



The Environment Agency: Facing the many challenges of Sustainability & Climate Change

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Presentation Content

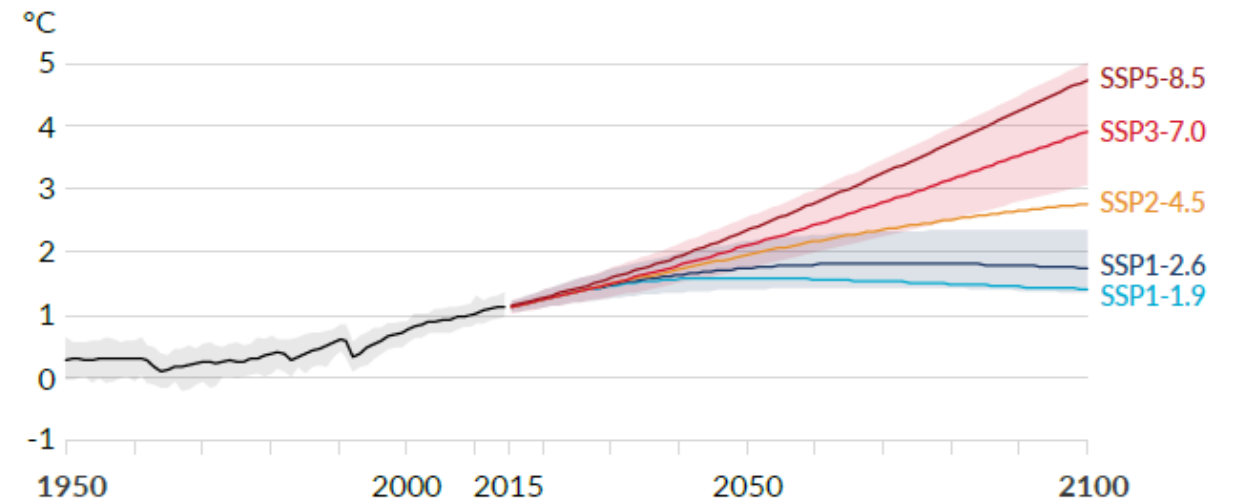
- Addressing the challenges of river flooding and coastal change – the increasing demand of the flood warning services
 - Latest from the IPCC
 - The Environment Agency's Flood Warning Service
 - Challenges for the future
- Flood alleviation in action: Graveney Flood Alleviation Scheme - Norbury Park
 - Norbury Park
 - Flood risk, scheme benefits and habitat improvement
 - Funding and partners
- Our commitment to net zero carbon
 - COP26
 - EA2025
 - Carbon reduction and offsetting

Addressing the challenges of river flooding and coastal change – the increasing demand of the flood warning services

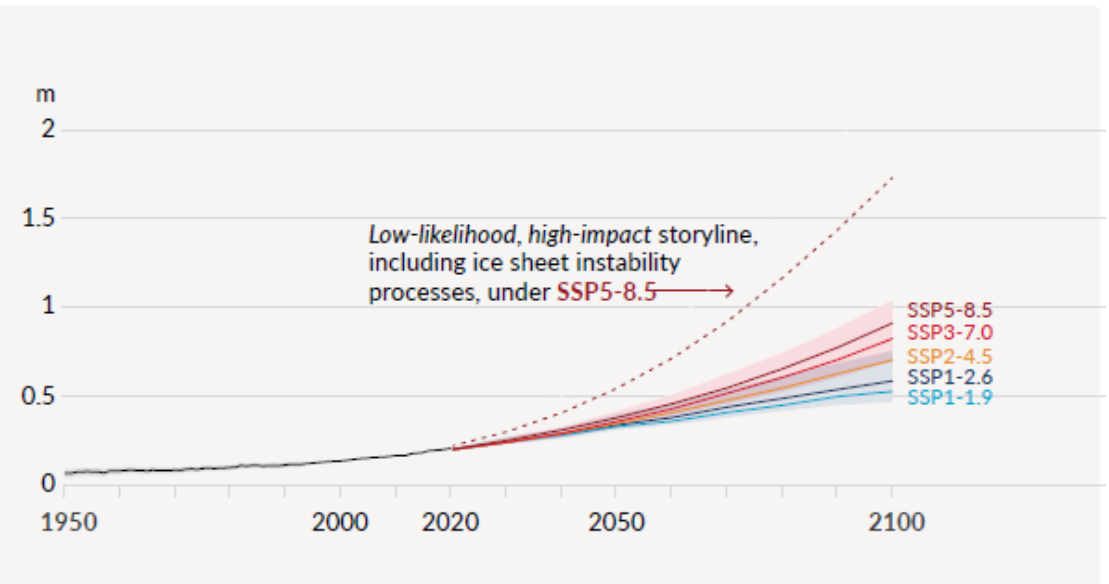
Latest from the IPCC

- It is unequivocal that human influence has warmed the atmosphere, ocean and land.
- Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred.
- The UN Secretary-General António Guterres said the Working Group's report was nothing less than "**a code red for humanity**". The alarm bells are deafening, and the evidence is irrefutable".

a) Global surface temperature change relative to 1850-1900



AB



Climate Impacts



Significant climate impacts are inevitable, especially for flood and coastal risks, water management, freshwater wildlife and industrial regulation.



