



Fiona Sutton-Wilson

Head of APSE Training



Let's talk training...

APSE Training

What is Carbon Literacy?

Carbon Literacy Options

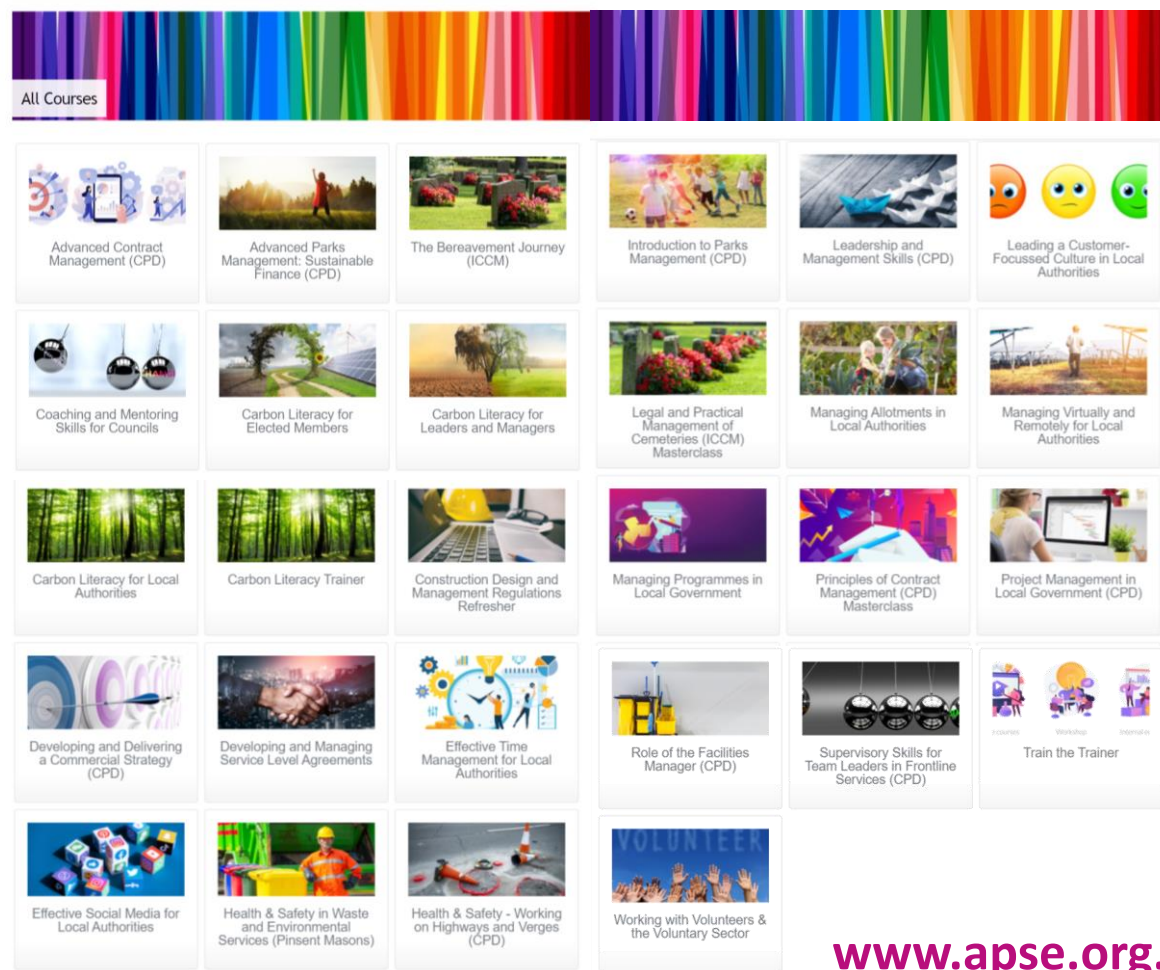
APSE Training



An Introduction...

1. 28 bookable open courses
2. Delivery of bespoke in-house courses
3. Mixture of onsite and online
4. CPD
5. Training programmes
6. eLearning

Follow this QR code to go to the APSE Training Webpages



APSE's Carbon Literacy Story

- APSE Energy and BEIS
- The Carbon Literacy Project
- UK Authorities = 114
- Southern Authorities =47
- Open and in-house courses



Carbon Literacy
Project



What is Carbon Literacy?



What is Carbon Literacy?

“An awareness of the carbon costs and impacts of everyday activities and the ability and motivation to reduce emissions, on an individual, community and organisational basis.”



This is to certify that via
Sample Organisation
Sample Name

has met all the requirements of the Carbon Literacy Standard and thus for the purposes of workplace, education and community should be regarded as Carbon Literate.

signed

All Abbas, Chair, on behalf of The Carbon Literacy Trust.
Registered Charity Number 1156722

date certificate no.
30th March 2014 00000000 / v1.05



certificate



Why Carbon Literacy in Local Authorities?



- ❑ Our local authority values and ethics
- ❑ Influence/impact in the community and wider world
- ❑ Duty/powers
- ❑ Political & social will
- ❑ Government & sectoral targets
- ❑ Financial savings
- ❑ To achieve the best possible outcomes!



APSE Carbon Literacy learning outcomes...

SCIENCE

Understand and explain the basic science of climate change

IMPACT

Appreciate how climate change will affect us both globally and locally

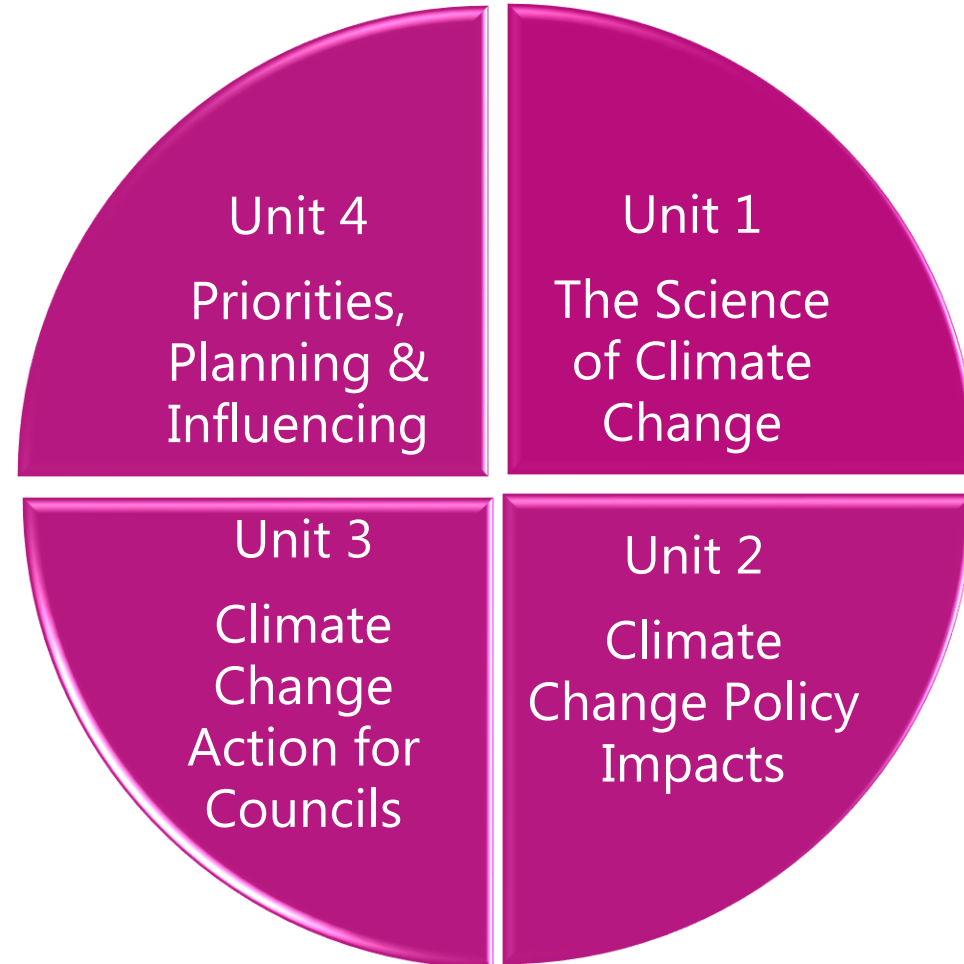
POLICY

Scrutinise the potential impact of your local authority climate change objectives

ACTION

Commit to supporting the delivery of your council's plan

Carbon Literacy Content





UNIT 1

The Science of Climate Change

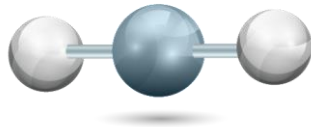
CONTENT

- ❑ Carbon Literacy Terminology
- ❑ Greenhouse Gases & the Greenhouse Effect
- ❑ How is the Climate Changing?

