A network linking the Quality of Urban Environments with Nature Connectedness and Health

Workshop Handbook

14th February- 2nd March 2022

The QUENCH network is funded by the Natural Environment Research Council and delivered by the QUENCH team based at Lancaster University and the University of Liverpool

Contents

1. Introduction to the network

The QUENCH network aims to build our capacity to mobilise urban ecosystems in supporting nature-connectedness and health outcomes, whilst delivering environmental benefits and reducing health inequalities. QUENCH will grow a new network that strongly inter-connects a diverse range of environmental scientists with data scientists, psychologists, social scientists and public and clinical health researchers, bringing them together with decision makers and practitioners to enable research that is informed by and solves real-world issues.

The focus of the network is on linking the 'quality of urban ecosystems and environments' to nature-connectedness, health and social inequalities. By quality of urban ecosystems, we mean the characteristics and functioning of urban ecosystems from an environmental science or ecological perspective. These may be understood through variables relating to air, water or soil quality, geospatial arrangement of habitats, or biodiversity, for example. This network seeks to strengthen the links between the science of the environment and our understanding of its effects on human health and wellbeing.

The network is supported by the Natural Environment Research Council's Healthy Environment programme with initial funding for a series of interlinked network building events, which aim to:

- Build the foundations of a diverse network of relevant researchers, practitioners and policy makers across disciplines and sectors.
- Explore the potential for integrating advances in environmental sciences and human health fields to transform our understanding of how the quality of urban ecosystems affects nature-connectedness and related health outcomes.
- Scope and launch a suite of up to 5 proof-of-concept studies (up to £45k each over up to 6 months) that accelerate the development of new understanding and methods relating to the links between urban ecosystem quality, nature-connectedness and health.

Background and rationale for the QUENCH network

QUENCH will focus on urban environments – encompassing a diverse range of urban green and blue spaces including parks, urban food growing spaces, wooded areas, and waterways. Urban environments are critical settings where people and nature intersect, especially since most people globally live in towns and cities. Day-to-day interactions with urban ecosystems are a key leverage point for shaping people's relationship with nature, and the contribution these spaces make to our health and well-being has been increasingly recognised during the COVID-19 pandemic.

Urban settlements are also often where greater levels of ill health and their co-occurring social determinants are concentrated. Previous evidence suggests that nature exposure in urban settings is associated with good health, and urban ecosystem-based interventions present a key opportunity to address ill-health. While access to nature can be unequally distributed within

cities, green/blue spaces are often present in deprived communities meaning that investing in urban nature-based interventions could also be potentially effective at reducing health inequalities.

From an environmental science perspective, urban environments also present an important research frontier. Urban ecosystems are the fastest growing habitat on Earth. Understanding their quality remains a major challenge given their: many introduced species; complex potentially fragmented spatial distributions; highly modified flows of water and nutrients; multiple novel pollutants; heterogeneous micro-climates; and complicated land management histories. Urban ecosystems have received relatively less research attention compared to other habitats, perhaps because of their relatively small land area. Hence, a key opportunity also exists to draw on understanding and measures of environmental quality in natural and agricultural settings to address emerging questions in urban ecosystem research and practice.

Urban environments are also a strategic national policy priority. Within the 25 Year Environment Plan the UK government sets out ambitions to improve and increase urban green infrastructure, and incorporate guidance on green infrastructure design, development and evaluation into national planning policy frameworks. Local government 'Green and Blue infrastructure' strategies are already shaping environmental quality and opportunities for nature-connectedness in urban spaces, in both existing and new developments. This network is an opportunity to help create a robust evidence base for these policies, including addressing key gaps highlighted in the recent Natural England rapid scoping review of health and wellbeing evidence for the Green Infrastructure Standards.

Working as an interdisciplinary and cross-sector network

We are excited by this opportunity to bring together many different research disciplines, and expertise from decision makers and practitioners. As a network we will aim to:

- minimise jargon that is likely to be unknown outside of our discipline or sphere of work.
- welcome questions and create an inclusive space where people can ask for explanation of what might seem obvious to others.
- create a glossary of key terms and concepts which might be useful for the network.
- appreciate the different pressures and work settings of others within the network.

2. Overview of the network building events

Workshop 1: Setting the scene and networking

In this session we will:

- explore who is in the room and have plenty of opportunities to interact with other participants bringing a diverse range of expertise and experience,
- introduce the mentors, who will provide some scene setting perspectives on the QUENCH challenge - inspiring us to think big and beyond boundaries,
- introduce the QUENCH team so that they become a key touchpoint for the network,
- co-create an initial mapping of QUENCH participants based on expertise, sector and geography.

Workshop 2: Mapping methods & needs and finding the seeds of collaboration

In this session we will:

- build on the 'Methods and Needs' exchange to identify knowledge gaps, needs and challenges to solve,
- generate a large range of research questions and project ideas based around the four QUENCH questions,
- have space for participants and mentors to discuss and feedback on initial flushes of project ideas,
- start to cluster project ideas into themes- identifying areas of overlap and areas that haven't been picked up so far,

Workshop 3: Thinning out ideas: converge and coalesce

In this session we will:

- review the themes emerging from workshop two with participants identifying projects and ideas that interest them,
- converge around approximately eight project ideas which have a group of participants interested in taking forwards,
- support project teams to form. Project teams to share early outline of projects with participants and mentors.

Workshop 4: Project development session and 1:1 mentor feedback

This session is:

- an opportunity for groups to work as project teams in breakout rooms on their proposal – due midday Monday 28th Feb,
- an opportunity to get feedback and advice from mentors.

Workshop 5: Project pitches and funding award

In this session we will:

- have a project pitching session where we hear from the eight teams
- community voting on project pitches and mentor scoring of proposals and pitches
- award up to five projects with funding
- celebrate!

3. Guidance on workshop tech and participation

The QUENCH workshops will now all be fully online and we'll be using some applications that might be familiar to you. As we'll be using a range of tools (including video conferencing, screen sharing, breakout rooms and a collaborative online whiteboard), we recommend that participants join from a laptop or PC (where possible) to ensure ease of engagement with the workshop activities.

Video conferencing software

- The workshops will be hosted on Zoom. If you have not used zoom you'll need to download the application before the workshops from: https://zoom.us/download#client_4meeting
- If you regularly use Zoom please make sure it's up to date to allow for full functionality.
- In the workshops we'll regularly be using breakouts so please join from a quiet place which enables you to engage in discussion with others.