The Environment Agency is preparing for climate impacts by working with government, businesses and communities.



We can successfully tackle the climate emergency if we do the right things. Early action counts.

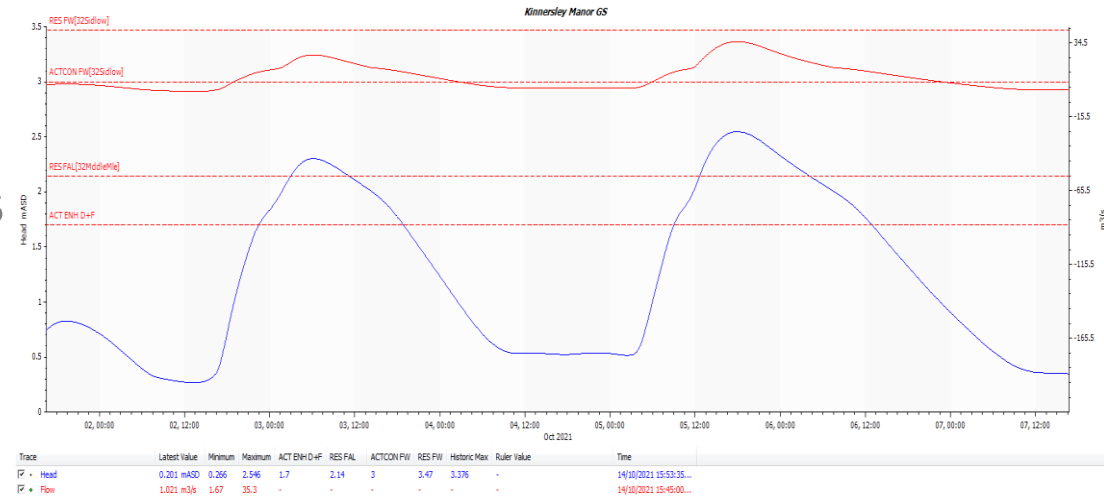
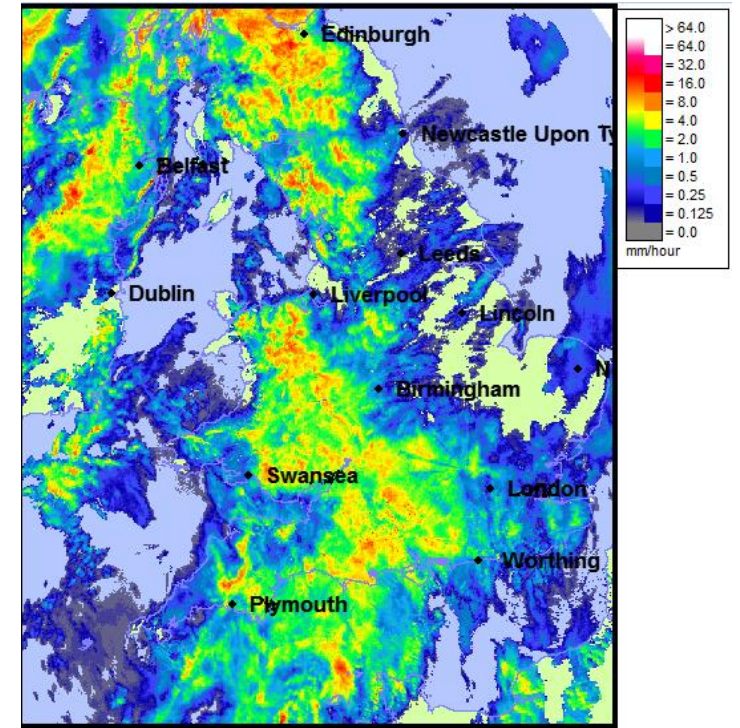
Climate reality checks

- The Environment Agency alone cannot protect everyone from increasing flood and coastal risks.
- Climate change makes it harder to ensure clean and plentiful water.
- Environmental regulation is not yet ready for a changing climate. Climate change will exacerbate risks from (and to) regulated industries.
- Ecosystems cannot adapt as fast as the climate is changing.
- There will be more and worse environmental incidents.

The future looks challenging, but in confronting these reality checks alongside our partners, we can start to develop a more positive picture for a country that is adapting to climate risks.

Climate Change and Incident Management – expected impacts

- It is expected that climate change will exacerbate the effects in extreme weather. For every 1C temperature, the atmosphere can hold approximately 7% more water vapour.
- It is *very likely* that heavy precipitation events will intensify and become more frequent in most regions with additional global warming.
- Relative sea level rise contributes to increases in the frequency and severity of coastal flooding in low-lying areas and to coastal erosion along most sandy coasts.