LO: Understand and explain the basic science of climate change

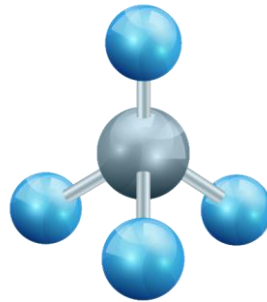
The Greenhouse Gases

Carbon Dioxide (CO₂)



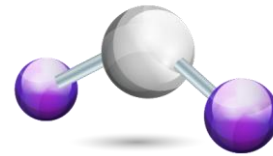
1

Methane (CH₄)



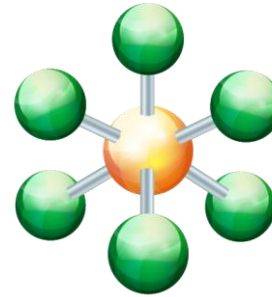
28

Nitrous Oxide (N₂O)



265

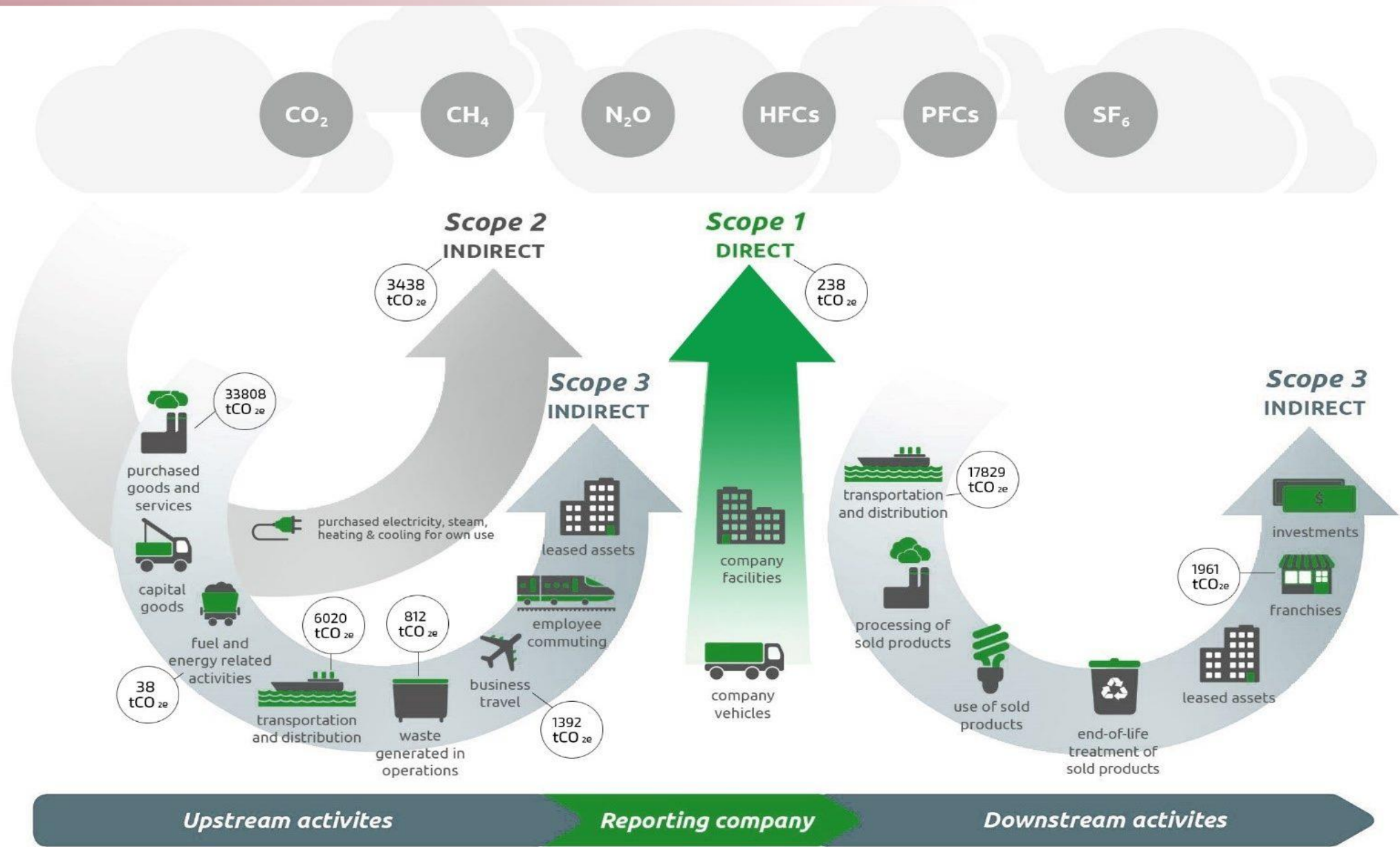
F Gases (various)



