction

- 150 Main buildings
- Influence 200 schools
- Hundreds of sports pavilions, small buildings and pieces of land
- BMDC has over 8,000 employees
- Wide variety of building types
- High level of listed and thermally inefficient buildings



Introduction – Estate – Listed buildings



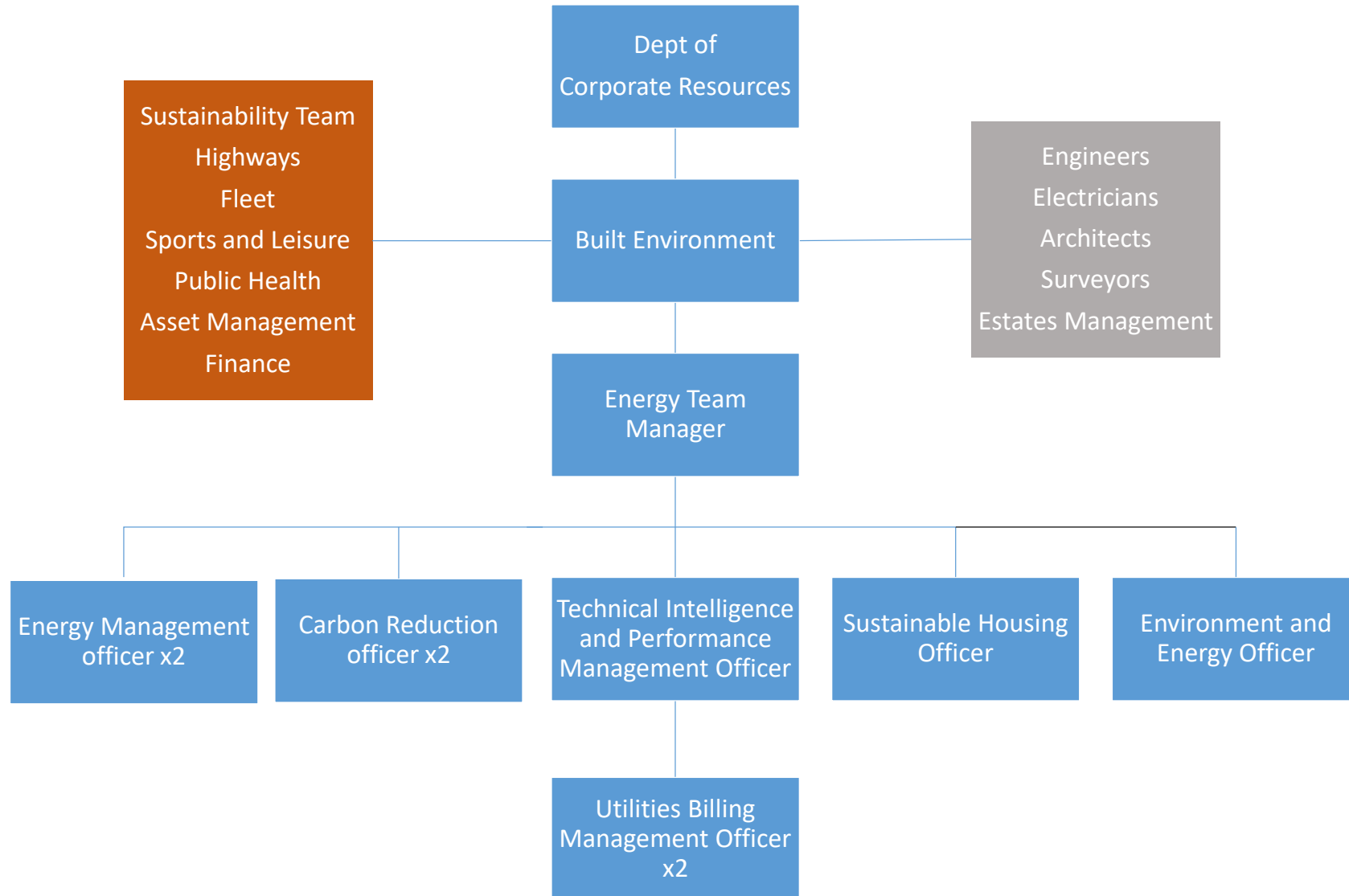
Estate – Sports and Leisure



Estate – Offices, Depots and Care Homes



Structure and Energy Team



Energy Team Activities

Target – net-zero carbon by 2038 – 10% CO2 emission reductions pa

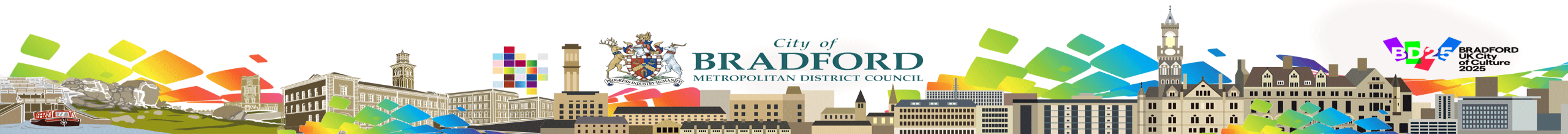
- Energy management – BMDC buildings and estate
- Carbon reduction – EPCs, DEC
- Utilities contracts and billing
- Provision of data
- Domestic housing retrofit – LAD3, ECO4, ECO-Flex, Pilot programmes
- Renewable energy projects
- Electric vehicle charging points



Approach – Main Principles

The lowest carbon kwh is the one you never use

The cheapest kwh is the one you don't use



Approach - plans and people

Plans

- Heating plan – signed off by council executive – sets parameters
- Sustainable Design Guide – must be adhered to in all new projects
- Small projects budget of £500k plus each year

People

- Energy Team Staff, Built Environment Colleagues and other departments – understand and use capabilities, experience/expertise
- Customers – listen to, act on issues, educate and inform
- Psychology of heating



