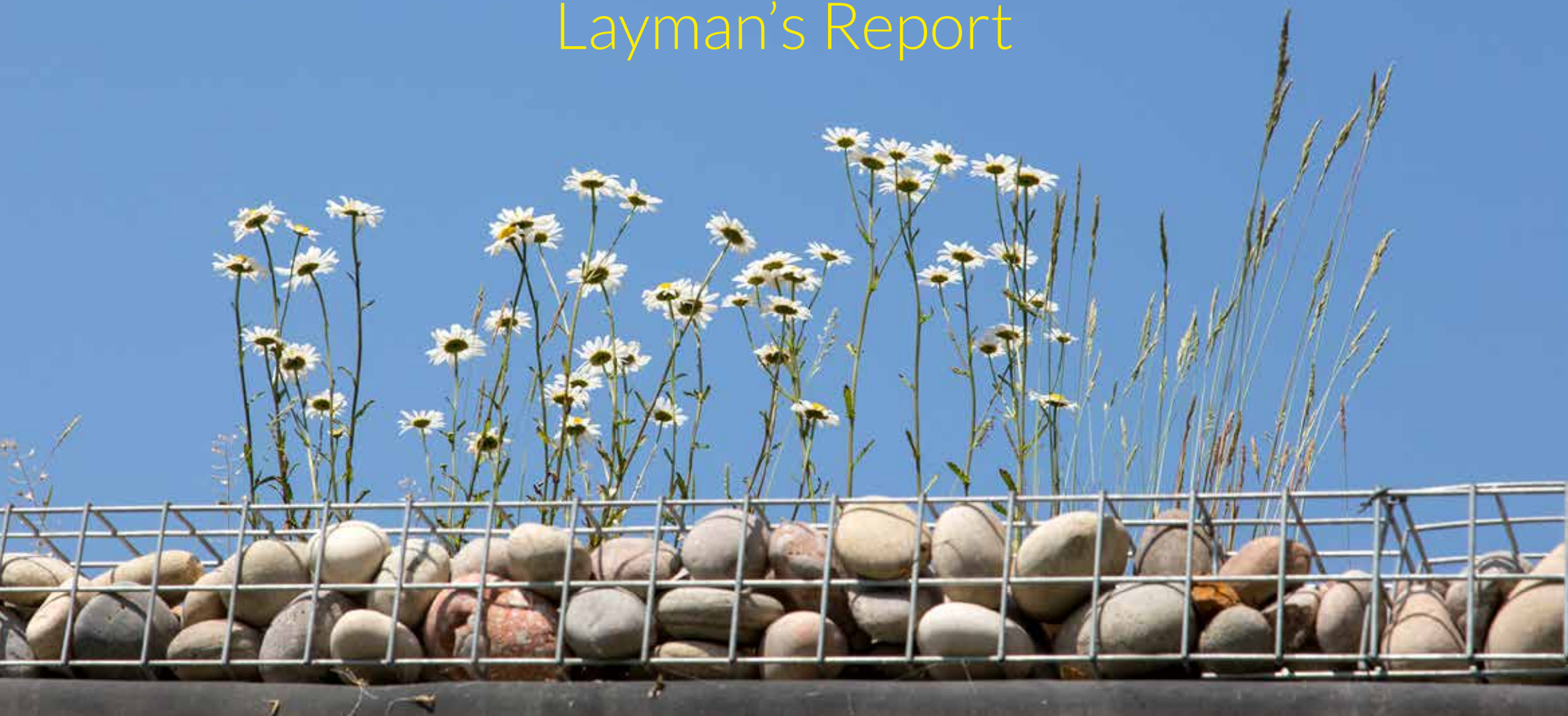


LIFE+ Climate-Proofing Social Housing Landscapes

Layman's Report



SUPPORTED BY
MAYOR OF LONDON



With the contribution of the LIFE financial instrument of the European Community. Project No: LIFE12 ENV/UK/001133

What is the Climate-Proofing Social Housing Landscapes project?

The 1.6 million EUR *Climate-Proofing Social Housing Landscapes* project, co-funded by the EU LIFE+ Programme, was delivered by environmental regeneration charity Groundwork London in partnership with Hammersmith & Fulham Council. The project, which ran from 2013-2016, demonstrated an integrated approach to addressing climate-related and wider socio-economic challenges in vulnerable urban environments by implementing a package of climate change adaptation measures in three social housing estates in West London.

The project's overarching aim was to demonstrate that through water-sensitive urban design measures and other climate adaptation actions, urban housing estates can play an important part in adapting our cities to cope better with climate change.

