

City of London Corporation Climate Resilience

Insert Project Location – Greater London and Home Counties UK

City of London Corporation and Arcadis

BIG Biodiversity Challenge Award Category: Innovation

Project overview (50 words max)

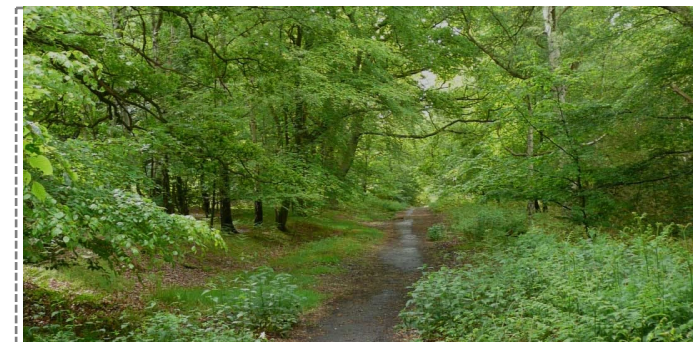
Climate change has the potential to significantly impact existing habitats, particularly those in urban environments and in the southeast of England. These negative impacts not only affect biodiversity but many other ecosystem services, which reduces the resilience and the amount of carbon sequestration that these habitats can provide. In some cases, climate change can even result in the release of carbon from existing habitats. Arcadis with the City of London Corporation (CoLC) developed a novel method for assessing the impacts of climate change on habitats and developed interventions to increase climate resilience. The project was completed in December 2023.

What were the biodiversity conditions on site prior to the enhancement? (100 words max)

The City of London Corporation manages 4428 ha in and around Greater London, holding some of London's and the home counties most important semi-natural habitats, including Epping Forest, Highgate Woods, Burnham Beaches and Hampstead Heath. The majority of the sites are wooded, and while all the sites are positively managed, climate change has the potential to reduce the flood resilience, passive cooling, biodiversity, recreational benefits of these semi-natural habitats, as well as causing carbon release, increasing soil erosion and increasing wildfire risk.

What were the reasons behind this project? (100 words max)

CoLC has an ambitious Climate Action Strategy with voluntary carbon reduction targets in line with local, national and global goals to achieve net zero carbon emissions from their own operations by 2027 and across their value chain by 2040. They are also keen to maximise multifunctional benefits and overall climate resilience given the importance of their assets. CoLC's existing green estate sequesters 16,300 tonnes of CO₂ per annum, which is around 20% of the estimated overall nature-based sequestration in London.



Heat stress can reduce carbon sequestration and lead to tree mortality (Epping Forest)



Leaky dams can retain water on site reducing heat stress (credit Valentine Muhawenimana)

What were the biodiversity measures taken? (300 words max)

The methodology to assess climate change vulnerability involved several 'key risk indicators': **Urban Heat Island Effect; soil vulnerability (to drought and erosion); fire risk; tree species vulnerability; climate vulnerability; tree age vulnerability; mammalian pests; arboricultural diseases; and recreational pressure**. Information was provided by CoLC and a range of freely available data sets. Scores were provided for each risk factor and overall risk.

CoLC land managers were interviewed to confirm ratings and to discuss the feasibility of a long list of interventions including: **Natural Flood Management; Sustainable Drainage Systems (SuDS); increased fire signage; social awareness campaigns; planting of climate and disease resilient tree species; and woodland management to improve tree health**. These were budgeted for four years and the cost versus benefit was measured in terms of carbon sequestration secured.

These interventions combined with **monitoring and collaboration** to share best practice, as well as creating an evidence base for climate resilient habitat management, will increase biodiversity, educational, recreational and wellbeing benefits.

Climate risk for grey infrastructure is now commonplace but it's uncommon for the assessment of climate risk for habitats and we are not aware of it having previously been undertaken to this level of detail across so many sites. Lack of assessment has resulted in an underestimation as to the risk and the implications for habitats, which could be devastating across the globe. This is a replicable method that can be used for any green estate. The awareness raising during sites manager liaison has also been a valuable support towards upskilling the wider team in climate risk and resilience.

By acting now, there is an opportunity to mitigate and adapt to the impacts of climate change, protect ecosystems and biodiversity, safeguard human health and wellbeing, fulfil commitments, and seize opportunities for sustainable management. Ultimately, this will provide opportunities to build a more resilient and sustainable future and improve quality of life.

Further information (250 words max)

The City of London Corporation's Natural Environment Division are juggling a host of current complex management requirements for habitats of biodiversity, cultural and recreational value. The evidence provided, combined with engagement and awareness raising with the CoLC team enabled the future issues due to climate change to be integrated into current management.

Intervention measures were costed across a 4-year period for review by the CoLC. The costings and benefits were designed to provide information for current and future land managers and underpinning the application for existing and future funding. The monitoring proposed will also provide a stronger evidence base for the interventions as they perform for climate resilience and biodiversity enhancement.

While this climate risk assessment for the green estate is an uncommon and largely innovative approach, it could be replicated and tailored for anyone interested in how secure their green assets were with regards to climate risk. This will be a combination of mitigation and adaptation depending upon the habitats assessed.

Project Team

- The City of London Corporation's Natural Environment Division
- Arcadis

What was the motivation for carrying out the enhancement? (100 words max)

Climate is rapidly changing, resulting in rising temperatures, extreme weather events, wildfire, sea-level rise, and biodiversity loss. In particular, 2022's extreme weather, resulting in leaf loss and tree death highlighted the potential impacts this could have on the CoLC's extensive green estate which is a critical contribution to the NbS carbon reduction of Greater London and to the CoLC's net zero target for carbon emissions from their own operations by 2027. Biodiversity underpins climate resilience and as such they are inextricably linked. The CoLC are keen to understand these future threats and to develop interventions which would provide adaptation and mitigation to these risks and therefore add resilience. Protecting ecosystems and biodiversity, safeguard human health and well-being, fulfil commitments, and seize opportunities for sustainable management, building a more resilient and sustainable future and improving quality of life.



Climate change increasing diseases, critical to introduce disease resistant trees (Ash Dieback)



Over mature and veteran trees reaching the end of their lives with regeneration limited due to mammalian predation (Bandstand oak, Hampstead Heath Ancient Tree Forum)