Approach – data and control

Data

- Monthly updates – gas and electricity - overall and individual building
- Monitor, identify issues, measure impacts of changes

Building Energy Management Systems

- **95 of our main buildings** - Real time monitoring of temperatures in buildings – reporting over a period of time
- Able to optimise heating and lighting plans for each building
- Replicate and measure impacts of potential solutions



Approach – Technology and Industry

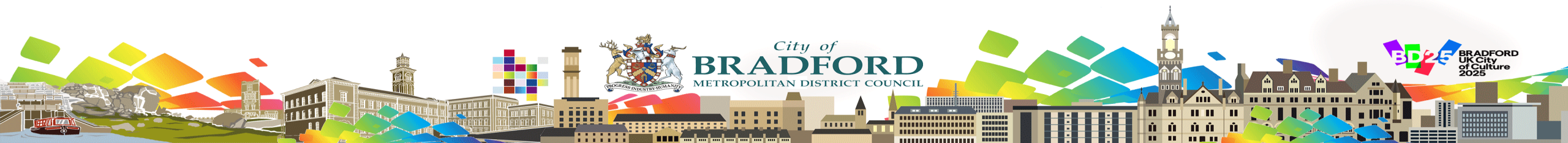
Technology

- Work closely with companies (many local) to identify, test and trial solutions
- Be open to staff bringing in potential solutions
- Be open to companies bringing in potential solutions
- Look for low cost – high impact solutions that can be rolled out across estate – value for money
- Be prepared to make mistakes



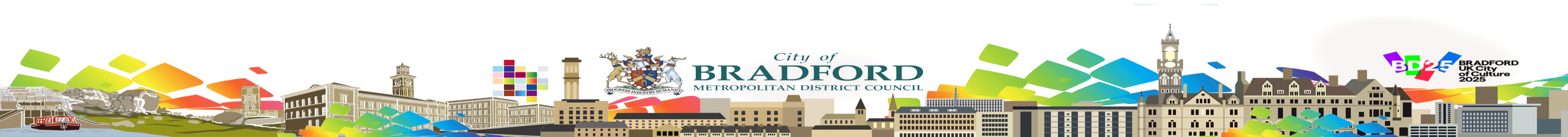
Approach – Best practice

- Internal – find out from teams what has been tried in the past - build on success – if it worked in the past - use it again
- External – regular communications with other councils, public sector organisations, trade bodies (REA), private sector, companies and individuals
- APSE – annual event (very good) – presentations and peer discussions
- APSE – informal dinners, regional events and internal expertise
- Only useful if you do something with the knowledge