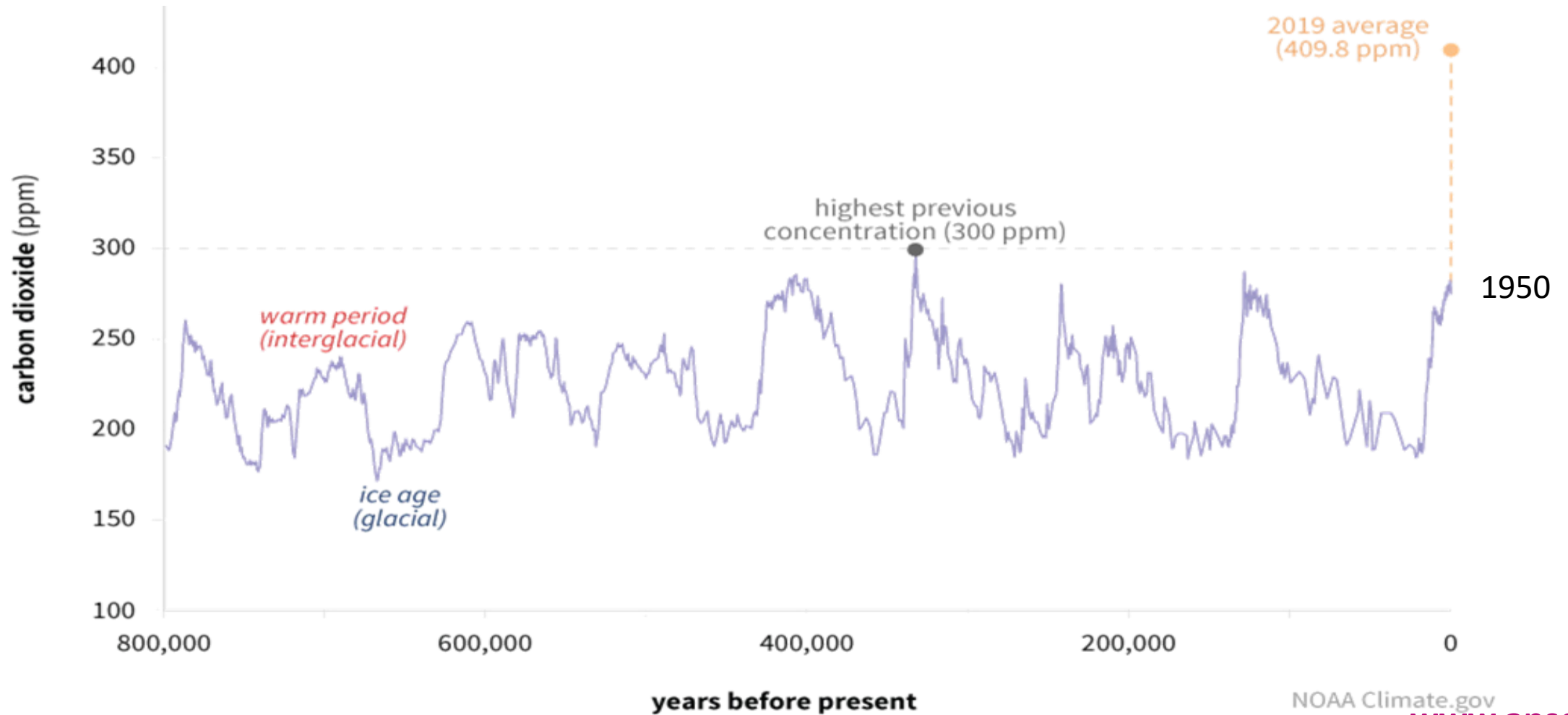
10s-10,000s

Global warming potentials

Carbon Dioxide Equivalent - CO₂e

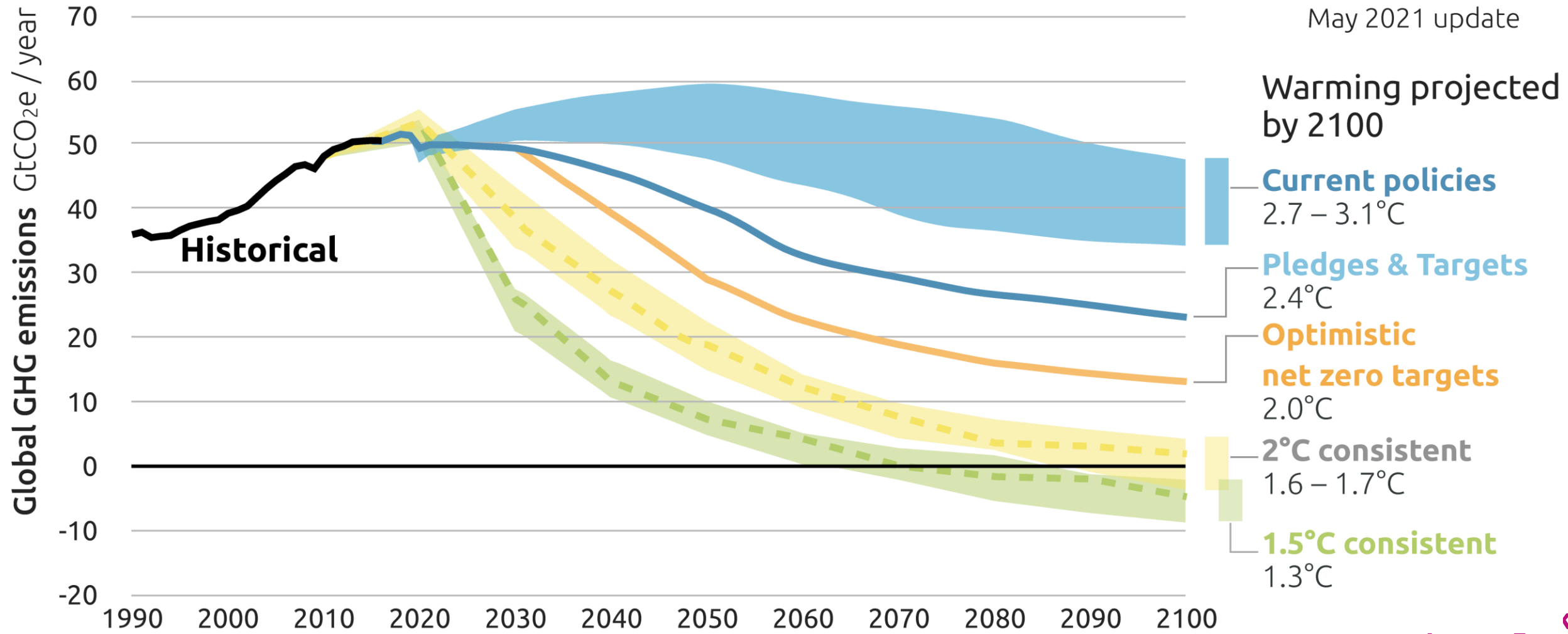


Level of CO2 over time



2100 WARMING PROJECTIONS

Emissions and expected warming based on pledges and current policies



Activity: UK climate change impacts

Let's discuss...

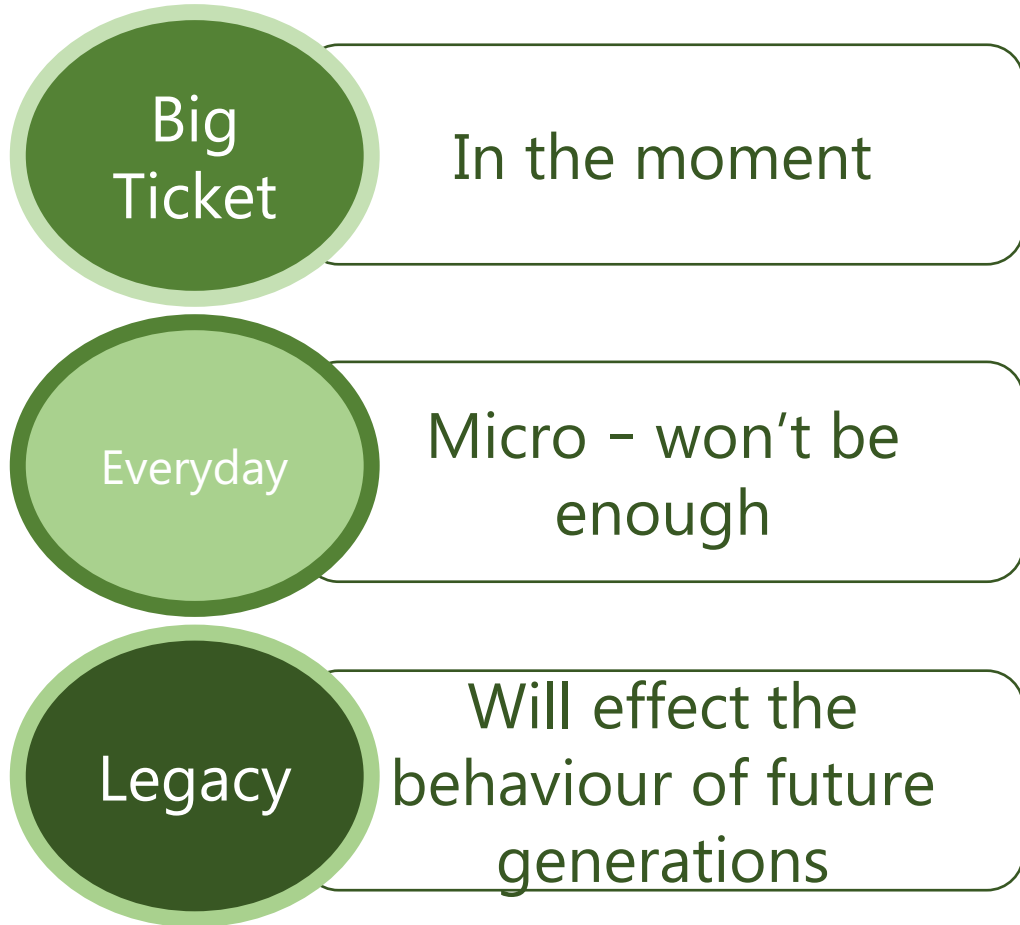
Flooding

**Heatwaves
and drought**

Wildfires

1. Share local then national experiences you have had of climate impacts.
2. Discuss climate impacts on the UK as a whole, considering areas like:
 - Financial and economic impacts (including insurance).
 - Impacts on transport.
 - Impacts on infrastructure
 - Impacts on health and wellbeing

Prevention AND Adaptation





CONTENT

- ❑ Equity & Vulnerability
- ❑ The Role of Local Councils
- ❑ Green Recovery
- ❑ Co-benefits of Climate Action

UNIT 2 Global & Local Climate Change Policy Impacts

LO: Appreciate how climate change will affect us both globally and locally



ACTIVITY: Why should we do anything?



Public Sector emissions
(?% of UK emissions)



Emissions under our influence
(?% of UK emissions)



Why should Local Authorities act?

-  **Direct local authority emissions (2% of UK emissions)**
-  **Emissions under the influence of local authorities (33% of UK emissions)**



2020 Committee on Climate Change report



What role do Local Authorities have?

1. Service provider / commissioner
2. Social landlord
3. Large employer
4. Leading by example
5. Statutory and regulatory responsibilities
6. Community leader and collaborator
7. Communications
8. Lobbying government on policy and funding