- IPCC WGI SFM 2021

Flood impacts due to a changing climate: challenges for the Environment Agency

Coastal



Surface water



Rivers

The Environment Agency's Flood Warning Service

Civil Contingencies Act 2004

Category 1 Responder – must 'make arrangements to warn and inform the public and businesses about impending floods'

Flood and Water Management Act 2010

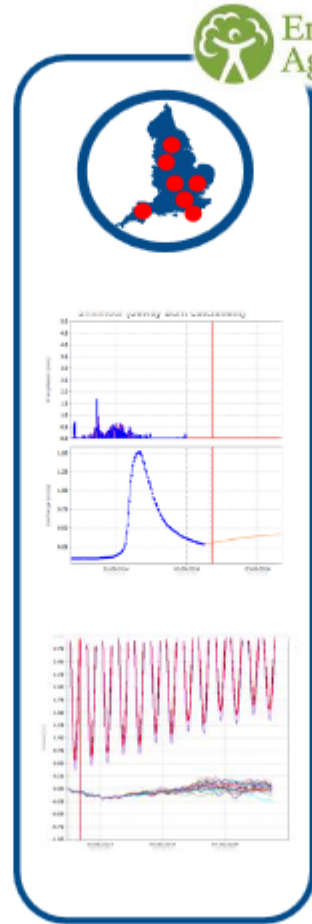
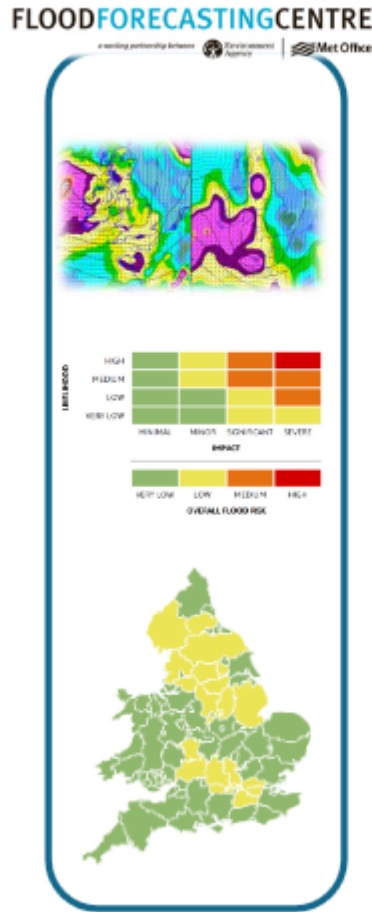
We have powers to provide forecasting and warning services for the flood risks we lead on (river and coastal flooding)

Environment Agency Flood Incident Management Plan 2015-22

Take a forecast led approach in all we do

What is the Local Forecasting Service?

One forecast led incident management service



Forecasting

Warning

Response

- The service translates meteorological and coastal conditions into main river and coastal flood risk forecasts
- Advice on surface water and ground water flooding *where capacity exists*
- 7 local forecasting centres

Climate Change and Incident Management – the Front Line

- We are also on the front line of helping communities to respond to climate impacts, whether that's flooding, coastal erosion, drought, wildfires or indirect impacts such as fish kills caused by water pollution and heat stress. Through our flood schemes, our drought plans and our management of incidents, we have a mature and growing understanding of the importance of resilience. We are exploring different approaches, with partners, to creating resilient places.
 - Our Climate Ambition – Environment Agency

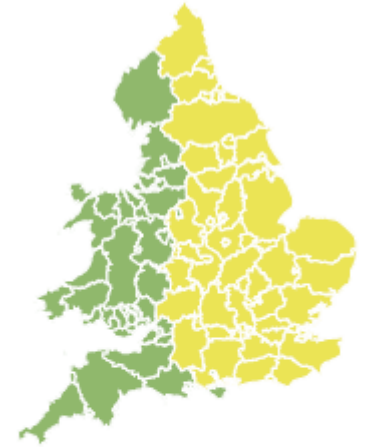
A recent example

- Sunday 16 February 2020 was one of the busiest days the Environment Agency and other responders have seen in terms of preparing for and responding to widespread flood risk, with a total of 600 flood warnings and alerts in place.



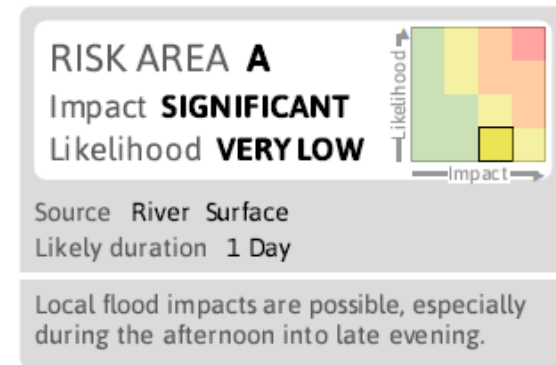
Incident Management – likely future needs

- My own IM role is called a Flood Warning Duty Officer
- FWDOs interpret river and coastal flood risk forecasts and determine the response with regards to warning and information. Work with internal colleagues and professional partners to communicate real-time flood risk
- Climate change is likely to increase the frequency, duration and intensity of flood events, adding pressure to resources
- Impacts for funding, resources and day-job activities expected



Sunday
19 Sep 2021

Steady →



Flood alleviation in action: Graveney Flood Alleviation Scheme – Norbury Park

Graveney Flood Alleviation Scheme - Croydon

- We are developing the Graveney Flood Alleviation Scheme to reduce the risk of flooding to homes, businesses and infrastructure close to the River Graveney.
- Flood risk modelling has identified more than 700 properties at risk of flooding in the area. Climate change will worsen this risk.
- This scheme aims to reduce this risk along the River Graveney and Norbury Brook in Norbury, where 340 homes are at risk.