Online collaborative whiteboard

- We'll be using the Miro Online Whiteboard to support us in collaborating digitally and for brainstorming ideas. There's no need to sign up to access this and we'll be sharing links to the QUENCH Miroboard in Workshop 1.
- Don't worry if you've not used Miro before, we'll have an introductory exercise during Workshop 1 to explore the tool and answer questions about its use.
- The boards we produce through the workshops will be private and shared only with workshop participants.

4. Pre-Workshop Activities and Outputs

Pre-workshop task: Contribute to the 'Methods and Needs exchange

Sharing of knowledge, methods, perspectives and challenges is vital for the development of this exciting area of research and practice at the intersection of urban ecosystems, nature-connectedness, health and social inequalities.

To help achieve this we are asking you as participants to contribute to creating a digital 'Methods and Needs Exchange' in advance of the workshops. The Methods and Needs Exchange will:

i) Support in-workshop networking: helping participants in the workshop communicate their perspectives, needs, methods and resources that they could bring to answering the QUENCH key questions and get to know and learn from others.

ii) Provide a foundation for developing the proof-of-concept studies: helping participants to identify key crossovers and potential skills and ideas that can be brought together in addressing the QUENCH key questions.

iii) Act as a longer-term open resource to those beyond the network events: Where participants are happy for their contribution to be made public we will share the 'Methods and Needs' exchange long term via our YouTube channel. We hope this helps you to make connections outside of the workshops and helps our community in its broadest sense consider what can be brought to the urban ecosystem-nature-connection-health challenge. Participants will be able to withdraw their contribution at the end of the workshops if they would prefer not be in the public channel.

To facilitate this, we ask that participants submit a contribution to our 'Methods and Needs' exchange by the 9th February.

Please submit your contribution in the form of a short video (<2 minutes long) sharing your perspectives on key knowledge gaps, critical questions, or methods and approaches which could be used to address the QUENCH themes in novel ways. This video will be made openly available.

When considering your contribution, think about the network's key questions below. Do you have a particular example or need that relates to any of these broad questions? Are there methods from your discipline or sector that could be applied to these questions? Are there related questions we should be asking?

1. How does nature-connectedness and subsequent health outcomes vary with urban ecosystem quality, and how might the characteristics of individual's exposure, activity and engagement in and with these ecosystems matter?

2. What linkages may exist between urban ecosystem quality, nature-connectedness and health inequalities, and what interventions can help tackle these inequities?

3. How can improved urban biodiversity and ecosystem quality be achieved and maintained to the benefit of health and wellbeing? Are there instances where better ecological quality comes into tension with public health outcomes?

4. How can wider environmental outcomes of improved health and wellbeing, mediated by better urban environments and nature-connectedness, be understood and valued?

Create a video for the 'Methods and Needs' exchange

· Don't panic - we are not looking for a polished video or impressive digital content creation skills! A simple video that offers other network participants some insight into who you are and what you bring is all that is necessary. It shouldn't take more than 1 hour to make, from planning to completion.

· Aim for your video contribution to be less than 2 minutes long. Pick one or two key ideas or approaches that you want to share with the network and communicate these in a language and style that would be accessible to a lay audience.

· Your video contribution can be created in any style including: presentation style, talking head video or filmed in your favourite piece of local green space, for example. The QUENCH team have each produced their own contributions to the exchange as examples that might help provide inspiration. You can view these via this link to the QUENCH YouTube channel (https://youtube.com/playlist?list=PLDGH3gCAflNlah_SzaYDhEmDdj-z4oDOC). We provide some personal tips on approaching making a video quickly and simply on the next page.

· Save your video in mp4 format and standard aspect ratio of 16:9 if possible, and if you are able to please include subtitles. Don't worry if you are not able to include subtitles, we can make sure this is done when we upload your video.

Getting your video to us

- All videos should be shared with the QUENCH team by the 9th February. Upload your video to the QUENCH folder available via this link. If you experience any issues accessing and uploading to the folder please contact us by email.
- Please name your file with your surname first, and then your organisation (e.g. 'Davies_LancasterUniversity.mp4')
- Please also email us (quench@lancaster.ac.uk) with the subject line 'Methods & Needs Exchange Video' with a short title and description (1 or 2 sentences) that will accompany the video when we load up to YouTube. You may want to add a key reference or link for people to find out more about what you talk about in the video in the description.
- · We will upload videos to our QUENCH YouTube channel before the workshops and these will be made available to QUENCH participants via a private link.

Tips for creating simple videos

Here we share some tips from our experience of creating video contributions for the 'Methods and Needs' exchange.

Create a video using PowerPoint applications

- One of the easiest ways to create a short video is to record yourself presenting on PowerPoint (or other slideshow application).
- You can record your narration and slideshow (with the option of having your camera on or off), then save the file as an mp4 to your device or to a cloud-based storage system.
- Upload your video to the QUENCH folder available via this link
- There is guidance on creating video in PowerPoint applications available here: https://support.microsoft.com/en-us/office/record-a-slide-show-with-narration-and-slide-timings-0b9502c6-5f6c-40ae-b1e7-e47d8741161c

Creating a video on a camera or mobile device [Andy's video]

- Use your camera's video function to record yourself talking and, if relevant, to give a sense of the space that you're in.
- Draft at least a rough script first – it's hard to keep within the 2 minute guideline!
- Choose a quiet place / time, with minimal background noise, and avoid filming other people, especially children, or filming with the sun directly behind you.
- Save or share the video to a cloud-based storage system, e.g. OneDrive, Google Drive, DropBox.
- Upload your file to the QUENCH folder available via this link.

