Co-designing Blue-Green Infrastructure in London

Co-conception d'infrastructures bleues et vertes à Londres

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RÉSUMÉ

Des chercheurs du projet CAMELLIA et des membres de la communauté du quartier de Kipling Estate à Londres ont collaboré à la conception conjointe d'une infrastructure bleue-verte sous la forme d'un jardin communautaire. Si la communauté rêvait depuis longtemps de créer un tel jardin, elle ignorait son potentiel pour prévenir les inondations de surface, ainsi que la quantité d'eau potable nécessaire à son irrigation. Les chercheurs ont mis en place et animé un processus de conception conjointe à travers trois ateliers, des visites du jardin et la mise en place de prototypes de bacs surélevés et d'un collecteur d'eau de pluie. Ces activités ont permis à la communauté de mieux comprendre les infrastructures hydrauliques et la logistique des jardins communautaires, et aux chercheurs de cerner les besoins de la communauté pour son propre jardin. Grâce à un financement de la Greater London Authority, la communauté a pu créer le Jardin et le Verger communautaires de Kipling. Cet exemple illustre comment universitaires et communautés peuvent collaborer à la création d'infrastructures bleues-vertes répondant aux besoins de la communauté locale et du réseau d'infrastructures au sens large. Une conception conjointe menée avec soin et sincérité donne aux individus les compétences et la motivation nécessaires pour atteindre des objectifs conformes, voire supérieurs, à leurs ambitions initiales.

ABSTRACT

Researchers from the CAMELLIA project and community members from the Kipling Estate in London formed a collaboration to co-design blue-green infrastructure in the form of a community garden. While the community had long dreamed of creating a community garden, they were unaware of its potential to help prevent surface water flooding, nor how much drinking water would be used for its irrigation. The researchers created and facilitated a co-design process over three workshops, community garden visits, and pilot installations of raised planter beds and a rainwater collector. These activities increased the capacity of the community to understand water infrastructures and the logistics of community gardens ; and for the researchers to grasp the needs of the community for their garden. The community successfully secured funding from the Greater London Authority and established the Kipling Community Garden and Orchard. This demonstrates how academics and communities can work collaboratively to create blue-green infrastructures which fulfil the needs of both the local community and the wider infrastructural network. Co-design applied with care and sincerity gives people the skills and motivation to achieve goals in alignment with, but also greater than their initial ambitions.

General presentation of the operation/strategy

1 BACKGROUND

Blue-green infrastructure is intimidating terminology to most people. It is not how people usually think of their gardens, trees, and streams, even though these things are integral to blue-green infrastructure. People experience gardens, trees and streams as natural elements that make places pleasant to live in, not an infrastructural system.

How then can we get communities to realise that these natural elements are also part of the blue-green infrastructure of the urban environment? They are an integral part of infrastructures that give space for water attenuation for rainfall and runoff (Versini et al. 2018); areas for water infiltration into soil and groundwater (Adhikari et al. 2024); decrease urban heat island effects through evapotranspiration, photosynthesis and shading (Targino et al. 2019); increase biodiversity by offering habitats for a variety of plants, fungi, insects and animals (Pauleit et al. 2011); and increase social integration by providing agreeable spaces for people to meet and do activities in (O'Donnell et al. 2024). These are more than pleasant places, they are essential infrastructures that create healthy environments and ecosystems for people and other species to thrive.

The Kipling Estate in Southwark, London had residents who had long dreamed of establishing a community garden. They clearly understood its green infrastructure potential for social, health and pleasant environment functions. Could we, a group of researchers, find a way for this community garden to also realise its potential to be blue and green infrastructure?

From the outset, blue-green infrastructure was not something that the researchers wanted to impose upon the community gardeners, but nor could the researchers expect the community to spontaneously implement blue-green infrastructure at the behest of the researchers. A mutual collaboration needed to be established where both community gardeners and the university would both benefit from the outcomes of the joint project (Bell et al. 2023).