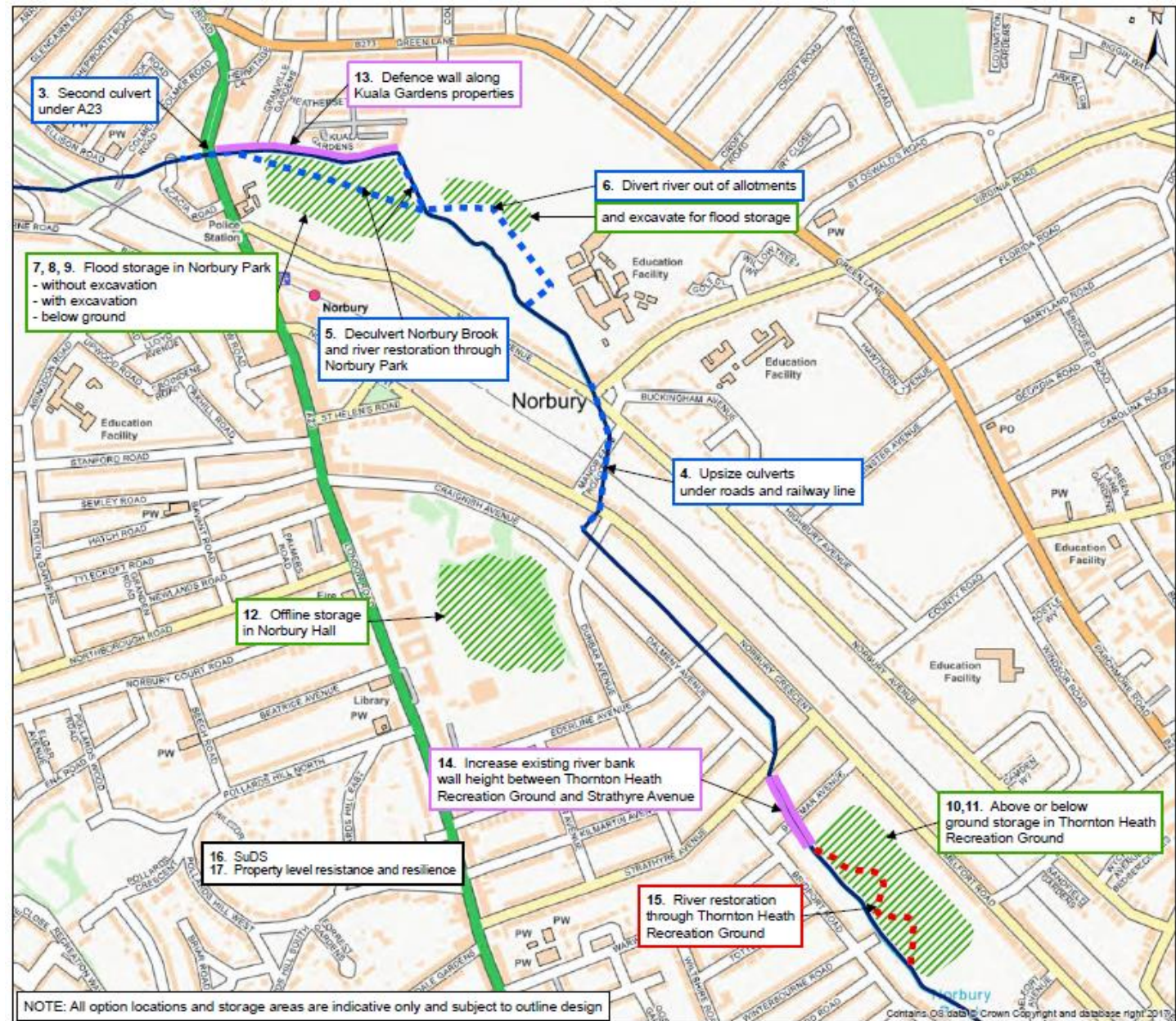


Options considered for the scheme

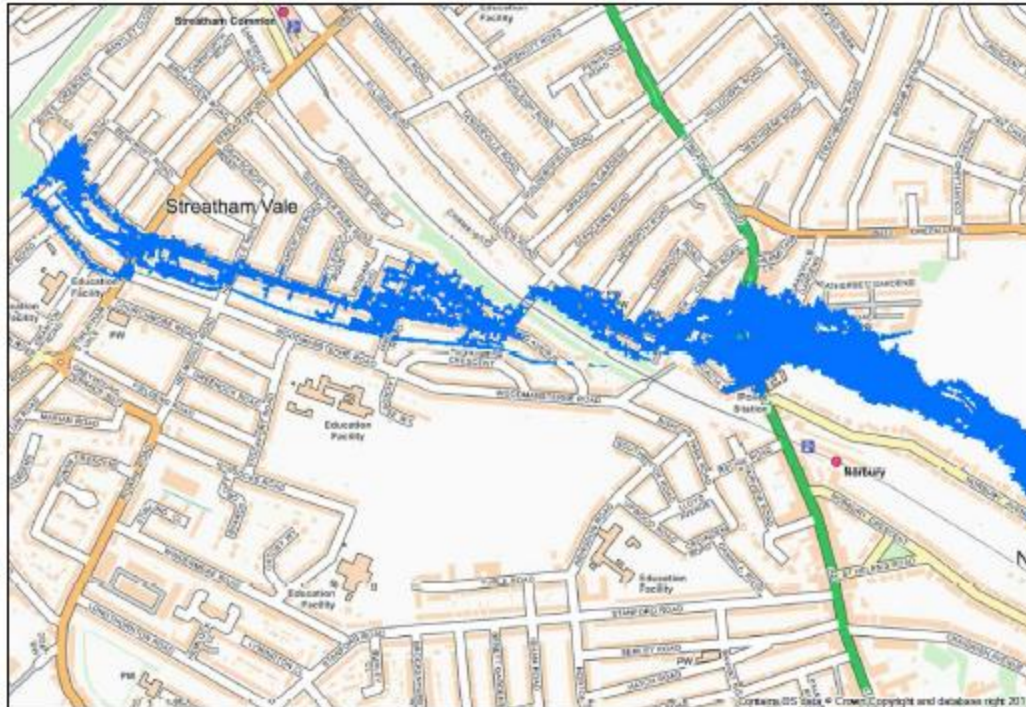
- Second culvert under A23
- Flood storage in Norbury Park without excavation
- Flood storage in Norbury Park with excavation
- Below ground storage in Norbury Park
- Flood storage in Thornton Heath Recreation Ground
- SuDS
- Property-level protection