The key objectives were to:

- Develop a transferable methodology for designing affordable, light-engineering climate change adaptation measures for social housing landscapes using green and blue infrastructure
- Design and implement comprehensive packages of retrofitting measures in three different types of social housing landscapes
- Implement the main measures through employment programmes for long-term unemployed beneficiaries, creating local jobs
- Develop a set of training modules for housing and grounds maintenance professionals on the whole cycle of adaptation and green infrastructure relevant procurement systems, design, retrofit and maintenance
- Develop a transferable methodology for resident stakeholder engagement, resulting in site-specific community adaptation action plans and practical involvement in retrofitting and maintenance activities

- Design an evaluation methodology capturing technical performance and social return on investment
- Develop interactive e-learning materials including a film to inform local, national and EU policy, strategy and best practice



Why is urban climate proofing important?

Benefits of climate adaptation interventions

Environmental benefits:

- Manage flood risk
- Improve water quality
- Provide carbon storage and sequestration
- Provide natural cooling
- Reduce the need for, and minimise the use of, fresh water for irrigation

Social and economic benefits:

- Reduce vulnerability of local communities and their homes to the impacts of climate change
- Reduce crime or anti-social behaviour
- Improve health and well-being of residents
- Raise awareness of climate change and its potential implications
- Apprenticeship and employment opportunities for the local community
- Financial savings for housing providers

The challenge

Climate change is likely to mean more extreme weather events across Europe, including winter flooding and summer heat waves. The impacts of this are likely to be exacerbated in urban areas, with high soil sealing and drainage systems already at or near capacity resulting in a significantly increased threat of surface water flooding, and the mass of construction material and reduction in vegetated surfaces resulting in an increased risk of over-heating.

Social housing residents are typically more vulnerable to the impacts of climate change and are also often the least likely to be able to afford measures which could help them tackle this risk. Climate adaptation solutions minimise the impact that urban development has on the environment, and the impact that a changing climate change could have on the buildings, open spaces and people that live there. Whilst most new developments are now designed to withstand future climates, this is not the case for existing housing; and the retrofitting of adaptation measures in existing housing estates' outdoor spaces is rare.

Recognising this, Groundwork London worked with Hammersmith & Fulham Council, residents and other key stakeholders to design and implement adaptation measures in three housing estates in West London in order to demonstrate how to ensure that urban environments are better placed to withstand the impact of extreme weather events and other effects of a changing climate.

The policy context

Adaptation measures of this nature are encouraged by European policy under the Water Framework Directive and the EU Floods Directive. These measures also demonstrate practical responses in line with the EU

Strategy on Adaptation to Climate Change, which encourages all Member States to adopt comprehensive adaptation strategies and recognises that it makes sense to begin with measures that are low-cost, flexible and good for both the economy and the climate. The European Commission's Green Infrastructure Strategy also recognises the important role these measures play in a number of areas, including the provision of ecosystem services, the protection and enhancement of natural capital, adaptation to climate change and disaster risk management, as well as offering health and social benefits too.

At the national level, the project contributed to the development of the UK's approach towards Sustainable Drainage Systems (SuDS), inputting to a UK government consultation in 2014. At the regional level, the project is referred to in the London Sustainable Drainage Action Plan, which aims to ensure that London can manage its rainwater sustainably to reduce flood risk and improve water security. The project also helped to strengthen Hammersmith & Fulham's local planning policies associated with SuDS and climate proofing future developments within the new Local Plan and proposed new Ecology / Biodiversity Policy.



Project location



Hammersmith & Fulham in West London is one of the smallest London Boroughs, yet one of the most densely populated local authorities in England. Three social housing estates were chosen because they reflect different social housing environments that can be found across Europe, demonstrate vulnerability to increasingly extreme weather conditions and are located in deprived areas.

The aim was to improve the overall quality of these estates, addressing climate threats such as flood risk, water scarcity and overheating, and wider contributors to local environmental quality such as biodiversity, air quality and water quality.

The implemented measures are light-engineering solutions including green roofs, rain gardens, swales and basins. These have been complemented by other elements including natural play features and food growing beds. Specific interventions took into account a range of site-specific factors.

Soft landscaping elements have been implemented through Groundwork London's Green Teams (apprenticeship and employment programmes for local people); hard landscaping elements have been delivered by externally appointed contractors. In this way, different mechanisms for the delivery of adaptation measures have been demonstrated.