An opportunity arrived in the form of a funding call from the Natural Environment Research Council, United Kingdom (NERC) for the Regional Impact from Science of the Environment (RISE) programme. This programme aimed to bring "research organisations together with businesses, policy bodies and other organisations to deliver high impact and focused research translation and innovation in environmental science." (UKRI 2025). The researchers from the University College London (UCL) had previously worked on a neighbouring Estate managed by the same Leathermarket Joint Management Board (JMB). The researchers knew of the Kipling Estate residents' desires for a community garden, which could potentially be a case study for the implementation of blue-green infrastructure co-designed with the community. Therefore, they approached the Leathermarket JMB and the Kipling Tenants and Residents Association (TRA) to see if they would like to be organisations that would support our research bid by collaborating with us to create a community garden which was also blue-green infrastructure. The motivation of the researchers was engagement with stakeholders and a project site. The motivation of the Kipling residents was the opportunity to inject energy and resources into the realisation of their longed-for project. The Leathermarket JMB who manage the Kipling Estate were motivated to support the project because it would increase the sustainability of the estate by providing a source of locally grown fruit and vegetables and increase sociability amongst residents, enhancing the lives of the residents. The three very different motivations had enough overlap to make this a possible collaboration.

For the collaboration to truly form, it was necessary for the funding bid to be successful. Two members of the Kipling TRA gave the researchers additional support by being part of the interview panel explaining their role as a case study for CAMELLIA: Community Water Management for a Liveable London (CAMELLIA Water 2022). Fortunately for everyone, their efforts were successful, the funding was awarded to the team. The collaboration was established, with a purpose, a timeline, and resources.

2 PROCESS

The researchers and community decided to embark on a co-design process. Whereupon the researchers would create and facilitate the co-design workshops focussed on establishing blue-green infrastructure. Before commencing creating the co-design workshop content, the researchers sought to establish the history of attempts to establish a community gardne on the Kipling Estate and the Kipling Estate itself. This was important because the researchers wanted the co-design workshops to build on experience, not repeat them. The research

team interviewed the two members of the Kipling TRA who had supported CAMELLIA's funding interview. These interviews covered how the carpark roof was currently used, their ideas and concerns about it becoming a green space, and their experiences of creating a shared garden space on the Estate. The gardening team of the Leathermarket JMB were interviewed for their perspective on how a new community garden could impact their existing maintenance and gardening responsibilities on the Kipling Estate. This information was then used to create the outline for the series of three workshops, and for the specific activities of the first workshop.

At the close of each workshop, simple feedback forms were filled out by participants this then fed into the research team meeting held after each workshop. At these meetings, the research team reflected on how the workshop ran in terms of engagement from the participants in each activity and the outcomes in terms of moving towards creating blue-green infrastructure. This influenced the types of activities that needed to be completed between each workshop as well as helping to refine the activities that would be run in the next workshop.

The decision to constrain the co-design workshops to three was decided for the practical reason of retaining as many of the same participants over the workshops for continuity. It was easier for participants to commit to a process with a short timeframe, than one that seemed endless. Workshops one and two were held a month apart, while workshop three was held four months after the second, due to the summer holidays when people are away. Momentum was maintained for the residents during this period through the community garden visits and for the researchers by developing the garden water calculator. The aim of the three workshops was to give the residents enough capacity, defined tasks and energy to then establish their own blue-green infrastructure community garden.

The first workshop was structured around establishing the different knowledges, values and expectations held by participants. The first activity after convening at the Kipling TRA hall, was to split into two groups to go on an "Infrastructure Safari", where we explored the Estate grounds, towers and the carpark roof looking for signs of water infrastructure, sharing knowledge and hypotheses of how the water infrastructure on the Estate operated. Following this, we had an activity where we asked people to individually write on index cards all the things that they wanted in their community garden. There was no limit to how many ideas each person could write, but only one idea was to be presented on each card. For example, if they wanted beehives in the garden, then beehives were considered one idea; if they also wanted to have an ornamental fountain, then this would be another idea. These ideas were then presented by each person to the group. With the permission of the group, the facilitator would then guide a thematic grouping of ideas into similar and related desires. This revealed what ideas the group shared, and by their repetition from different people, how much of a priority it should be considered for the community garden.