Long-list options

- Options considered at long-list stage



Graveney FAS – Flood Risk



- Do Minimum (existing situation flood outline for 1.3% annual chance storm)



- Preferred option outline 1.3% annual chance storm.

Norbury Park, now and in the future?

- Norbury Park today



- Future vision for the park



Graveney FAS – preferred option

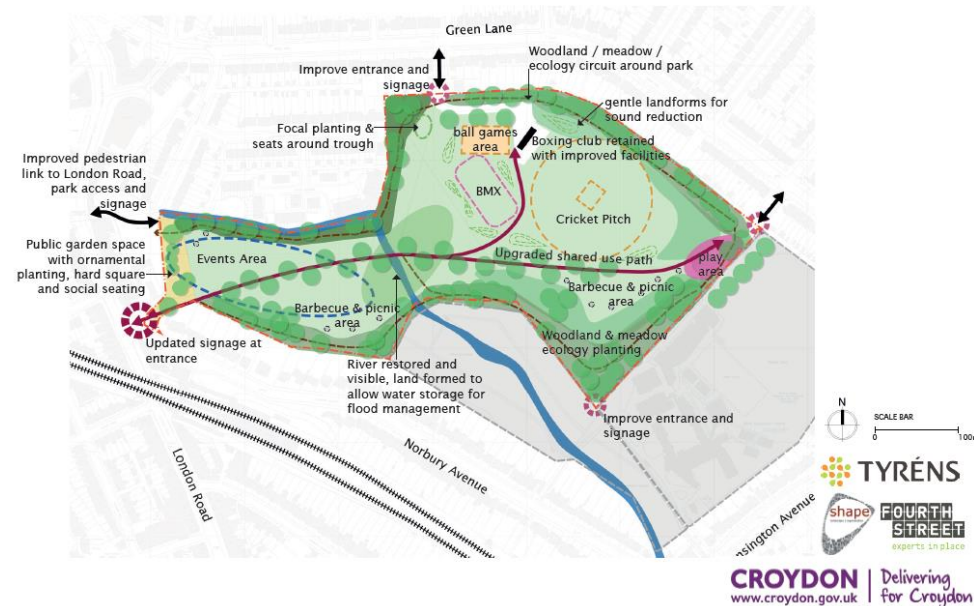
- Restoration and creation of around 300m of more naturalised river channel through Norbury Park
- Creation of a flood storage area to reduce flood risk and mitigate for climate change
- How will it help wildlife?
 - Improved water quality resulting in more diverse aquatic habitat
 - Varied channel profile resulting in establishment of diverse emergent and bankside vegetation
 - Ecological tree planting to create new habitat and places for foraging and refuge
 - Establishment of nectar rich species from new grassland and woodland planting

Graveney FAS – benefits and partners

- How will it help people?
 - Enhancement of the amenity value of the park
 - Providing access to the river
 - Aligning to Croydon Council's Masterplan for recreation to increase park use
- How will it help reduce flood risk?
 - Embankments and walls will be built to temporarily store flood water during flood event
 - Reduction of flood risk downstream of Norbury Park
 - Approximately 940 homes will benefit to some extent, with around 240 homes moving to a lower flood risk band.

- Partnership organisations

- Croydon Council
- Lambeth Council
- Thames Water
- South East Rivers Trust (SERT)
- Thames21



Graveney FAS – A landscape-led scheme

- The Graveney FAS is intended to be a landscape-led scheme
- Pollution, flooding, climate change all contribute a marked increase in physical and mental health conditions SoE Health
- Spending just 2 hours a week in nature significantly boosts health
- People living in deprived areas often have poorer quality environments with less accessible high quality green & blue space.
- Also more likely to breathe polluted air; live near poor quality rivers; be impacted by flooding; live closer to industrial activities.
- 23% of adults from all minority ethnic groups combined have no access to a garden vs 8.5% white British adults.