Actions - impacts

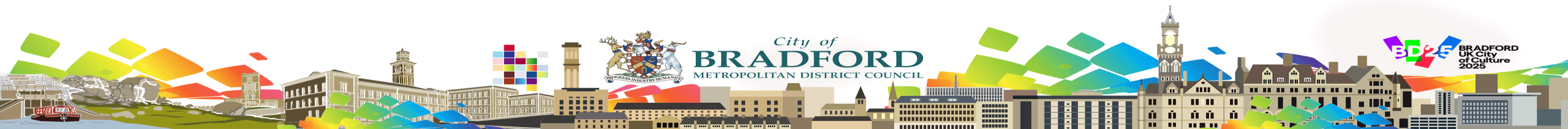
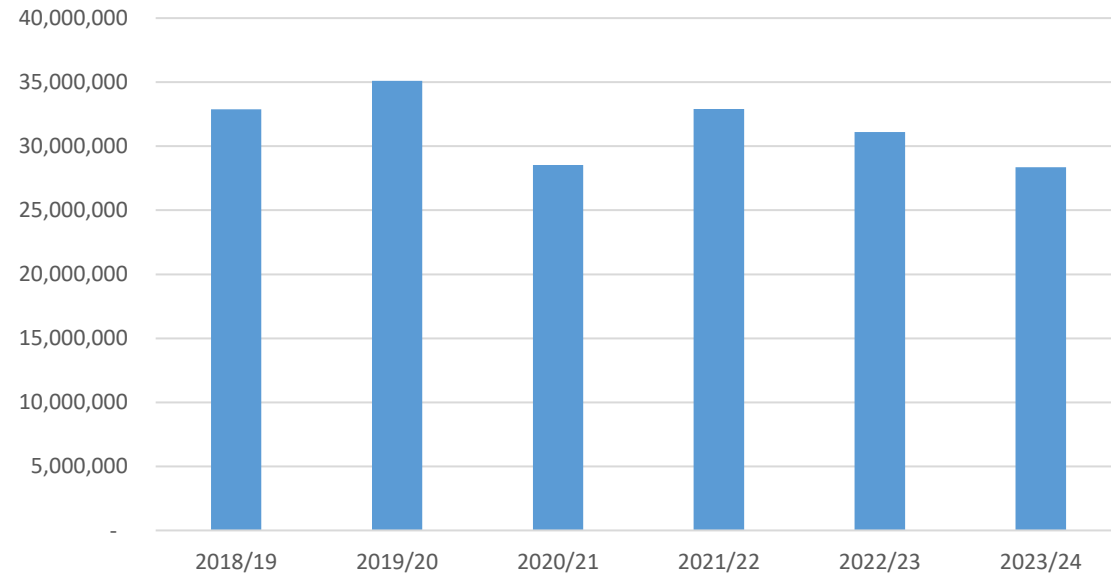
- Optimised heating/lighting plan for each building
- Sensors (movement, heat, noise, CO2) – sports halls 40% reduction
- Selective lighting controls – sports pitches 30-50% reduction
- Radiator additive (Delta-T) - 10 to 30% reduction in gas usage
- Direct drive electric motors for air handling units – 35% reduction
- Controllable LED lighting – lighting levels set by specific areas – 3-4 year paybacks – better lighting conditions for individuals



Impacts – Gas usage

- Since peak in 2019/20 – reduction of 19.2%
- Since 2021/22 – reduction of 13.8%