UNIT 3

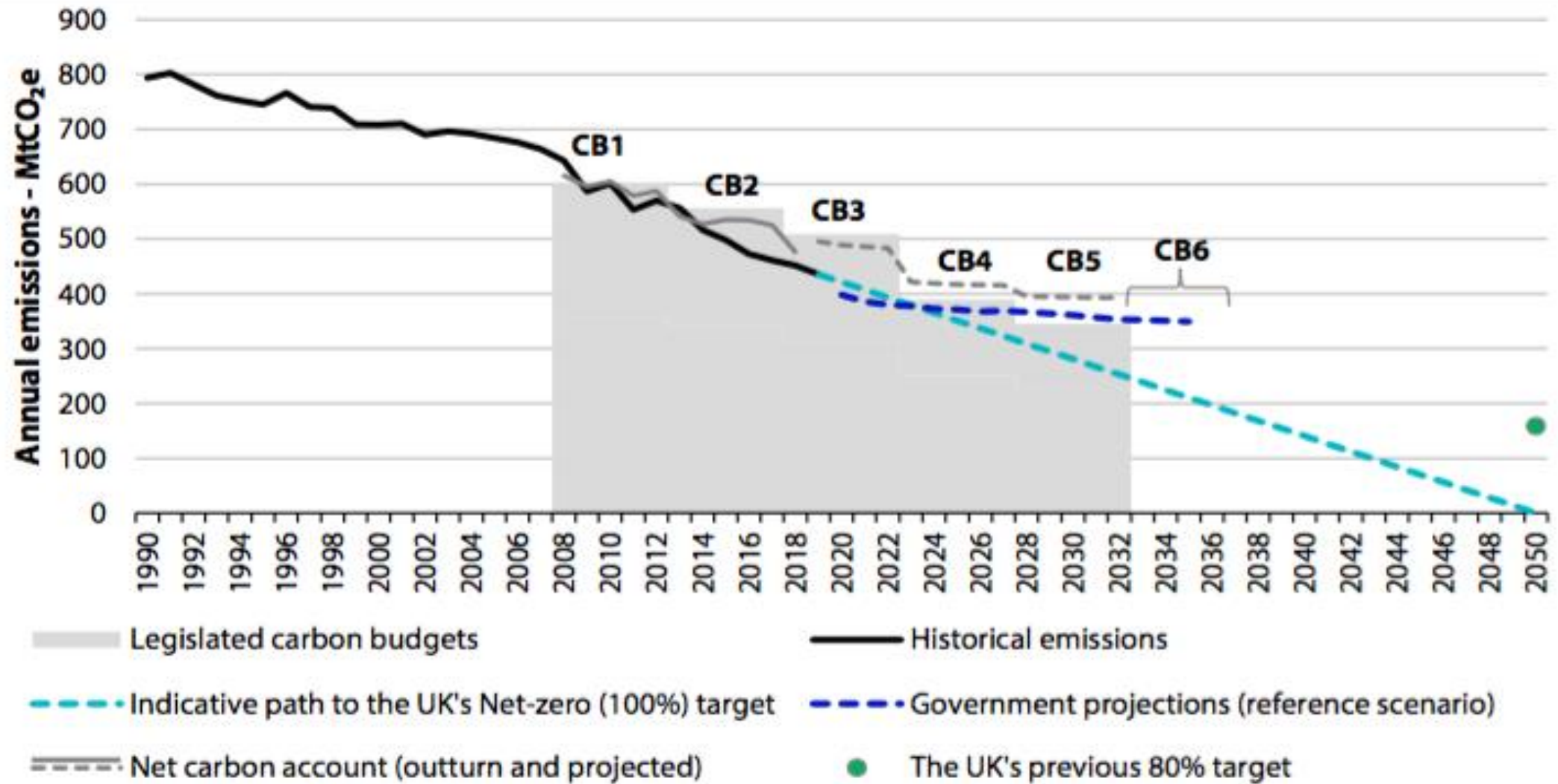
Climate Change Action for Councils

CONTENT

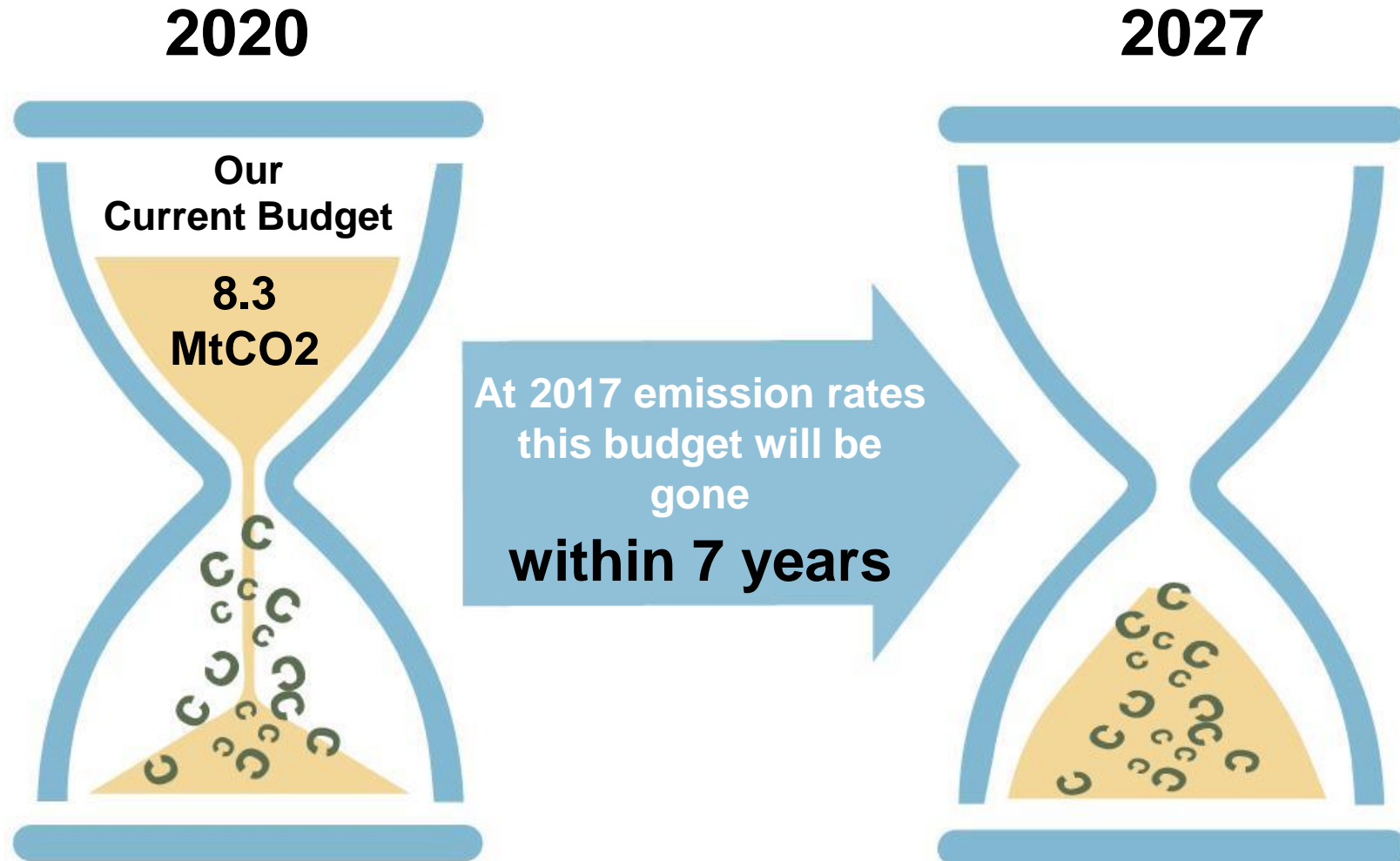
- ❑ Carbon Budgets
- ❑ Carbon Footprints
- ❑ Creating a Green Print
- ❑ Dragon's Den

LO: Scrutinise the potential impact of your council's climate change objectives

Climate Change Policy Impacts



e.g. Carbon Budget for Mystery Council





What is a carbon footprint?

- A measure of the amount of greenhouse gases released to the atmosphere as a result of our activities.
- We can calculate the carbon footprint of anything - individuals, organisations, events, products, projects, cities, or countries...



Activity: Your Carbon Footprint

- Review results of the WWF calculator (carbon footprint calculator)
- Which area of your life is the most carbon intensive? Why?
- Which area of your life is the least carbon intensive? Why?





UNIT 4 Priorities, Planning & Influencing

CONTENT

- ❑ Carbon Literacy Award
- ❑ Talking about the need for urgent climate action
- ❑ Plenary

LO: Construct your own strategies to take action on climate change

Golden Thread of Climate Policies & Strategies





Revolutions have happened before...



1903



1913

Carbon Literacy Options





Carbon Literacy for Local Authorities

Generic staff training, suitable for different types of council
Leads to Carbon Literacy Award



Carbon Literacy for Elected Members

Cabinet, committee and ward level training - visioning
Leads to Carbon Literacy Award



Carbon Literacy for Leaders and Managers

Strategic leadership training, incorporating ethics and commercialisation - Leads to CL Award



Carbon Literacy Trainer

Training to support roll-out of CL training across authorities
Two-day Masterclass



Carbon Literacy for Local Authorities

28/10/21
30/11/21



Carbon Literacy for Elected Members

01/11/21



Carbon Literacy for Leaders and Managers

04/11/21 (AM) +
05/11/21 (AM)



Carbon Literacy Trainer

29/11/21 +
30/11/21

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Arrange an in-house course

- Delivered on a mutually convenient date
- A pre-course consultation so we can tailor the course to meet your needs
- Learner Needs Analysis
- Customisation of the slide pack
- Delivery of the course
- Analysis of learner feedback, which we share with you
- Trainer feedback, if required

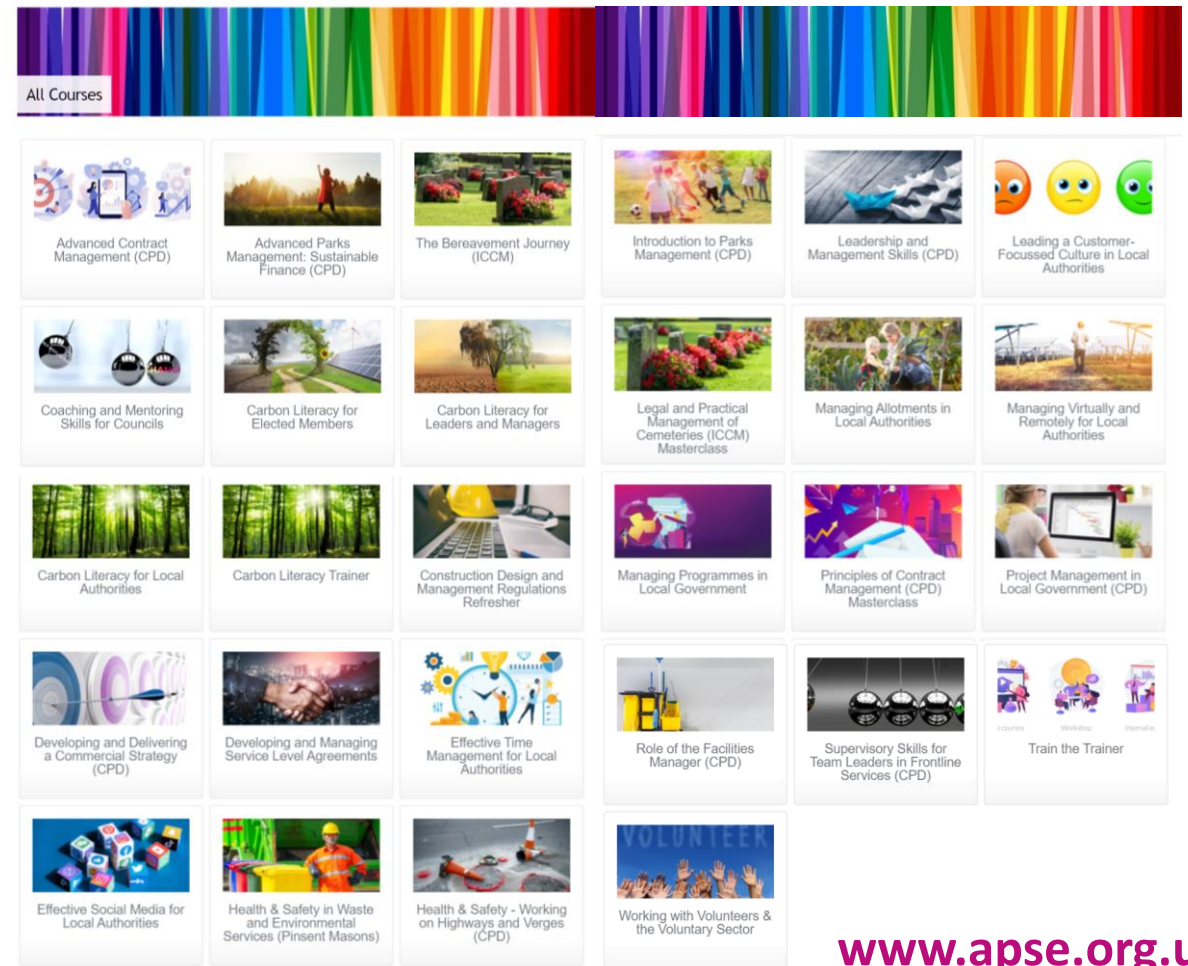
And as a reminder...