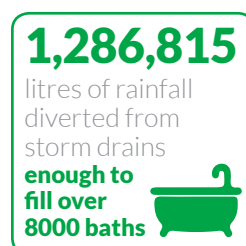
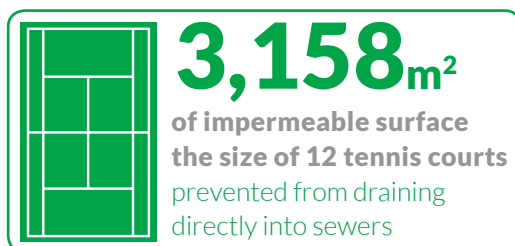
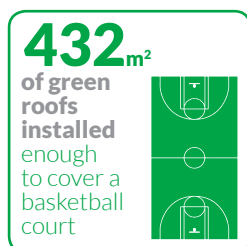
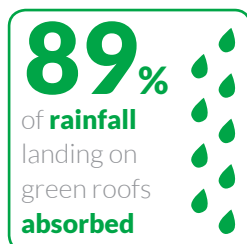
Before and after images

1. Open spaces at Queen Caroline Estate
2. Open spaces at Cyril Thatcher, Eric MacDonald & Richard Knight Houses
3. Orchard Square improvements at Cheeseman's Terrace

The features at the Queen Caroline Estate and Cyril Thatcher, Eric MacDonald and Richard Knight Houses are showcased in a 360° virtual tour, which can be viewed at: www.groundwork.org.uk/sites/urbanclimateproofing/pages/ucp-estates



Key activities



The key stages in the *Climate-Proofing Social Housing Landscapes* project were as follows:

- **Initial audit** – desk-based data collection, site surveys, and community consultation events
- **Assessment of threats and opportunities** – interpretation of site surveys and community consultation events
- **Feasibility assessment** – screening opportunities based on an assessment of key factors, with expert input

- **Prioritisation of opportunities** – short-listing of opportunities to take forward to sketch design using a simple multi-criteria assessment method
- **Design** – master plans, outline and sketch proposals, further feasibility surveys, detailed design, technical review, initial costs estimates, and securing planning permission
- **Preparation for implementation** – revised cost estimates, timelines for implementation, drafting maintenance schedules, tender actions, contract preparation and issue
- **Implementation** – pre-start meetings, contractors delivering hard landscaping works on site, Green Teams delivering soft landscaping, contract administration, installation of noticeboards to keep residents informed, ongoing resident engagement
- **Maintenance** – led by Groundwork London's Green Teams initially, then handed over to Hammersmith & Fulham Council's contractors;
- **Monitoring and evaluation** – technical monitoring led by the University of East London, complemented by a Social Return On Investment assessment
- **Dissemination and communication** – sharing project activities, results and lessons learned with stakeholders across Europe with a view to supporting the implementation of similar initiatives by other housing providers

Resident engagement is not listed as an individual stage as this has been a cross-cutting activity throughout the project, from design and implementation through to maintenance and evaluation. In addition, the involvement of a wide range of external experts, including the Landscape Institute, National Housing Federation, Thames Water and the Environment Agency, has supported various elements of the project.

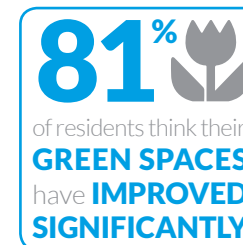
Spotlight: Community engagement

Groundwork London worked with residents throughout the project, giving them the opportunity to shape the open space improvements on their estates. In the early stages, residents were consulted in order to understand how they used the existing green spaces, problems they experienced, and improvements they would like to see; following this they were involved in mapping environmental issues and solution ideas, and then reviewing concept designs to help visualise the improvements that could be made. An ongoing plan of activities was developed to keep residents engaged throughout the project and understand their views on its impacts. This engagement helped to promote greater awareness of the implications of climate change for London, and the actions that residents could take themselves to contribute to adaptation and resilience.

Activities included:

- Launch events to introduce the project to each estate;
- Participation in planned resident meetings on the estates;
- Leaflet dropping and surveys (through door knocking);
- Energy and water efficiency home visits through Groundwork's Green Doctor programme;
- Food growing and gardening clubs;
- Sustainability champions training sessions and workshops, to equip local residents with the skills and understanding to manage their green space assets effectively;
- Noticeboards for each estate informing residents of the works and their benefits;
- Events on each estate to celebrate the completion of capital works;
- Engagement in estate climate adaptation plans, including through estate walkabouts and photography competitions;

- Engagement in the Social Return On Investment exercise to understand the wider social and economic impacts of the project and the specific benefits experienced by residents.