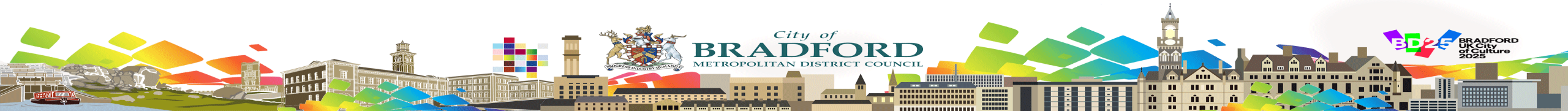
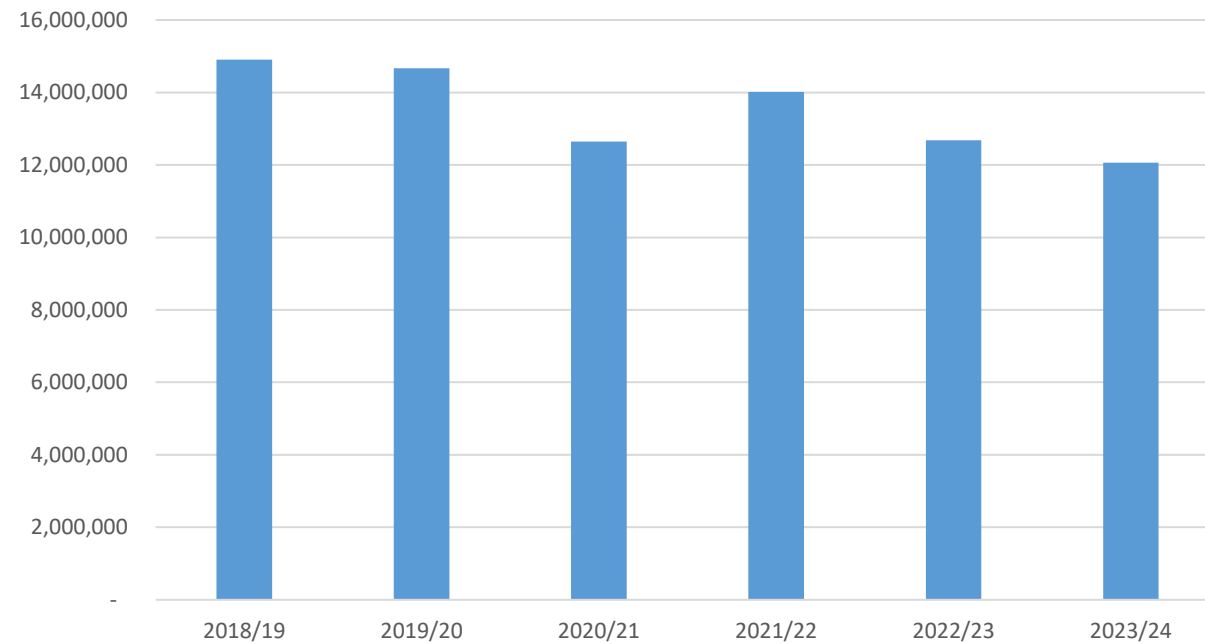
Gas Usage Comparison



Impacts – Electricity usage

- Since peak in 2019/20 – reduction of 17.7%
- Since 2021/22 – reduction of 13.9%

Electricity Usage Comparison



Impacts – CO2 Emissions

Scopes 1 and 2 plus small number of easily measurable scope 3s

- 2018/19 – 47,446 tonnes CO2e
- 2022/23 – 21,432 tonnes CO2e
- 55% CO2 emission reduction in last 5 years



Challenges

- Public sector processes including IT
- Silo approach
- Early comprehensive engagement on projects
- Lack of joined up thinking with strategies/plans linking to objectives
- Poorly designed and delivered projects – value engineering?
- Budgets
- Funding applications
- Lack of sharing of knowledge and best practice



What next

- Further optimisation of heating and lighting plans
- Continued deployment of BEMS and smart sensors
- Vortex kit for wet heating systems – in trial phase
- Ceramic micro-filtration systems for pools – due 2025 – 30-40%
- Solar PV – solar farms and buildings – feasibility study done with gradual deployment to be decided
- District Heat Network – final phase of evaluation
- HyBradford – advanced fuel facility
- Co-ordinated estates and energy strategies/plans with BMDC plans