As a reminder...

1. 28 bookable open courses
2. Delivery of bespoke in-house courses
3. Mixture of onsite and online
4. CPD
5. Training programmes
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Plenary

1. Any key points of learning or take-aways?
2. What are you going to do next?
3. Please complete the feedback survey in the
CHAT



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GB 11409



GB 11132



GB 14074

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Road Map towards Net Zero Carbon for Cambridge City Council's Housing APSE

28th September 2021

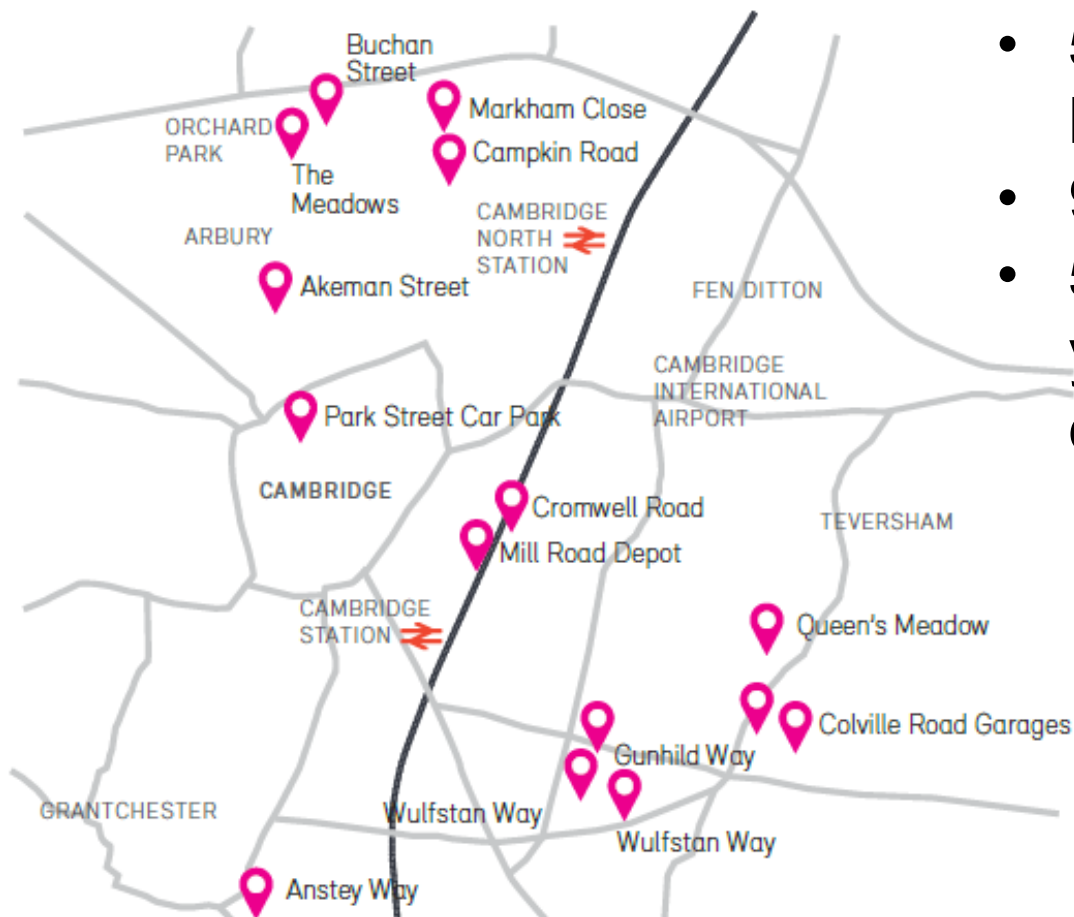


Purpose of Today's Briefing

1. 500 programme
2. Why adopt the road map
3. Challenges
4. Q&A

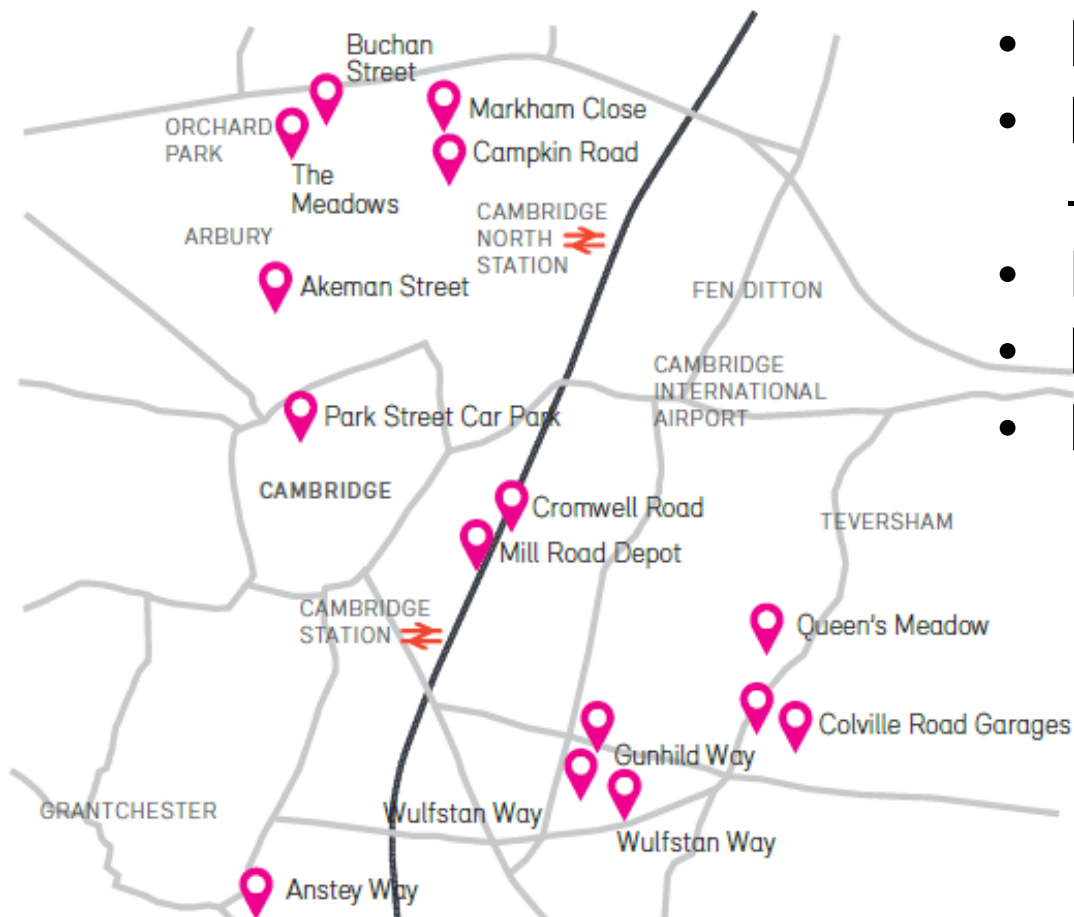


500 home programme



- 542 net new council homes
- 934 new homes
- 526 started onsite one year ahead of March'22 deadline

500 home programme



- Local Plan or above
- Mill Rd and Cromwell Rd – CHP, Solar PV
- Fabric First approach
- MVHR
- Later schemes gas free

Climate Emergency



Housing Emergency



Policy Trade offs



Climate emergency

- Need to reduce carbon
- Low carbon housing is more expensive
- Build less?

Housing Emergency

- 2000 on waiting list
- Need lower energy bills
- Need to build more?