Combine different media sources using simple video editing software [Rachel's video]

- Free video editing software such as Windows Photo App or Apple's iMovie (as well as other applications such as Vimeo) allow for simple videos to be edited together from video recordings, still images and PowerPoint slides.
- Rachel recorded herself talking to the camera and presenting a slideshow on a video conferencing application. This file was saved as an mp4, which can be opened and modified in a video editor.
- Within a video editor mp4 files can be trimmed and split to select the clips that are required. Video files can also be combined with still images, narration and special effects.
- Guidance on Windows Photo App: https://support.microsoft.com/en-gb/windows/create-films-with-a-video-editor-94e651f8-a5be-ae03-3c50-e49f013d47f6
- Guidance on using Apple's iMovie: https://blog.storyblocks.com/video-tutorials/getting-started-imovie/

5. Meet the QUENCH participants

The QUENCH Facilitation Team

Jess Davies Professor of Sustainability Lancaster University	Network lead Jess Davies is a Professor of Sustainability at Lancaster Environment Centre and Director of the Centre for Global Eco-innovation. She studies terrestrial biogeochemical cycles and leads a range of interdisciplinary projects relating to sustainable soils, land use and urban environments. Jess brings to the network a broad understanding of environmental processes and experience of working with policy makers, businesses, and third sector organisations.
Jo Knight Professor in Applied Data Science Lancaster University	Jo Knight is an applied data scientist with expertise in the use of routinely collected health data and works in partnership with a number of local NHS trusts and councils. She is also Lancaster University Research Director for the Eden project tasked with catalysing research in partnership with Eden Project International.
Charlotte Hardman Senior Lecturer in Psychology University of Liverpool	Charlotte brings a wealth of knowledge, methodological skills, and networks in health-related behaviour change and psychological wellbeing. She currently leads research teams on major interdisciplinary projects (UKRI and EU-funded). She co-ordinates the North-West network of the UK Association for the Study of Obesity, is Communications lead for the British Feeding and Drinking Group, and is a founding member of the Liverpool Food Growers Network.
Mark Green Senior Lecturer in Health Geography University of Liverpool	Mark brings expertise in applying data science techniques for studying the social and spatial determinants of health inequalities. They currently are PI and Co-I on three UKRI grants, including the UK-PRP funded GroundsWell project which is exploring how urban green and blue spaces affect health.
Andy Yuille Senior Research Associate Lancaster University	Andy is an interdisciplinary social scientist whose research focuses on the relationships between society and environment. He specialises in public participation in decision-making about environmental change and his research builds on ten years' experience working with environmental NGOs, policy makers and public-private partnerships. He bridges the gap between academics and practitioners with an emphasis on impact-oriented research.
Rachel Marshall Knowledge Exchange Fellow Lancaster University	Rachel is an interdisciplinary researcher specialising in local food systems. She recently led the Rurban Hope Spots project designing a methodology for identifying spaces in towns and cities where food growing projects could help deliver health, social and environmental benefits. She brings experience of facilitating spaces for the co-design of projects that address critical challenges in creating

	sustainable and fair urban environments.
Martin Grimshaw Professional Facilitator	Martin from Thriving Planet, is a facilitator, organisational consultant and trainer working professionally and freelance for a decade. With a focus on sustainability-driven contexts, his work ranges from strategy development, to self-organising and peer-peer co-learning, working in both in-person and virtual settings. Martin will help to facilitate interdisciplinary QUENCH collaborations, and help instil longer-term skills and mechanisms for peer-to-peer network making.

The QUENCH Mentors

Charlotte Russell The Eden Project	Charlotte Russell leads the education and leadership programmes for Eden Project International. In the 11 years she has worked with Eden Project she has run a number of major projects, including establishing degree programmes at Eden Project in Cornwall and the development of a highly regarded leadership course 'Nature of Leadership' under the brand of HotHouse. She also leads the science engagement strategy at Eden and specialises in food, farming and agronomy. She is an experienced organic farmer, running a 700 acre organic farm in Cornwall for most of her career. She has been a non-executive director on the board of a number of acute NHS trusts for 15 years and currently has board roles including a wildlife and farming charity and a CIC for people with learning difficulties.
Katherine Irvine The James Hutton Institute	Katherine Irvine is a senior researcher in conservation behaviour/ environmental psychology focusing on people-environment relationships. Kate draws on an interdisciplinary background in molecular biology, natural resource management, conservation behaviour and environmental psychology to investigate the interface between people and their environmental settings (for example, natural, built, home, office) with an aim to develop bridges between issues of ecological quality, health/wellbeing and sustainability.
Piran White University of York	Piran White is Professor of Environmental Management in the Department of Environment and Geography at the University of York. His research focuses on the management of ecosystems to enhance biodiversity, sustainability, and human health. His current research on ecosystems and human health includes a project within the UKRI Future of UK Treescapes programme, 'Connected Treescapes', a NERC iCASP project on transforming environmental research into evidence on the health and wellbeing benefits of green and blue space, and an ESRC Network+ project 'Closing the Gap', in which he co-leads a theme on the benefits of green and blue space for

	improving the health of people with serious mental illness. He is also involved in the evaluations of green social prescribing projects in West Yorkshire and Humber, Coast and Vale. Much of his research is interdisciplinary across the natural and social sciences and the humanities, and involves working closely with policy-makers and practitioners. At the University of York, he is Co-Director of the Interdisciplinary Global Development Centre and co-lead for the Environment and Health theme within the York Environmental Sustainability Institute. He has served on programme review boards and grant assessment panels for NERC, ESRC, BBSRC and EPSRC and is a member of Natural England's Scientific Advisory Committee. He is Editor-in-Chief for Wildlife Research journal.
Rich Fry Swansea University	Dr Rich Fry is an Associate Professor in GIS and Health Geographies at the Environment and Health (ENVHE) Research Centre within the Population Data Science Team at Swansea University. Rich graduated with a BSc (Hons) Physical Geography from Swansea before completing an MSc and PhD in GIS and computing at the University of South Wales following some time out in industry. Following a post-doctoral position at the Wales Institute for Socio-Economic Research, Data and Methods (WISERD) he returned to Swansea, joining the Medical School as a Senior Research Officer specialising in GIS and privacy protecting spatial data linkage. Rich is the lead of the Environment and Health Research Centre (ENVHE) which uses advanced data analysis techniques to understand the factors that influence health and wellbeing. ENVHE brings together geographers, epidemiologists, statisticians, and data scientists who work with the routine health and social care data held within the SAIL Databank to produce policy-relevant insights.
Rosie Hails National Trust	Professor Rosie Hails MBE FRSB is an ecologist and Nature and Science Director at the National Trust, holding honorary chairs at Exeter and Cranfield Universities. Her role is to develop the Trust's nature strategy, research portfolio and advise on science evidence relevant to Trust decision making. She leads teams focusing on Nature Conservation, Trees & Woods, Wildlife Management, Land Use, Farming and Public Benefits delivered by Nature. She is a member of Defra's Science Advisory Council, chairing the Biodiversity Targets Advisory Group, Council member of the RSPB, Chair of the Woodmeadow Trust Steering Group and Trustee of the John Innes Foundation. She is also on a number of advisory boards. Formerly she was the Science Director for Biodiversity & Ecosystem Science at the UK Centre for Ecology & Hydrology.