*Young residents enjoying the wildflowers
at Queen Caroline Estate*

Spotlight: Training and employment



Training for Hammersmith & Fulham Council staff and grounds maintenance contractors

Over the course of the project, Groundwork London delivered eight workshops to develop the local institutional capacity of the local authority and its maintenance contractors, to facilitate the replication of the project's approach across the Borough. This aimed to ensure that housing staff and contractors understood the impacts of climate change at a local level and were equipped to specify and maintain retrofit solutions going forward.

Two programmes were developed and held; one for operatives and the other for senior management. The operatives training helped to ensure that teams were aware of the benefits of climate adaptation measures, as well as the maintenance requirements and how these differ or overlap with usual maintenance practices. The senior management training helped to encourage a coordinated communications effort at senior level with consistent messaging around the green infrastructure and SuDS agendas, building a strong evidence base to inform investment decisions, and supporting the effective involvement of residents and the wider community.

Training opportunities were also created through Groundwork's Green Teams, which offer structured programmes for young people – often those who are unemployed – to support them in learning new skills, gaining qualifications and improving their employment prospects while carrying out real and valuable environmental improvements. 22 Green Team members carried out landscaping and maintenance works, learning how to build raised planting beds for food growing, lay topsoil and turf, and carry out planting and mulching. All members achieved a Level 1 horticulture qualification from City & Guilds (the leading skills development organisation in the UK) and have been supported to find employment on completion of the programme.

22 
young people
EMPLOYED
as green team
trainees

46 
council
contractors
& **managers**
trained

11 
JOBS
CREATED

8 
sustainability
champions
trained

Spotlight: Monitoring impact

The University of East London (UEL) was appointed to monitor the climate adaptation impacts of the various interventions across the three sites. Using a range of tools, a number of qualitative and quantitative indicators were assessed:

- **Environmental conditions**, including the timings and size of rain events, temperature, wind direction and speed, and humidity, monitored using weather stations

- **Performance of measures during rain events and the development of vegetation** captured using fixed-point time lapse cameras at key locations near to the interventions
- **Water accumulation and infiltration times** monitored using flowmeters and pressure sensors, to understand the impact of selected rainfall events on surface water run-off
- **Thermal monitoring** using a thermal imaging camera to understand the impact on the urban heat island effect, with a focus on key aspects such as green roofs
- **Biodiversity monitoring** on the green roofs, using vegetation surveys to understand the floral species diversity and vegetation cover
- **Photographic monitoring** during site visits to create an archive of the development of biodiversity and to monitor elements as they develop and mature
- **Simulated storm events** to assess how selected interventions would perform in a 1 in 100 year storm event, by pumping water into the intervention and monitoring the data readings from the pressure sensor, as well as capturing photographic documentation.

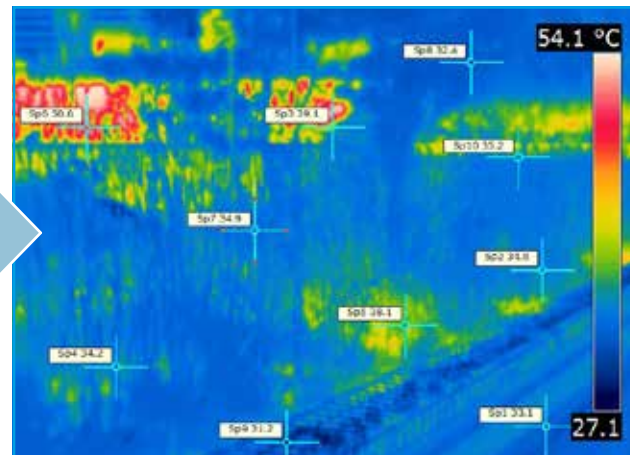
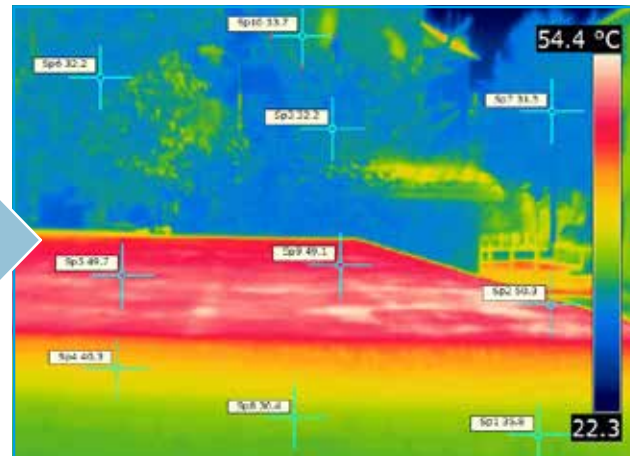