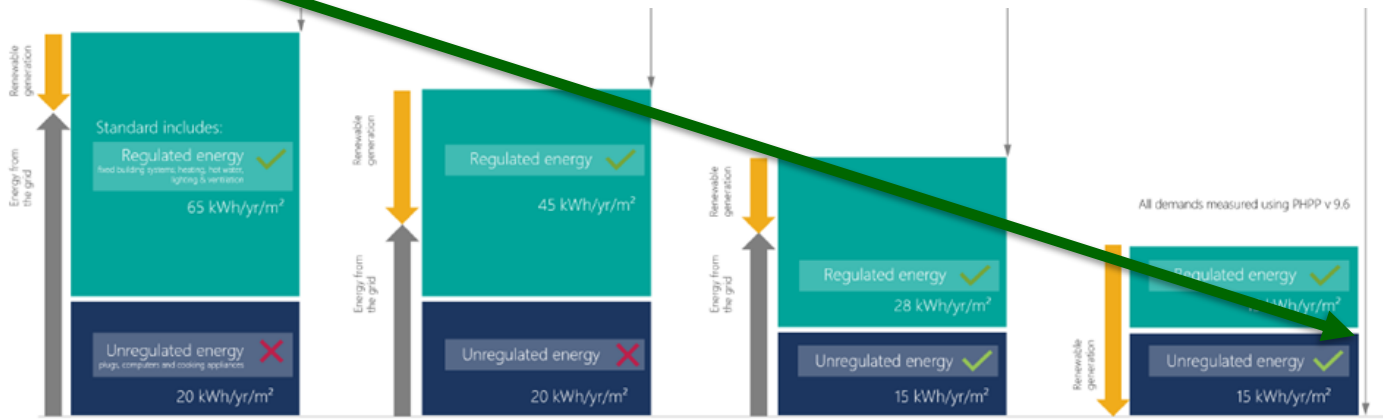
What is the roadmap

2020
National
standards

2020
-19%
Cambridge
Local Plan
& SHDG

2025
-35%
Proposed
National
Standards?

2030
-100%
Proposed
Cambridge
Local Plan



**Gas,
Fabric
Solar PV**

**Gas
Fabric +
Solar PV +**

**No gas
Fabric ++
MVHR
Solar PV**

**What is
Net Zero
Carbon**

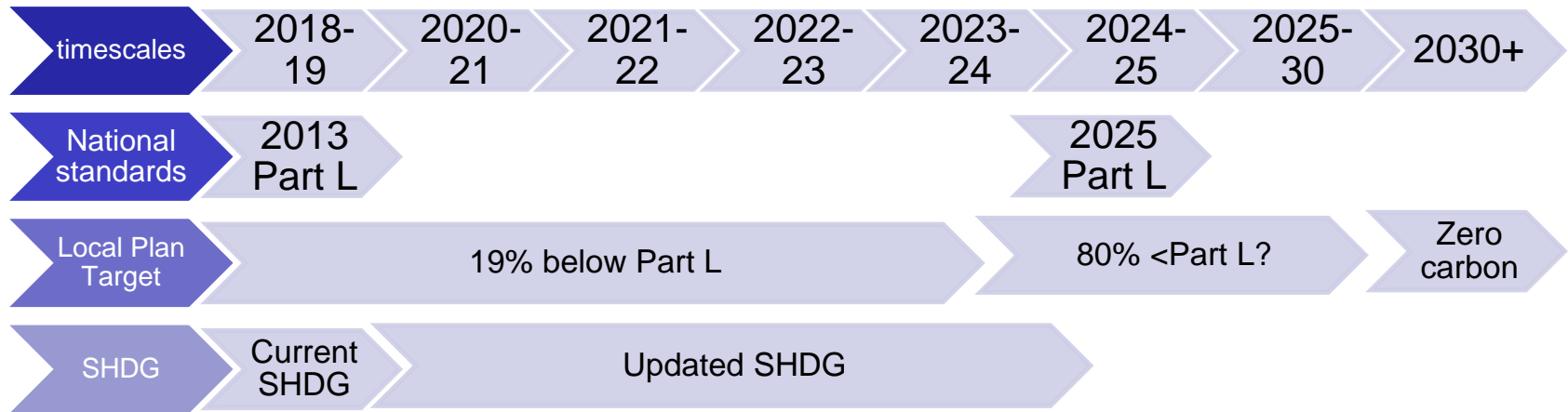


1000 home programme

1. 1,000 net Council rented units to be delivered over 10 years in a total programme of 1933
2. includes shared ownership/intermediate tenure and private sales/private rental schemes
3. grant support for the programme is assumed
4. Buro Happold to look at sustainability options
5. Technical constraints may restrict sustainability



Buro Happold brief



1. Provide a roadmap to zero carbon
2. Whole Life Costs – capital costs, maintenance costs and tenant costs
3. Constraints
4. Include other sustainability measures
5. Provide guidance on options

Passivhaus



A zero carbon house needs zero carbon tenants and asset management

- Asset management, Housing and finance teams must be involved
- Engage with members
- Engage with tenants
- Be clear in messaging

Roadmap to Net Zero Carbon

2020

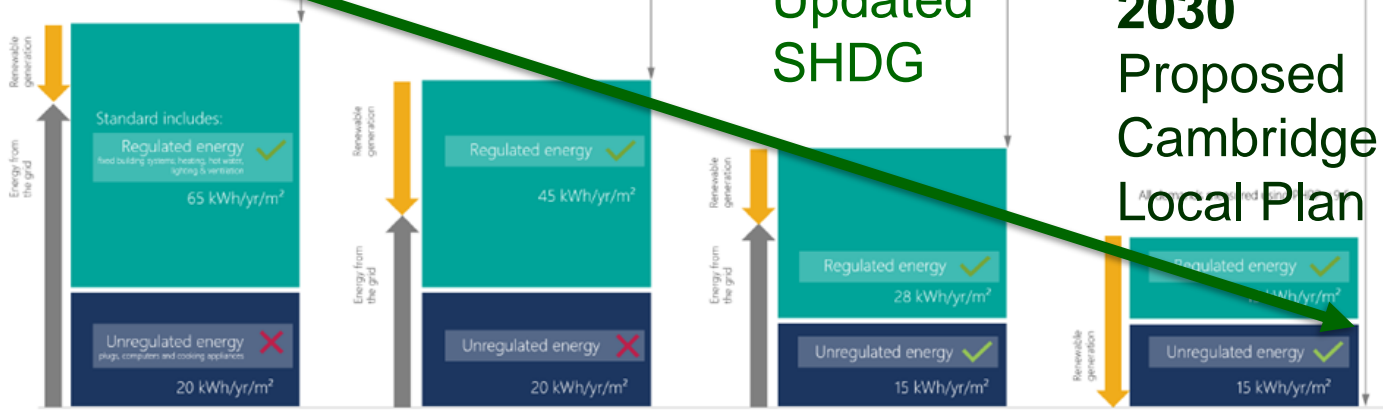
National standards

2020
Cambridge
Local Plan
& SHDG

2025
National
Standards

2021
Proposed
Updated
SHDG

2030
Proposed
Cambridge
Local Plan



Local Plan

Local Plan Plus

Passivhaus

Net Zero Carbon



Sustainable housing standard options

Operational energy

This outlines potential standards and targets that could be applied to new council homes delivered. Standards will be applied through the 'Interim Sustainable Housing Standards 2020'. Standards focus on operational energy, the energy used for living in a home from fixed heating, hot water, lighting, ventilation, plugs, cooking and appliances. It however excludes consideration of electric vehicle (EV) charging.

1. Existing Local Plan

Homes will require:

- Typical energy efficiency
- Gas fuelled heating and hot water
- Solar technologies for energy generation

2. Local Plan Plus

Homes will require:

- High levels of energy efficiency
- Heat pumps for heating and hot water
- Solar technologies for energy generation
- Hot water store with WWHR

3. Passivhaus Certification

Homes will require:

- Ultra-high levels of energy efficiency
- Electric heating and hot water
- Solar technologies for energy generation
- Hot water store with WWHR

4. Net Zero Carbon on-site

Homes will require:

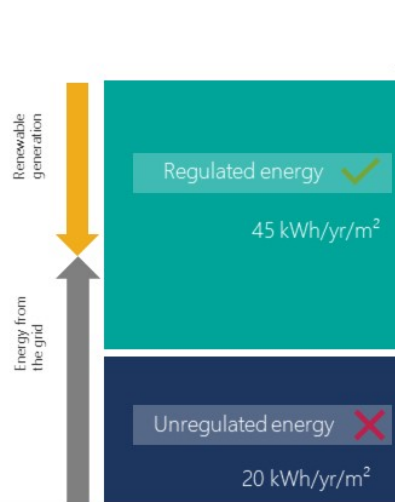
- Ultra-high levels of energy efficiency
- Heat pumps for heating and hot water
- Solar technologies for energy generation
- Batteries for energy storage

Building Regulations Part L baseline
Current UK Government legal requirement for new homes

Carbon reduction Part L 2013 = **19%**
Carbon reduction SAP 10.1 = **19%**
Capital cost uplift beyond typical = **0%**
Typical annual maintenance cost = **~£800/yr**
Typical annual energy cost = **~£600/yr**



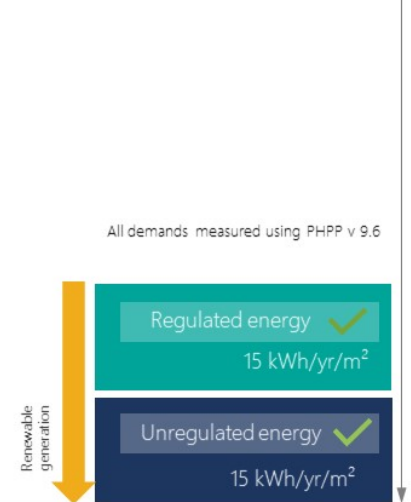
Carbon reduction Part L 2013 = **35%**
Carbon reduction SAP 10.1 = **80%**
Capital cost uplift beyond typical = **3%**
Typical annual maintenance cost = **~£900/yr**
Typical annual energy cost = **~£600/yr**



Carbon reduction Part L 2013 = **35%**
Carbon reduction SAP 10.1 = **80%**
Capital cost uplift beyond typical = **20%**
Typical annual maintenance cost = **~£1,000/yr**
Typical annual energy cost = **~£400/yr**