The QUENCH network participants

Anant Jani University of Oxford	I have worked on several projects to understand how to design and implement non-medical interventions, particularly social prescriptions, to address social determinants of health, promote health and prevent disease. One important class of social prescriptions we have explored with county councils and Natural England are nature-based interventions that aim to connect individuals to nature to promote both physical and mental health. The variety and complexity of the design and implementation of social prescriptions, particularly nature-based social prescriptions, means that there are no one size fits all solutions.
Annabelle Edwards Lancaster University	As a 'therapeutic landscapes' researcher, a researcher concerned with understanding the connections between health and place, and in particular, how places can promote improvements in mental health and wellbeing, participating in QUENCH is a really exciting prospect. In my work I explore experiences of places that have a reputation for being 'good for us', such as parks and woodlands. Specifically, I am interested in how people actually experience these places from one moment to the next, in what people think, and in how they feel emotionally and in their bodies. Over the last few years I have developed new methods to capture this information from people without disrupting their experiences, methods that include my own participation in these places, diaries, and interviews. Applying these methods has enabled me to show that experiences of these places are extremely complicated and individual, that people are affected by different things in different ways, that people find different things positive, that not all experiences are positive, and that all experiences are continually changing. From these findings I have developed an understanding of how experience within these places comes to be, and what facilitates positive or 'therapeutic' outcomes.
Aude Vuilliomenet University College London	As an individual, I have positioned myself at the intersection of the built environment, urban informatics and food systems to foster healthy and sustainable cities. My PhD research aims to advance the understanding of cities' ecological networks and management of urban greenery to support human health and ecosystem quality.In my PhD, I am researching the integration of IoT devices and the use of deep learning in green spaces. My aim is to develop novel techniques to gain insight into ecological biodiversity as well as to explore how digital tools facilitate community engagement with nature and the maintenance of biodiverse green spaces. My past experiences have led me to implement electronics to automate and analyse the vertical farming processes of growing indoor crops. I specialise in testing environmental sensors and programming single-board computers to optimise plant growth cycles. Moreover, I collaborate with mechanical engineers and plant

	scientists, thus gaining a holistic view of how industrial design influences living organisms, but more importantly, how electronics and software are invaluable tools to deploy to manage processes.
Beth Nicholls University of Sussex	I am fascinated by the potential for urban ecosystems to both improve people's health and wellbeing through an increased connection to nature and improved access to fresh food, as well as provide habitat for wildlife such as insect pollinators. I have previously been involved in work to quantify the productivity of urban food production and the benefit for biodiversityI am an ecologist with an interest in how bees and other pollinators decide which flowers to visit, and how the impacts on the pollination of wildflowers and crops. For the past four years I have been part of an interdisciplinary team at the University of Sussex, that are collaborating with urban food growers in the UK and India to try to understand how much food can be produced by small-scale urban farms (i.e. <2 ha), and how important pollinators are for urban food production. I have trained growers to become "citizen scientists", and together co-created methods to monitor how much food they harvest and which pollinating insects visit their crops. Recently we found that the average yield of allotments in Brighton was 1kg per square metre, with some growers harvesting up to 10kg which is comparable with conventional yields. We also produced a tool that allows growers to calculate the value of their produce, and how much is "owed" to pollination- ~£350 per grower per year on average.
Bethan Mead University of Liverpool	I am a psychology researcher working in university research and the Food Standards Agency to develop research that will support food policy. I study relationships between environments, diet, physical and mental-health. I work with a diverse range of people in other subjects, sectors and community groups, whilst building meaningful relationships with stakeholders and practitioners. My work uses psychological research techniques like surveys and interviews to answer questions about health and the natural environment, such as how are sustainable food choices related to well-being and nature connectedness? Or can growing food in urban areas benefit health, well-being and sustainability? I am also a founding member of the Liverpool Food Growers Network, which brings together academics and community food growers in Liverpool to promote food growing to increase access to healthy food, connect the community with nature, and enhance urban environments to promote sustainability and biodiversity.
Danielle Lambrick University of Southampton	I am an academic at the University of Southampton. My research area concerns the utility, measurement, evaluation, and promotion of physical activity and healthy lifestyle behaviours for the prevention and management of non-communicable diseases. I have a strong theme of researching under-represented groups, and am interested in the barriers and facilitators to being active. Considering the strong relationship between socioeconomic factors and physical

	activity behaviour, I am interested in exploring more around the built environment and its impact on health and well-being. I have recently co-led a multi-institution, multi-country programme of work around the COVID-19 effects on physical activity, mental health and well-being. We have some interesting findings in relation to the differences in outcomes of those people living in rural versus urban settings. I am interested in addressing further questions in this area.
Dave Bell Natural England	At Natural England I lead our strategy for connecting people with nature to improve health and wellbeing. I have a particular focus on the urban environment and work closely with colleagues from the Green Infrastructure side to understand how best to plan for, deliver and maintain natural spaces in Urban areas. One of the key levers for this is to be clear on the health benefits they provide (and joining these with the benefits for climate mitigation and habitat/species recovery). I have spent the majority of my career working in government departments and delivery bodies across a number of sectors. I am not an expert in ecology or any other natural environment field; but work with an amazing group of people who are. My role is to use their expertise and knowledge to improve the lives of people across the country. This involves building a strong, evidence-based narrative on the benefits that connecting with nature provides and using that to put nature higher up the agenda. I have worked for Natural England for 5 years and driven a greater focus on Urban nature recovery and health and wellbeing through a number of projects including the Urban Pioneer project in Greater Manchester, Green Social Prescribing Cross Government Pilots and Natural Capital mapping.
Emma Critchley Eden Project	I am an experienced community engagement specialist & project manager and have been working in the Morecambe & Lancaster area since 2017 building strong relationships & networks within the local community. I have spent four years developing the Eden North project & have acted as both project manager and Head of engagement. I have developed and implemented the process that has seen engagement with 5000+ residents & community organisations in the local area and the development of a strong network of stakeholders. This has shaped the development of the experience and design and ensured positive local buy in. I have recently become involved with the delivery of 'The Bay' programme in partnership with the Wildlife Trust. This is a social prescribing programme that uses reconnecting with local nature to combat loneliness, depression and anxiety. I have previously managed the delivery of the government neighbourhood planning programme. I worked directly with hundreds of communities to provide local people with the skills needed to empower them to physically shape their local neighbourhood and introduce better design and green spaces to enhance wellbeing.