Photo and infrared image of standard and greened pram shed roofs, 19th July 2016

Given the range of environmental, social and economic benefits offered by these types of interventions, the monitoring scope of the project was expanded beyond the environmental benefits, using a Social Return on Investment (SROI) model. SROI is an outcomes based measuring tool that provides a framework for measuring and accounting for a broader concept of value and incorporates the social, economic and environmental costs and benefits of a project. In doing so it enables an understanding of how the project adds value in terms of the social impacts of its actions, and helps to maximise the value of these impacts for local people.

Lessons learned



Challenges

There were no major limiting factors to the project. Minor challenges were addressed as they emerged, including:

- It was difficult to engage some estate residents in the climate change agenda at first as it wasn't seen as an immediate problem for the estates. The project overcame this by linking wider threats to local issues, such as water pooling and overheating.
- Several open spaces on the estates were fenced off and rarely used before the work started. Some residents were concerned that opening up the spaces might encourage anti-social behaviour. The opposite has happened, with the spaces now more widely used and valued.
- Even with utility company drawings and radar surveys for underground services, not all services were identified. This meant some design changes were needed during construction.
- Construction works close to residents' homes and altering access routes were a concern for some residents. This was expected and managed through Groundwork London's Community Project Officer and relevant Council teams.
- The scheduling of works at the final estate reduced the time available for monitoring. This was solved by using storm simulation tests which allow for spot testing of the performance of interventions. The aim is to extend the monitoring period by up to a year (subject to funding) to better understand the longer-term performance of the SuDS measures.

Successes

The project has helped to demonstrate that:

- Retrofitting open spaces in social housing environments is both necessary and cost-effective: the measures implemented help to demonstrate the role these spaces can play in increasing urban resilience to climate change.
- Such projects work better when not delivered in isolation: climate adaptation is multi-faceted and requires cross-disciplinary working – from consultation to co-design, from community engagement activities to training and employment opportunities.
- Communities, in particular residents, are expert users of spaces and have valuable knowledge of their local environment: their involvement from the start of the project has been essential to secure their input and support.
- A comprehensive approach to monitoring and evaluation can help make the business case for such schemes: as exemplified by this project, this should not only include technical monitoring of the environmental benefits, but also additional evaluation to capture the wider social and economic benefits of the project.

Transferability of the project



A key aim of the project was to develop and adopt a model that is replicable in and transferable to cities across Europe. The approaches adopted show that there are cost effective, socially acceptable and highly replicable alternatives to heavy engineering, which can deliver positive environmental, social and economic impacts in the context of UK and wider European social housing environments.

The *Climate-Proofing Social Housing Landscapes* project has been widely recognised in the UK and beyond as a leading example of urban climate adaptation initiatives. The project has won multiple awards, including the [Landscape Institute's](#) College of Fellows' Award 2016 for climate change adaptation, and was also highly commended at the Landscape Institute Awards 2016 in the Adding Value through Landscape category. Case studies have been written for websites including [Climate-ADAPT](#), with articles also published by European networks such as [Housing Europe](#). The project has been presented at several events, including the 1st European Urban Green Infrastructure Conference in Vienna in 2015.

In addition, various resources have been developed to encourage and support other housing providers to implement similar initiatives; including a project website, short film featuring interviews with key stakeholders, implementation guide offering guidance to other housing providers, 360° tour showcasing two of the project sites, and case studies of the project sites and key elements such as community engagement approaches.

These actions and resources, alongside the experiences and lessons learned from the project, all serve to facilitate the transferability of the project to other housing environments, both in the UK and across Europe.

1 
layman's
report
produced

50
presentations
DELIVERED


2 
masterclasses
for housing professionals
DELIVERED

5 
case studies
published

15
ARTICLES
PUBLISHED


8 
WORKSHOPS
PRESENTED

1 
implementation
guide **CREATED**

Contact details

Hannah Baker, Programme Manager
Groundwork London
18-21 Morley Street
London SE1 7QZ

Tel.: +44 (0)20 7922 1230
E-mail: hannah.baker@groundwork.org.uk

Project website: www.urbanclimateproofing.london

Twitter: [#urbanclimateproofing](https://twitter.com/urbanclimateproofing)

LIFE projects database: [http://ec.europa.eu/
environment/life/project/Projects/index.
cfm?fuseaction=search.dspPage&n_proj_id=4752](http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=4752)