Carbon reduction Part L 2013 = **100%**
Carbon reduction SAP 10.1 = **100%**
Capital cost uplift beyond typical = **29%**
Typical annual maintenance cost = **~£1,900/yr**
Typical annual energy cost = **£350/yr**



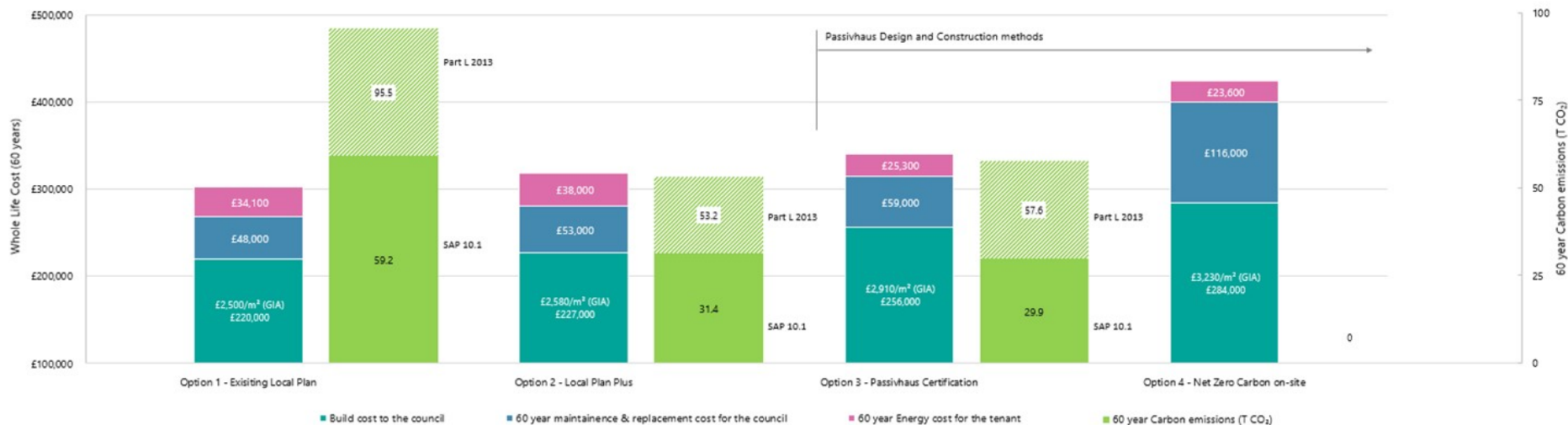
Cost, tenant bills and carbon trade off

Local Plan

Local Plan Plus

Passivhaus

Net Zero Carbon



Fabric ++
Technology +++

Risk:
E&F: +++
Contractor: +
Tenant: +++

Fabric ++++
Technology ++

Risk:
E&F: ++
Contractor: +++
Tenant: ++

Fabric ++++
Technology +++++

Risk:
E&F: +++++
Contractor: +++
Tenant: +++++

What does this mean?

All council new builds built to:

- **Net Zero Carbon from 2030**
- **Passivhaus certification from 2021**
- Sustainability Options appraisal for every development to include:
 - Future proofing all schemes to Net Zero Carbon when funds permit
 - Technical and financial justification for not attaining Passivhaus



Don't forget the other sustainability targets

Summaries	Current Local Plan (2018)	Local Plan Plus	Passivhaus	Net Zero regulated Energy / Carbon
Water Summary	110 l/p/d	90 l/p/d	90 l/p/d	80 l/p/d
Overheating Summary	Recommended but not mandatory to use TM59	Mandatory use of TM59	Mandatory use of TM59	Mandatory use of TM59
POE Summary	Recommended through SHDG but not mandatory	POE for first year of occupation	POE for first 5 years of occupation.	POE for first 5 years of occupation.
EV Summary	SPD: 50% active and 50% passive charging points.	SPD: 50% active and 50% passive charging points.	50% active and 50% passive charging points.	50% active and 50% passive charging points.
Car Parking ratios across sites	~0.7-0.9 parking spaces per home	~0.5-0.6 parking spaces per home	0.5 parking spaces per home	<0.5 parking spaces per home
Car Club		Increased Car Club provision	Increased Car Club provision all with active charging	Increased Car Club provision all with active charging
Biodiversity Summary	Flat roof must be green roof 10% net gain in biodiversity	Flat roof must be green roof 10% net gain in biodiversity (DEFRA)	All Flat roofs to be extensive (Sedum) green roofs. 20% improvement in biodiversity (DEFRA)	All Flat roofs to be extensive (Sedum) green roofs. 20% improvement in biodiversity (DEFRA) All features with habitat value to be retained

Constraints

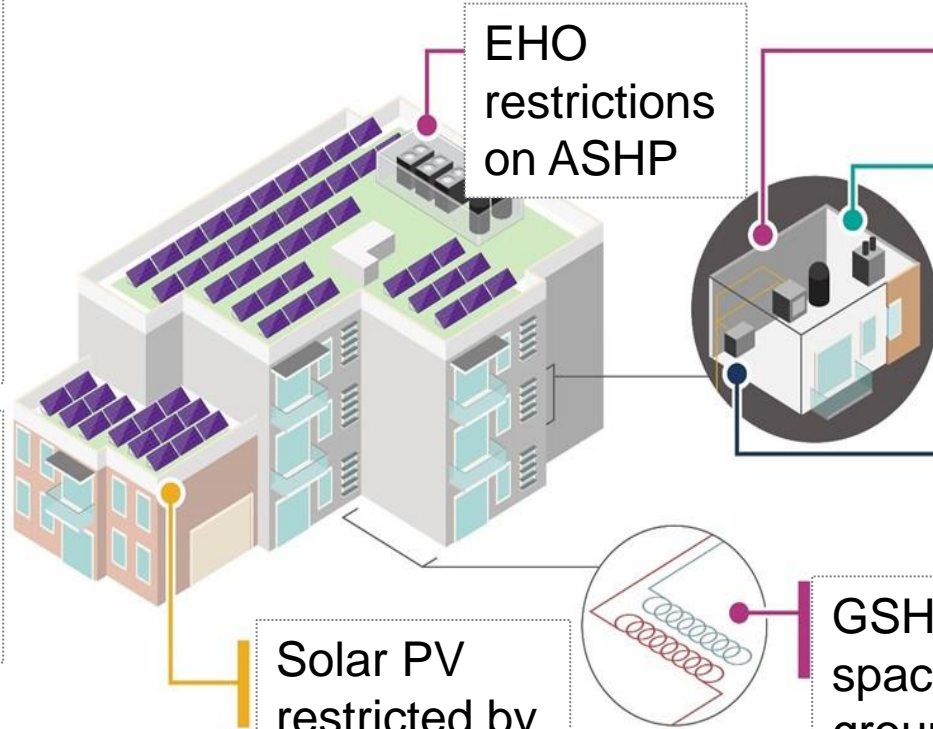
Difficult to control tenant behaviour

Energy and carbon reduction limited if tenants and E&F are not able to operate or maintain new technology

Not all sites suited for Passivhaus due to orientation, other design and planning constraints

Council will have less design control over S106 sites

Limited experience from designers, contractors and supply chains



EHO restrictions on ASHP

Significant storage space required for technology

Solar PV restricted by roof space

GSHP need lots of space or the right ground conditions

Water restrictions and lack of car parking may be unpopular

Biodiversity easier on brownfield and greenfield sites but not overgrown sites

Sustainability - choices

Apartments: Performance and cost summary.

		Original	Iteration 1 New Baseline	Iteration 2 Communal ASHP	Iteration 3 Communal ASHP + WWHR	Iteration 4 EAHP	Iteration 5 DE	Iteration 6 DE + Sunamp	Iteration 7 Local GSHP	Final ASHP + WWHR + ST + PV	
CO ₂	Building Regulations compliance carbon performance	% Reduction against 2013 Notional building	35%	36%	37%	39%	42%	-5%	-4%	50%	58% ¹
		Compliance with 19% planning target?	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
	Estimated SAP 10.1 carbon performance	% Reduction against 2020 Notional building	-8%	-5%	81%	82%	83%	68%	69%	85%	88%
		Aspirational 55% improvement met?	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
£	Tenant regulated operational energy cost	Total (£) per dwelling	£511	£505	£431	£421	£416	£693 - £585	£678 - £579	£370 - £326	£352 ²
		% Change against "New Baseline"	1%	N/A	-15%	-17%	-18%	37% -16%	34% -15%	-35% -27%	-30%
	Heat metering/ billing cost³	Total (£) per dwelling	£94.90	£94.90	£94.90	£94.90	-	-	-	-	£94.90
	Maintenance cost⁴	Total (£) per dwelling	£662	£662	£544	£494	£670	£670	£670	£539	£853
		Total (£) All apartments	£41,706	£41,706	£34,272	£31,122	£42,210	£42,210	£42,210	£33,957	£53,739
		% Change against "New Baseline"	0%	0%	-18%	-25%	1%	1%	1%	-19%	29%
	Capital cost	Total (£) whole site	N/A	£184,500	£194,050	£269,950	£237,960	£70,525	£233,961	£484,474	278,136
		% Change against "New Baseline"	N/A-	-	5%	46%	29%	- 62%	27%	126%	51%
	Landlord CHP electrical generation cost recovery	Total (£) per dwelling	£236	£230	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Total (£) whole site	£14,868	£14,490	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Air source heat pumps
Waste water heat recovery
Solar thermal
Solar PV

¹Based on Stage 3 Part L Compliance report

²Calculated based on the stage 3 TM54 Prediction of operational energy analysis.