- Chinbrook Meadows



EA 2025
HEALTHY AIR,
LAND AND WATER



EA 2025
GREEN GROWTH AND
A SUSTAINABLE FUTURE



EA 2025
A NATION RESILIENT
TO CLIMATE CHANGE

Graveney FAS – Next steps

- Outline Business Case has been given project assurance
- Detailed design, planning requirements, etc. to begin this autumn
- Further work on carbon footprint and biodiversity improvement
- Around 250 homes to be better protected from flooding
- Cost of around £3m, whole life benefits around £18m
- Completion expected by 2025

Our commitment to net zero carbon

COP26 – 1-12 November 2021






- The world needs to **halve emissions over the next decade** and **reach net zero carbon emissions by the middle of the century** if we are to limit global temperature rises to 1.5C above pre-industrial average.
- This week sees the world's leaders in Glasgow for COP26
- COP26 presents the last significant opportunity for governments around the world to agree emissions reductions prior to the end of decade deadline to prevent irreversible impacts.

EA 2025

The next five years are crucial.

- We need to take bold and transformative action to be the first generation to leave the environment in a better state than we found it while supporting a sustainable, fair and healthy recovery from the coronavirus pandemic.

- The EA2015 sets out 3 long term goals

-  A nation resilient to climate change
-  Healthy air, land and water
-  Green growth and a sustainable future



Green growth and a sustainable future

- By 2025 we will be on track to deliver our sustainable business commitments, including to be net zero by 2030
- A carbon net zero organisation by 2030 - 28,720 tonnes: 8% reduction on 19/20 outturn – 2% per quarter