Felicity Crotty Royal Agricultural University	I am a Senior Lecturer in Soil Science and Ecology at the Royal Agricultural University. I am a soil ecologist investigating the life within the soil. Over one quarter of all species can be found within the soil and soil biodiversity underpins improvements in the wider natural environment. My expertise in soil biodiversity allows me to assess the soil health of an ecosystem. To date I have largely focused on the effect of agricultural management on soil health; however, soil is still of pivotal importance in urban ecosystems and understanding the impact management has on it is crucial. Working within the agricultural sector I have also gained a large breadth of experience of working with stakeholders (farmers and policy makers), this will provide an understanding of how best to implement initiatives to facilitate stakeholder support and backing within urban environments.
Gabriele Manoli University College London	I am an early career scientist building the Urban Ecohydrology Laboratory at UCL. Our aim is to combine concepts of hydrology, ecology, meteorology, urban planning, public health and complexity science to better understand the interactions between human and natural systems and guide the design of greener, more sustainable and inclusive cities. Hence, I am keen to establish new collaborations, craft ideas and co-create knowledge with various stakeholders - QUENCH seems the perfect venue for this! I am a lecturer in Environmental Engineering at University College London where I lead the Urban Ecohydrology Lab. I am also a Branco Weiss Fellow and a member of UCL Urban Laboratory. My research focuses on the complex mechanisms regulating water, carbon, and energy exchanges at the land surface considering both natural and urban environments. Specific research areas include urban climate (i.e. how cities modify the local climatic conditions), soil-plant processes (i.e. how vegetation use water and interact with the atmosphere), and sustainable urban design - with particular attention to urban green spaces and their positive effects on climate and health. Given the complexity of such problems, my research crosses the boundaries between multiple disciplines, from hydrology, to ecology, soil physics, non-linear dynamics, and complex system science.
Hayley Scoffham Stantec	I've been working as an ecological consultant for 16 years. I'm a Chartered Environmentalist, a full member of the Chartered Institute for Ecology and Environmental Management, and have Undergraduate and Masters degrees in related subjects. My contribution to the QUENCH network would be in terms of biodiversity and ecosystems, drawing on my experience in ecological impact assessment and master planning for biodiversity. I have a sound understanding and application of biodiversity and green/ blue infrastructure policy and legislation, and work across a variety of sectors including residential development and urban regeneration. I understand the requirements needed for ecosystems – particularly their habitat and species components - to thrive. I

	make recommendations for habitat creation and enhancement to maximise biodiversity value in urban environments and produce ecological management plans.
Helen Hoyle University of the West of England	My work focuses on the links between nature and human wellbeing. I aim to better understand these relationships, so planners and land managers can create places on the ground that support people's wellbeing, through recreation or mental relaxation, and are good for wildlife such as butterflies, bees and other insects. I'm also interested in creating green spaces and parks which are adapted to the changing climate. I first worked on designing the meadows for the London 2012 Olympic Park, then went onto apply these ideas in ordinary green spaces in Bedfordshire. The local authorities were interested in providing attractive flowering meadows for local site users, and were supportive of wildlife, but needed to cut maintenance costs. I'm now working closely with Luton Parks Service and a local primary school to create an arboretum-meadow which will provide an educational resource and foster nature-connection amongst children.
Jamie Sims University of Chichester	Originally trained as a clinical psychologist, I moved into public health, moving from considering how to help individuals towards thinking about improving the health of whole populations. I have a solid base of experience in collecting and analysing information about people in order to answer research or clinical questions. I specialise in the collection of measurement data of human movement and health behaviours, such as physical activity or transport choice, and can contribute to the design and implementation of clear and relevant ways to gather information. While I am experienced at the statistical analysis of both field data and large datasets, I also have experience in the construction of computer models, allowing me to answer additional questions surrounding the potential long-term impact of specific interventions on health and wellbeing, or assessing the cost-effectiveness or policy implications of different health or environmental interventions.
Jody Ferguson Cumbria Wildlife Trust	I currently work for Cumbria Wildlife Trust on community engagement, & project and partnership development in Carlisle and North Cumbria. The focus of most of my work is people and wildlife, and I'm a Team Wilder Champion for the Trust. Team Wilder is a new approach by Wildlife Trust's nationally, focussed on community empowerment, and how we can better support people to take meaningful action for nature in a way that best suits, and helps, themselves and their communities. I'm also involved in projects around green social prescribing, and Thriving Communities Carlisle. This is a cross-sector partnership project designed to scale up social-prescribing across Carlisle and I'm trialling different nature-based activities in community spaces across the city.
Jon Hutchinson	I am Programme Director for Communities at Groundwork in the

Groundwork	North West. Groundwork is a federation of charities mobilising practical community action on poverty and the environment across the UK. We are passionate about creating a future where every neighbourhood is vibrant and green, every community is strong and able to shape its own destiny and no-one is held back by their background or circumstances. Our work includes: 1) Landscape design and nature improvement - from small community gardens to large nature reserves and heritage parks we have the skills to design and implement change at different scales. 2) Community development - the way we deliver change is always WITH and not for local communities. We engage people, build skills and raise aspirations at a neighbourhood level. Our aim is to empower communities and develop experience and skills within local people. 3) Partnerships - we work with land owners, policy makers, health professionals, other NGOs and community leaders to create change at scale. 4) Targeted work - a significant amount of our work is focused on engaging underrepresented groups in nature based activity. We understand engagement techniques and how to adapt delivery to ensure inclusivity.
Jon Snowden Environment Agency	I am a Senior Policy Advisor for Public Health looking at how the Environment Agency's work in the environment supports health outcomes. My particular interest is engagement with blue space for mental and physical health benefits. I sit within a national policy team within the Environment Agency tasked with improving our contribution to health outcomes and addressing health and environmental inequalities. This gives me an oversight and influence of government/EA policy and ambition, environmental and social evidence and how we can turn this into delivery. This is the tricky bit that benefits from collaboration to address evidence gaps, capacity building, co-design and funding etc. My formative career has been largely in operational delivery, giving me a grounding in partnership delivery and understanding people and place. Latterly, my focus had been on policy development and capacity building in others to turn ambition into delivery.
Kirsti Ashworth Lancaster University	I am an Atmospheric Scientist with wide-ranging interests from air pollution and climate to urban green space and mental health and wellbeing. I partner with the Trees for Cities charity on the “Planting Healthy Air” programme, working directly with schools and pupils to design and plant green spaces in playgrounds in highly polluted primary schools to reduce the pupils’ exposure to air pollution. We achieve this by reducing pollution in small areas and encouraging pupils to spend more time in these spaces. I lead the Open Green Spaces programme of the Lancaster Health Festival in which I invite people to identify the open space they spend most time in or gain the most