After the first workshop, it was clear to the residents that it would be useful to visit other community gardens in the local area to see what they were like, and ask questions to people who participated in these community gardens about the history of its establishment, what problems they faced, how these were solved, and what things they might do differently if they were establishing a new community garden. The researchers organised to visit two community gardens between the second and third workshop.

The second workshop had an activity to explore enabling and constraining factors for the establishment of their community garden. This game was titled 'Macromoves'. The implication being that some of these conditions were beyond the control of the community gardeners. These were factors which form the context which shape the way the community garden could be made or fail to be made. After this activity, there was a demonstration with a tray, sponges and water to show the principles of green-blue infrastructure. How different types of planting, soil and rainwater tanks influenced the attenuation of water to reduce surface water flood events in comparison to a concrete roof. Then a game called 'Landed' was played. The group was split into two teams, who would then imagine a new community garden on the roof and make a theatrical play about what the garden was, how it had been established, how it was being used, and by whom. A scaled cardboard model of the roof, various garden cutouts, paper, cardboard, scissors, coloured markers, glue and Lego figurines were provided to create the scenery for the play. Video recordings were made of the play to be made available for other residents who were unable to join this workshop. After each group finished their play, a discussion was held about how each group had addressed areas of concern deliberating over common and unique responses which were useful for establishing their garden.

After the second workshop, the researchers realised that while they could demonstrate in principle the concepts of surface water attenuation, it was difficult to quantify the effects for the different garden designs. The researchers then asked colleagues in the British Geological Survey also working in the CAMELLIA project if they

could develop a garden water calculator for the project. This was a simple calculator with square tiles which represented water collectors, green roof, raised planter beds, and garden furniture on a paved surface. This garden water calculator (https://dist.bgs.vercel.app/) was used in the third workshop to quantify two water impacts of garden designs: stormwater runoff and watering needs for the plants.

The third workshop was focussed on the practicalities of establishing a community garden. Different funding options and the implications these had for the establishment of a community garden were were talked through. The participants then convened on the carpark roof carrying planters and rainwater collectors to begin a pilot community garden installation. The roof was measured into the same 6mx6m squares that the tiles on the garden water calculator represented. The participants were then divided into two groups. One group investigated the water and electricity infrastructure to implement a rainwater collector. The other group arranged the planter boxes and plants into what they felt were the desirable locations for planting. The groups then swapped tasks so that everyone had a practical understanding of the roof garden context. Following this exercise the groups reconstituted into three groups to use the garden water calculator to test various garden designs to see the garden's effect on water. This was the final co-design stage that the researchers facilitated for the establishment of blue-green infrastructure.

After the three workshops were completed, all resident participants were invited to be interviewed. Four agreed, each interview lasted between twenty-minutes and one-hour. One was a phone interview. The other three were conducted in-person.

3 RESULTS

At the end of the third workshop a small number of residents formed a gardening group. One of the members of the group worked with a researcher to put in a bid to the Greater London Authority using the results of the garden water calculator to make a case for establishing a blue-green infrastructure community garden. After successfully securing the funding the community garden and orchard was established. A further six-years after the initial co-design workshops, the gardening group have secured additional funding through the local government to implement an wild flower meadow extensive green roof combined with photovoltaic cells on the roof of a carpark on the estate. Establishing more green-blue infrastructure.

Kipling Community Garden and Orchard – Blue-green infrastructure established, August 2024 (CC BY-NC-ND, Tse-Hui Teh)

4 CONCLUSION

Collaborative co-design can retrofit new blue-green infrastructure in dense urban areas. Mutual learning creates stronger outcomes which is the value of co-design. Empowered communities achieve beyond their initial goals.