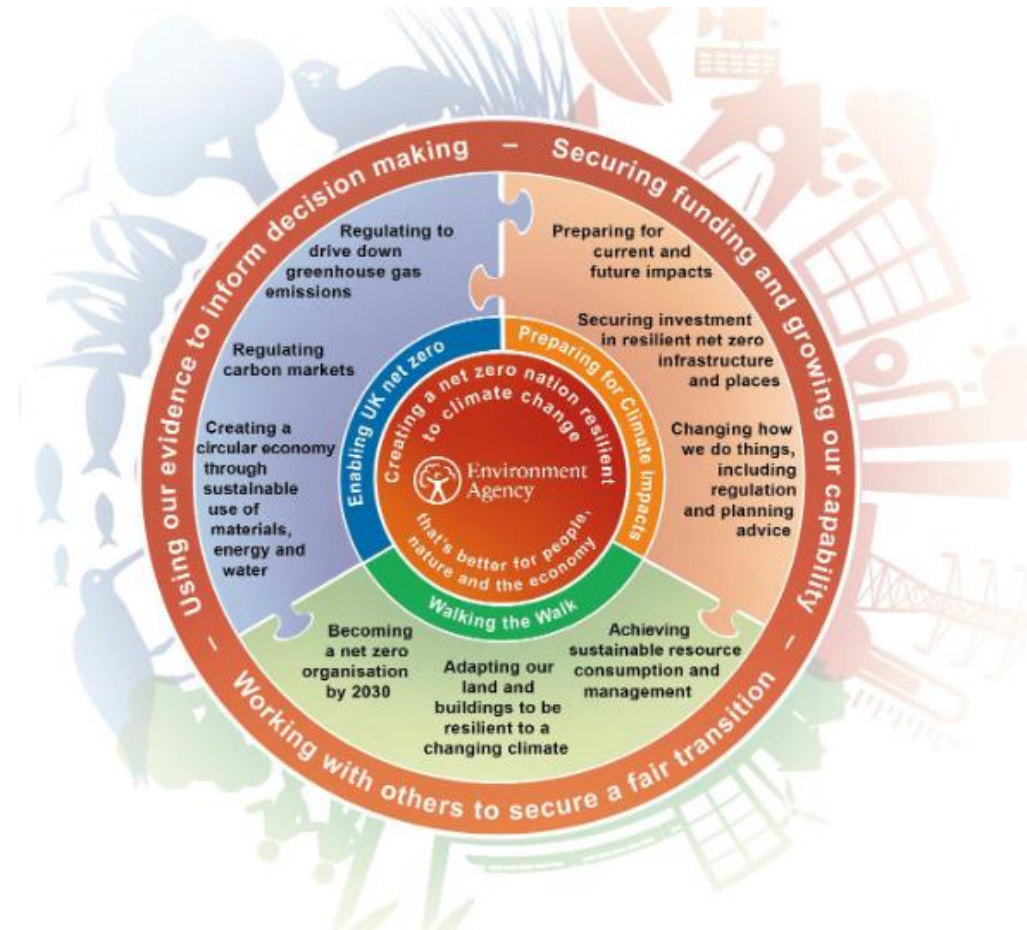
EA 2025

CREATING A
BETTER PLACE

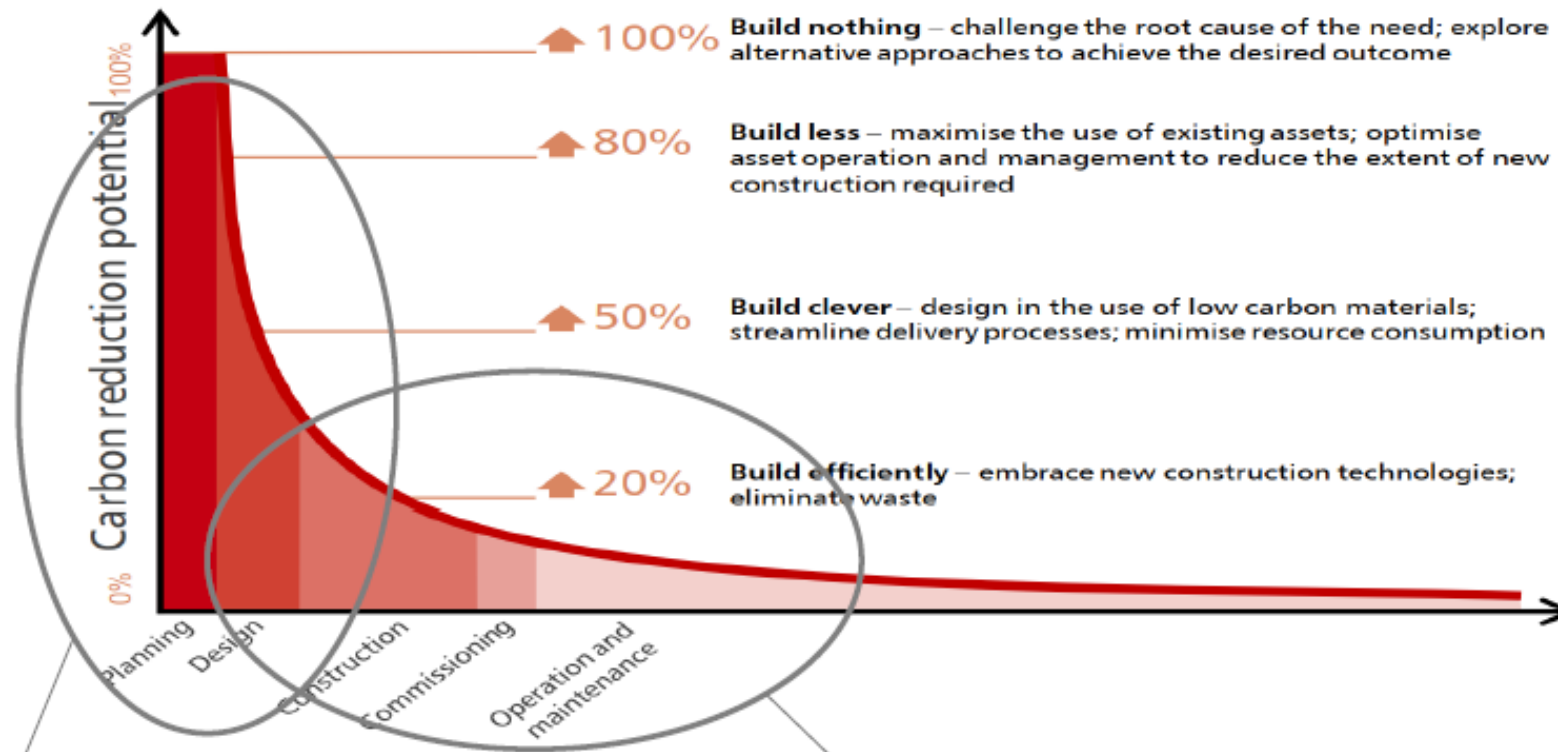
Our commitment to net zero carbon



- Our Climate Ambition
 - It has three main areas of focus that help us support the delivery of EA2025:
 - **Enabling UK net zero** - We will continue to work with the government as it shapes the policy and investment necessary to put the UK on a path to becoming net zero by 2050 and play our part in driving down emissions from those we regulate.
 - **Preparing for climate impacts** - We will help the country by leading on managing two of the biggest climate impacts - too much and too little water - and through our important role as incident responders.
 - **Walking the walk (EA net zero)** - We will lead by example and become a net zero organisation by 2030, so that we no longer contribute to a changing climate, and achieve sustainable resource consumption and management.



The Carbon Reduction Hierarchy



Investment choices

- Strategic objectives/outcomes
- Economic option appraisal

Decarbonisation technology

- Design for best products/innovation
- Supplier decarbonisation (emissions at source)

Our carbon reduction targets

We emit 270,000T CO2e from operations & supply chain

Biggest emitters:

Commuting



Computing



Cars

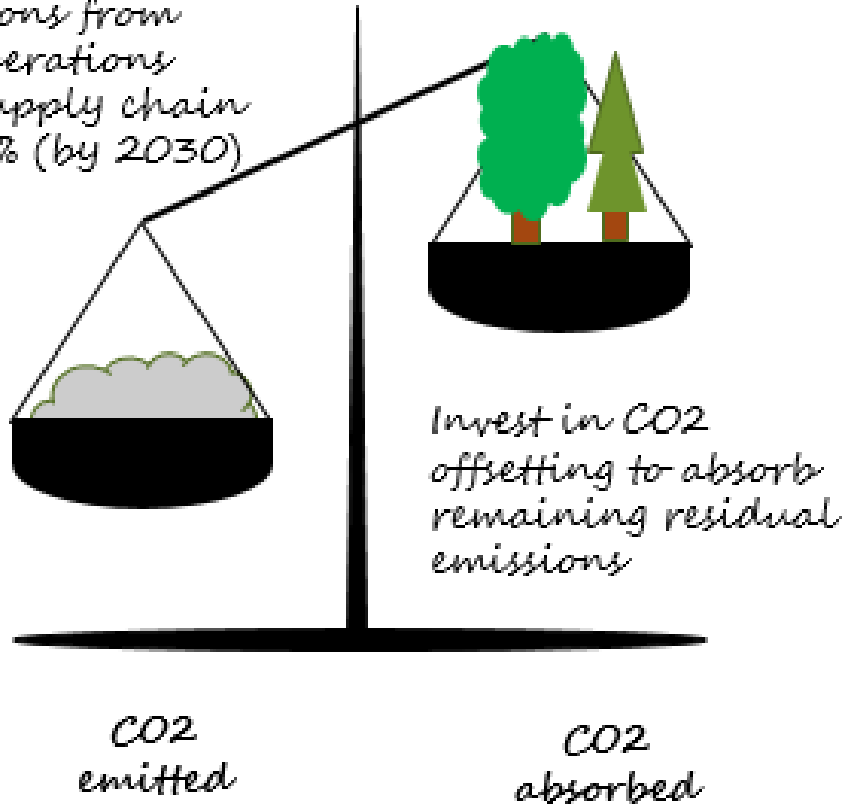


Construction
(50%)

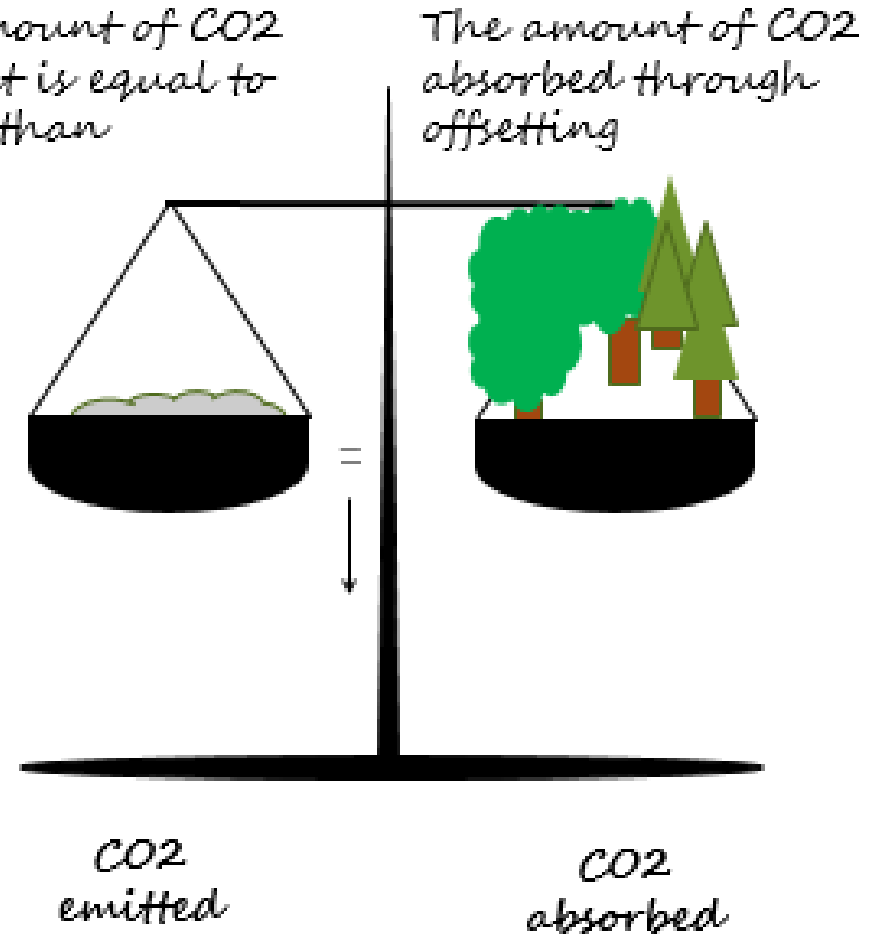


Net Zero is achieved when

Decrease the CO2 emissions from our operations and supply chain by 45% (by 2030)



The amount of CO2 we emit is equal to or less than



Meeting our Net Zero Carbon Ambition

- We will seek every opportunity to limit carbon emissions with all of our projects.
- We will have to make some difficult choices on schemes – carbon associated with flood damage will need to be measured against carbon emitted during and following a scheme.
- Remaining carbon will have to be offset (Reduction vs removal).
- Modelling exercise we found that we would need approx. 10,000 hectares of land to offset our emissions, this is a large area of land roughly the size of Bristol City. This is a substantial area of land for one organisation.
- Investigations to expand offset accreditation codes – currently only two, woodland and peatland (peatland is usually a net carbon emitter).
- We will work with partners and seek funding.

Conclusions

Conclusions

- It is unequivocal that human influence has warmed the atmosphere, ocean and land.
- Significant climate impacts are inevitable, especially for flood and coastal risks, the flood warning service, water management, freshwater wildlife and industrial regulation.
- We are developing flood alleviation schemes and other flood risk reduction measures to keep flood risk at manageable levels, with schemes seeking wider benefits
- The Environment Agency has committed to becoming a net zero carbon organisation by 2030 and has begun setting out a path to achieving that aim.
- Net zero will consist of a balance of cutting carbon emissions and offsetting emissions which cannot be avoided.

Thank you for your time

Questions?