	benefit from and describe WHY. We are creating a map of these spaces tagged with their benefits to inform other residents and council planners. I currently work with Greenclose Studio to deliver the Phoenix Rising programme of creative arts, nature and movement-based activities to support mental and physical wellbeing.
Laura MacLean James Hutton Institute	My PhD investigated the quality of urban life of neighbourhoods in Lilongwe, the capital city of Malawi. Quality of urban life is a multi-disciplinary topic that includes factors relating to the physical, social, health and economic environments of the urban realm. I used a range of participatory social science methods to investigate the quality of the urban form from the perspective of the residents and experts. This included surveys with residents, and expert panel assessment with policymakers, practitioners and non-governmental agencies working in Lilongwe. My research concluded with a range of policy recommendations based on the results of the research. I now work as an environmental social scientist, with current and upcoming projects that focus on cultural ecosystems services, green space and health, and youth engagement in greenspace.
Liz O'Brien Forest Research	I am Head of the Social and Economic Research Group at Forest Research. We are the principal organisation for forestry and tree related research in Britain. I have been focusing on human nature relationships over the past twenty years with a particular focus on how connection with nature can impact on people's health and wellbeing. I have been involved in a number of European networks that have focused on forests and human health, and Green Infrastructure in the urban environment. More recently I worked with a European network on a systematic review of the types and characteristics of urban and peri-urban green and blue space and their impact on mental health and wellbeing. As an applied researcher I am currently working with Sport England and Forestry England to evaluate a physical activity intervention in 18 woodlands in England using a mixture of surveys, focus groups and undertaking activities with members of the public to understand their engagement in the programme.
Louise Neilson BIC Innovation	I have been heading up the Nutri-Wales cluster for the Welsh Government for 3 years, which has a key focus on Controlled Environment Agriculture (CEA). This activity has resulted in the development of a Special Interest Group (SIG) incorporating academia, industry and Government. In 2021 I managed a community-based CEA project across 4 sites in Wales to deliver hyper local produce, well being for the region and educational opportunities from primary school to further education levels. I am now managing a feasibility study to develop a roof top urban growing space in Cardiff. Through cluster activity I have recently created a Future Foods Ecosystem consortium of over 20 partners to work on significant funding calls with urban growing and nutrition

	key pillars for the consortium. My experience has resulted in the Welsh Government commissioning me to write the CEA Prospectus to attract investment to Wales and the undertaking of a research project to shape their Community Food Strategy.
Margarita Skarkou	Originally a Civil and Environmental MEng Engineer, I spent my studies focusing on urban design and construction, including a full-year at EIVP in Paris, a university specialised in urban planning and design. Following my studies and a brief stint as an engineer at VINCI, I spent almost a decade working for Barclays across a number of different business units including corporate / project finance, credit, corporate innovation and investing (where I was head of wellbeing and health), ESG and green finance. Recently, I have joined one of Europe's largest ClimateTech and Sustainability venture capital funds, 2150, which is focusing on making the urban environment more sustainable and resilient where among other areas I lead on natural environment, looking specifically at the interconnectedness of nature, built environment, long-term policy, city planning and the wellbeing of individuals. Finally I am a Non Exec for Innovate UK and delegate for NERC Economics of Biodiversity initiative.
Mark Goddard Northumbria University	I am an urban ecologist with a passion for making cities better places for nature and ensuring that the benefits nature provides to people are accessible to all. My PhD focused on the value of private gardens as wildlife habitat, and in the 10 years since completing my PhD I have worked on a variety of projects at local to global scales about how best to design, plan and manage urban green spaces to enhance their value for wildlife and people. For example, I coordinated the Leeds team of the UK-wide Urban Pollinators Project that investigated the quality of urban habitats for bees and other pollinating insects, and set up experimental flower meadows to examine their benefit to pollinators. These flower meadows were then used in a follow-on project I initiated that explored links between biodiversity, people's connection to nature and their health and well-being. More recent research topics include the role of urban soils for carbon storage and the impact of robotics on urban wildlife.
Mat Cottam The Conservation Volunteers	I have worked as a practitioner with UK / International Governments and NGO environmental bodies for 30 years. I enjoy novel project design – taking disparate objectives and drawing together an innovative project from the mix. I currently work for The Conservation Volunteers (TCV) as Business Development Manager for Central England. Working mostly in high IMD urban areas, TCV's Vision: "Healthier, happier communities for everyone", and TCV's Mission: "To connect people and green spaces to deliver lasting outcomes for both" are central to the core themes of QUENCH. Encouraging nature connectedness, evaluation and proof (not superlatives) are recurrent themes in my work. Gathering and

