Written evidence submitted by the Green Roof Organisation

Introduction

The Green Roof Organisation **(GRO) is an independent not-for-profit Trade Association representing the UK Green** Roof, Blue Roof (rainwater management) and BioSolar Roof (Solar PV) industries, representing manufacturers of waterproofing systems, suppliers of Green/Blue/BioSolar systems and components, specialist contractors from the roofing and landscape sectors and associated sectors such complimentary trade associations, NGO's, insurance companies, academia, ecology consultants, designers and architects.

GRO develops guidance documents and generally promotes the adoption of Green/Blue/BioSolar roofing technologies within the built environment.

Written Evidence

Studies around the world have shown the positive sustainable cooling impact green roofs have on Urban Heat Island Effect in Cities through:

- prevention of the heating of the roof surface, which is usually black, during the daytime.
- reduction in daytime heat retention then also reduces the re-release of heat into the atmosphere overnight.
- evaporation of the water retained with the green roof system and plants during the daytime cooling the air naturally (Evapotranspiration), this is particularly beneficial on high rise buildings when the green roof is at a lower level.
- cooling air as it travels across/through the planting at roof level.
- reduction in atmospheric pollutants that are captured within the planting.
- cooling of solar panels through evapotranspiration increasing energy production and reducing the heat gain to the atmosphere from the solar panel.

Toronto in Canada produced detailed report and implemented as incentive programme based on the evidence demonstrating that by making just 5 percent of the city's area green roofs they lowered city wide temperature by an estimated 1.5° to 2°C, with a greater temperature reduction in high-density areas and with a direct 4° to 5°C roof surface cooling effect.

An additional benefit identifies was the green roofs retention of 12,300 cubic meters of stormwater runoff (equivalent of 50 Olympic-sized swimming pools), reducing pollution into sewer overflows and preventing 220 metric tons of greenhouse gas emissions.

Urban Heat Island Effect studies:

- Green Roofs And The Urban Heat Island Effect: https://www.greenrooforganisation.org/2023/06/23/green-roofs-and-the-urban-heat-island-effect/#:~:text=The%20paper%20published%20by%20T,areas%20of%20New%20York%20City.
- How the urban heat island effect makes cities vulnerable to climate change: https://ukgbc.org/news/how-the-urban-heat-island-effect-makes-cities-vulnerable-to-climate-change/
- Positive effects of vegetation: Urban heat island and green roofs: https://www.sciencedirect.com/science/article/abs/pii/S0269749111001539
- Toronto Report: https://developingresilience.uli.org/case/toronto-green-roof-bylaw-and-eco-roof-incentive-program/
- Toronto Eco Roof incentive programme: https://www.toronto.ca/services-payments/water-environment/environmental-grants-incentives/green-your-roof/
- Role of green roofs in reducing heat stress in vulnerable urban communities—a multidisciplinary approach: https://iopscience.iop.org/article/10.1088/1748-9326/aad93c
- The Effects of Green Roofs on Outdoor Thermal Comfort, Urban Heat Island Mitigation and Energy Savings: https://www.mdpi.com/2073-4433/11/2/123
- Using Green Roofs to Reduce Heat Islands: https://www.epa.gov/heatislands/using-green-roofs-reduce-heat-islands
- Using Green Roofs for Social Housing to Improve Energy Consumption in New Cities. (An Applied Study of Social Housing in Egypt's New Cairo City): https://futurecitiesandenvironment.com/articles/10.5334/fce.165
- Green Roofs - Did the Teletubbies have it right?:

https://www.ahr.co.uk/news/green-roofs-did-the-teletubbies-have-it-right-2

Energy Saving

- https://www.greenrooforganisation.org/2023/01/12/how-do-green-roofs-save-energy/

Current Planning Framework

The London Plan has provided the London based planning authorities with the powers to require a green roof on major developments since 2004. In 2021 The London Plan was updated to include Blue Roofs, which also form part of the current DEFRA White Paper investigating rainwater management solution (Sustainable Drainage Systems – SuDS).

With the implementation of Biodiversity Net Gain (BNG) requirements in November 2023 the opportunity to further enforce a requirement for green roofs in Cities, particularly Inner Cities, is created as the lack of ground level planting space for BNG suggest roof level greening is the only or simplest compliance option.

UK's existing public and private sector housing stock

If Local Authorities were required to demonstrate why they cannot retrofit a green roof on existing multi occupancy dwellings such as apartments/flats the heating of cities would reduce, the winter heating requirements would reduce (through the thermal mass of a green roof), the mental health of the residents would improve and the biodiversity within the city could be significantly improved. This is as true in deprived areas as it is within wealthy areas.

Whilst there would be an increased cost to the one-off implementation of the retrofit green roof the extended life of the roof waterproofing (typically the life expectancy of the roofing system doubles and can be 3rd party certified by the likes of the BBA as "Life of the Building", together with the reduction in heating and cooling costs would more than cover the increased initial cost over the whole life cost of the building.

Additionally, the green roof could provide the opportunity for a roof level allotment for the residents to use for the growth of vegetables and herbs.

On behalf of the Green Roof Organisation,

Mark Harris
Secretary and Technical Committee Chair

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