³Based on the Kurve system

⁴Maintenance costs provided by Buro Happold

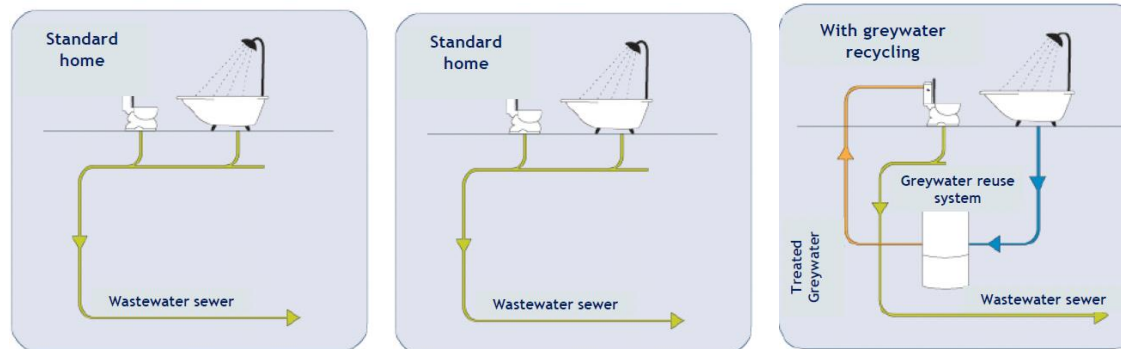
Sustainability - constraints

- Biodiversity Net Gain
 - No current requirement
 - 10%+ gain in draft SPD-
 - 20%+ gain for CIP schemes
- Green grass – green deserts - OK
- Brownfield sites – OK
- BUT overgrown sites with trees makes 20% difficult
- Off-site mitigation is necessary

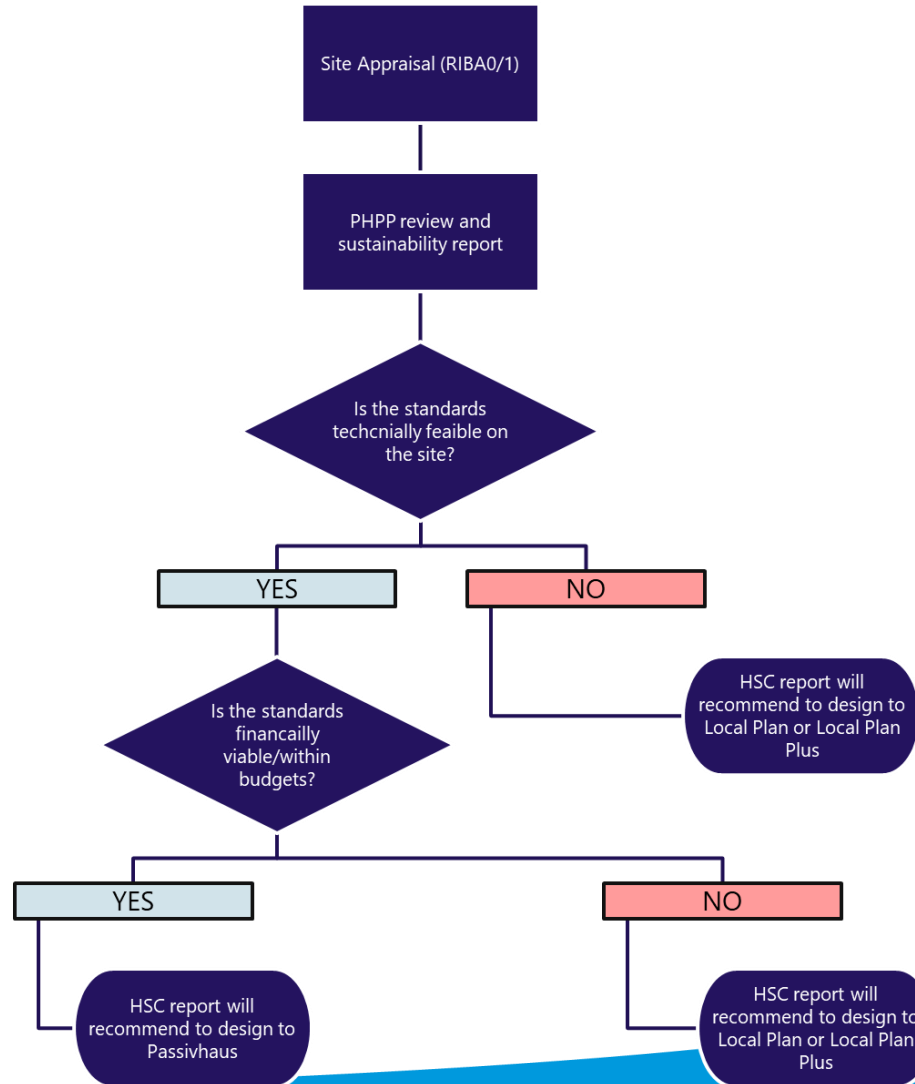


Sustainability - constraints

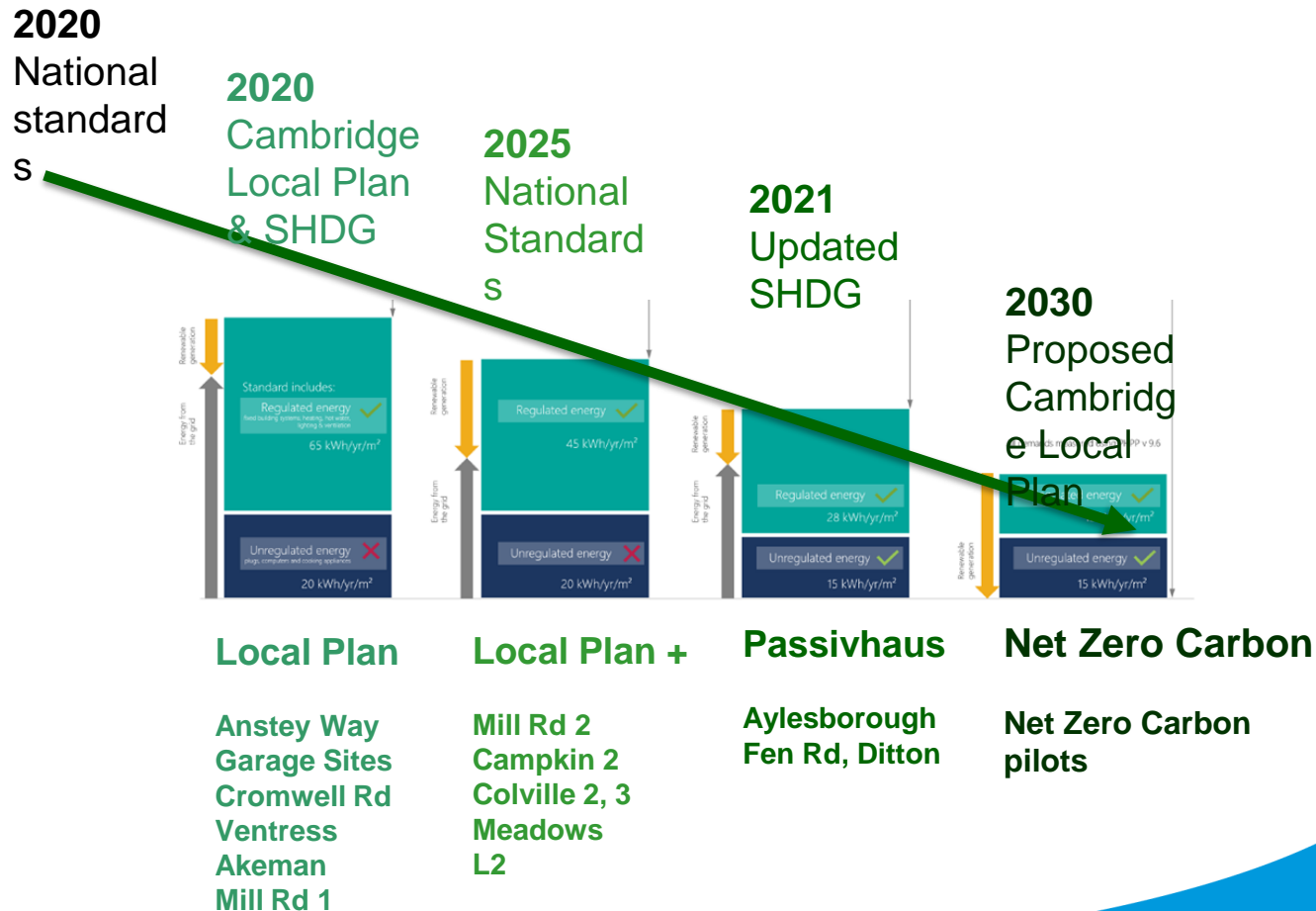
Standard	current requirement	Passivhaus	Net Zero
lppd	110lppd	90lppd	80lppd
impact	none	No bath or small bath Tenant concerns?	Extra cost, extra maintenance



Decision making on sustainability



Sustainability – progress



Thank you for listening

Any questions?