	presenting robust evidence is especially important with the advent of the Social Prescribing movement. Our data need to more closely match the quality of clinical data if the benefits of nature-based social prescribing are to be evenly evaluated / funded against medical interventions.
Matt Ellis The Environment Agency and Greater Manchester Combined Authority	I am a qualified land use planner working for the Environment Agency. I have over 20 years experience supporting public sector organisations and their partners to address a range of environment and sustainability issues. For several years now I have been working with the Greater Manchester Combined Authority, supporting it and it's partners to address the climate emergency, particularly the climate resilience issues it creates. I'm presently working with GMCA and partners as part of the Urban Innovation Action funded IGNITION project. This is focusing on developing the critical solutions needed to identify, innovatively fund and, most importantly, deliver large scale programs of nature based solutions to the climate emergency. An important part of my work is ensuring that the wider environmental outcomes of improved health and wellbeing are understood similarly to the more physical resilience outcomes. Can we, for example, quantify the health and well being value of a green space and use this, along with other value (such as flood risk reduction) to build a more compelling business case around which funding for delivery can be sought and a number of beneficiaries then be brought together provide a blend of contributions which deliver a pipeline of NBS projects
Maureen Berg University of Brighton	I am a plant ecologist, with an interest in promoting green spaces biodiversity, in particular through habitat enhancement and connectivity. I work with collaborators (academic and practitioners, local authority) whose main areas of interest are to ensure our urban environment is more resilient to climate change and sustainable whilst also improving the value and landscape of urban green spaces (GS) for mental health through biodiversity. I am interested in the idea of promoting nature on your doorstep, and since 2019, I have been the co-organiser of the Brighton and Eastern downs City Nature Challenge. In collaboration with Brighton Biosphere and South Downs National Park we are aiming to increase our biodiversity recordings in our local green spaces and also increase participation and interest with the environment through the use of an app. I have contributed to the local Neighbourhood plan in my capacity of ecologist and provided areas of enhancement. I have produced Biodiversity Action Plans for local landowners to increase biodiversity and one of my latest projects is with an NHS trust to develop biodiverse areas on the grounds for long stay patients showing the importance of the environment for mental well being and health.
Michael Lomas	I am an environmental psychologist, whose work broadly focuses on human-environment interactions and relationships. I completed my

University of Salford	PhD in Environmental Psychology in 2020, for which I explored experiences of place attachment and mental wellbeing in the context of urban regeneration. As part of this journey, I developed a comprehensive theoretical knowledge of the emotional ties that humans can share with the physical environment, as well as several methodological avenues to explore such relationships through research. My research interests have now expanded, and I have been involved in numerous projects exploring the restorative impacts of nature environments. These include an experimental examination of the role of personality in the cognitive processing of nature, as well as supervision of a PhD student who is examining individual differences in the cognitive restoration when exposed to nature environments. Furthermore, I recently received funding from the ESRC to develop an interactive online museum exhibition on the benefits of nature for thinking.
Michael Pocock UK Centre for Ecology and Hydrology	My interest in nature connectedness and health developed from understanding the motivations of participants in environmental citizen science (CS), and how CS links to action to improve people's local environment. I have recently led a large experiment (500 people), with psychologists, finding that taking part in nature-based activities, including CS, led to benefits for people's wellbeing. I led a major review for Defra on future opportunities for CS. This has a special relevance for urban areas because I have shown that people's participation in CS is strongly associated with urban areas. I also understand the importance of policy in this area, for example through my work on Defra's Natural Capital Ecosystem Assessment (which has a focus on urban) and I co-lead the CS working group for UK Environmental Observation Framework, which provides a platform across UK government agencies for advancing all aspects of CS (air, water, biodiversity, hazards).
Michelle Tester-Jones University of Exeter	I currently hold a lectureship in Public Health in the University of Exeter School of Medicine and Health. My areas of experience and expertise include cognitive mechanisms in depression (how depression impacts our mental activities) and factors that impact mental health and well-being in natural environments. I have also had particular experience in the analysis of large, multinational datasets. My recent work on the BlueHealth project gave me the opportunity to explore blue and green space use, motivations to use, and experiences among patients diagnosed with depression and anxiety. My findings may help inform future approaches to how we encourage the use of natural spaces for optimum nature connectedness and mental health outcomes in both formal (e.g., prescription and therapeutic programs) and informal contexts. I would be very interested in incorporating and better understanding how the quality of urban ecosystems can play a role in these relationships and approaches.
Nadine Andrews	In addition to working for the Scottish Government as a social

Culture Probe	researcher, I specialise in creative nature-based and mindfulness-based approaches to coaching, facilitation, consultancy and research. I am interested in the psycho-social factors affecting people's relationship with nature including racism and trauma. How people connect with nature influences not just their own health but also how they perceive and act towards the natural world. The state of ecosystems both affects and is affected by this. An interdisciplinary approach is essential for developing our understanding of these complex relationships. My PhD was on the psychology of pro-environmental behaviour and I work part-time as a mindfulness and nature based coach and trainer. I have trained in wildlife ID and bushcraft and am a qualified Mountain Leader. I have extensive experience of designing and leading mindfulness and nature connection workshops and courses. I am part of the UK Ecopsychology network, former chair of the Scotland branch of the Climate Psychology Alliance, and a member of the International Ecolinguistics Association steering group.
Nicoletta Leonardi University of Liverpool	I am a coastal scientist and an engineer looking at how the coastline will evolve with climate change and at coastal hazards such as coastal flooding and coastal erosion. I have a special focus on the use of nature-based solutions for coastal protection which includes the use of salt marshes and seagrasses to dissipate storms energy and protect coastal communities from flooding and erosion. I am currently looking at how we could design more effective Nature-based solutions for coastal protection to replace hard engineering solutions such as seawalls. This is because hard engineering solutions are becoming increasingly more expensive to maintain due to sea-level rise and associated carbon emissions and might not be sustainable solutions in the long term. Even though I focus on coastal dynamics, the same hydrodynamic and vegetation models could be applied to within-city free surface flow and green areas which I would be interested to explore.
Niki Newton Joint Nature Conservation Committee	I work in the Ecosystem Analysis Team at JNCC. I have worked in various roles in this team for 7 years, all focused around national species surveillance schemes using citizen science. I have been the JNCC project manager for the National Plant Monitoring Scheme, the National Bat Monitoring Programme, and the Terrestrial Surveillance Development and Analysis partnership (working with BTO and UKCEH). I also manage the Terrestrial Evidence Partnership of Partnerships, which brings together all the partners involved in JNCC national surveillance schemes for collaboration and knowledge exchange. Over the last year, I have been involved in planning and delivery under the Defra Natural Capital and Ecosystem Assessment programme, particularly focused on scoping potential niches and protocols for citizen science in urban areas to deliver species/habitat monitoring for local and policy needs. I'm also greatly involved in JNCC's work to enhance EDI in volunteer networks.

Rachel Clarke Newcastle University	My expertise is in co-design and creative methods working with communities on issues of social and ecological sustainability and the role of existing and near future technologies. My background is in Human-Computer Interaction (HCI), which usually involves understanding how people use technology and how it can be better designed. My focus is often on marginalised communities such as refugees, migrant women, or racially diverse community groups. Prior to completing my PhD and starting a research career, I worked with environmental organisations, theatre companies and arts organisations on digital engagement strategy and delivery often with a focus on place-based and environmental themes.
Rachel Murtagh Tees Valley Nature Partnership	Rachel currently manages the Tees Valley Nature Partnership, widely considered as one of the top performing nature partnerships in England and is the forthcoming host of Natural England's first national Nature Recovery Network Conference in 2022. She brings over 25 years' experience volunteering and working in a diverse range of roles in the environment sector across public (local government, National Park Authority), NGO (The Wildlife Trusts, The Conservation Volunteers) and working freelance. Her role as Manager is to oversee the running of the partnership working with partners to design, commission and deliver strategic and practical nature recovery across the Tees Valley for the benefit of people, nature, and economy. She has a background in environmental science, countryside management, and sustainable development. Rachel is passionate about the cultivation of ecological awareness engaging hearts and minds in the personal and social change to ensure a vibrant future for our planet.
Rachel Pateman University of York	I have expertise in citizen science i.e. involving the public in scientific research. Over the past decade, I have designed and led environmental citizen science projects and researched the impacts of citizen science methods. I am interested in how citizen science can deepen nature connectedness in participants and improve their wellbeing while also contributing to environmental monitoring, in turn informing management of urban ecosystems. I am also interested in how citizen science methods can answer research questions around the links between biodiversity and wellbeing. The relationship between urban form and access to greenspaces is increasingly well established in the global north but less so in the global south. In cities in Africa and Asia, I have been studying inequalities in access to greenspaces and the impacts of different types of urban space on feelings of wellbeing and physiological stress.
Rebecca Clark National Trust	As an environmental economist in the National Trust (NT), I am keen to participate in co-design of research to address gaps in knowledge of how characteristics of urban habitats affect people's nature connection and the benefits they gain. Research into how the natural environment delivers benefits to physical and mental

	wellbeing is a priority for NT. As an experienced environmental economist, I am an expert in identifying the benefits to society provided by urban green and blue space, describing the benefits, quantifying and estimating the monetary value where possible, employing available evidence and tools. I have a good knowledge of the evidence gaps and the challenges in resolving them. I am experienced in developing research and its delivery, having worked previously as a researcher for ten years and subsequently commissioned and managed numerous research projects (e.g. health benefits of England's coastal paths). Currently, in the National Trust, I assess the benefits to society of proposed enhancements of urban green space in collaboration with colleagues. Previously, whilst working for Natural England, I contributed to development of government guidance (ENCA) on assessing various benefits of the environment, including nature conservation and recreation benefits.
Ross Cameron University of Sheffield	My research focuses on the ecosystem services (benefits) provided by urban plants, with a strong focus on human psychological health, urban cooling, flood mitigation and improvements in air quality. Current projects include investigations into plant and animal diversity in urban parks and psychological responses, and builds on previous NERC funded work. I have a strong interest in how landscape quality affects restorative processes and work closely with the landscape/ horticultural sectors on teasing out what 'quality' means and how that relates to effective 'restorative designs'. This includes aspects such as scale, colour, plant form, perceived and real biodiversity levels and the presence/ absence of water. I also have two current projects investigating how cultural context affects response to nature/restorative landscapes. My 'pet' interest is in gardens/gardening for health, and I am a science advisor to both the Health and Horticulture Forum and the RHS.
Ryan Lumber De Montfort University	I am particularly interested in the area of nature connectedness, how feeling part of a wider natural world can make people happier, healthier while also doing more to help the rest of nature. This led to me creating the Pathways Framework where using your senses, expressing emotion, finding personal meaning, acting compassionately, and noticing the beauty of nature can help us reconnect with it in a meaningful way. Alongside numerous research publications on the topic, I have worked with a range of organisations to help them use the pathways including the National Trust, Natural England, Durrell Conservation Trust and New Zealand Government's Department of Conservation to help reconnect people with nature. I also actively research including work on the National Trust's noticing nature report, using local nature to improve mood in people with depression and anxiety, using the five pathways alongside VIA character strengths to improve pro-nature behaviours.

Sally Cox Royal Hospital Liverpool	I work in the Clinical Health Psychology Service at the Royal Hospital in Liverpool (part of LUHFT). I work for the cardiology and cancer services. I am a clinical psychologist, we work with people to help them understand and make sense of the way they might feel and experiences they have had. We talk about what may strengthen their ability to cope, coping mechanisms they already have and help people find a way forward. I am interested in how and where we work with people. I would like to set up some outdoor clinics, to strengthen the impact of the natural world on our health and well-being. In my experience our nature connectedness has a big impact on our health and wellbeing e.g. for relaxation, restoring attention, helping us to find meaning and inspiration and to feel more whole and connected. I am interested in how a wider perspective and broad-minded coping can affect our mood and sense of wellbeing and how we can bring this (through nature) into our work with patients.
Sian de Bell University of Exeter	I began my career studying biology and trained in public health through my PhD. I used quantitative and qualitative methods to investigate the improvement of an urban river and whether it had been successful in improving the health of the environment and local community. My research has continued to focus on natural spaces in urban areas and their benefits for the environment and people. I am particularly interested in translating research for use in the 'real world', through projects such as Greenkeeper, where I developed methods to value the health benefits of urban green space for a toolkit which is being used by local authorities to plan and manage these areas. Currently, I produce evidence syntheses, these draw together research to answer a specific question. Some have been for environmental organisations e.g. on the benefits of investing in green space for health, whilst others have been commissioned by the health sector e.g. on the use of peer support in health and social care.
Victoria Carr RSPB	I work in the social science research team within the RSPB where I conduct research exploring how we can develop adults' relationship with nature ('nature connection') and encourage them to take action to protect nature. My current research focuses on building natural connection through nature-related activities and developing ways to measure how effective those activities are. With my colleague Joelene Hughes, I developed the Evaluating Nature Activities for Connection Tool (ENACT), a survey to evaluate how effective activities are in promoting nature connection and nature-related behaviour. ENACT was designed for activities in high-nature settings (e.g. nature reserves), so I am now developing a version for activities in other settings, e.g. urban and community events. I am a Chartered Psychologist with 20 years' experience in applied research in academia, public, private and charity sectors, focusing

	on measurement and evaluation. I have worked at the RSPB for 10 years and joined the Conservation Science department in 2018.
Vikki Houlden University of Leeds	My unique background crosses geography, urban science, engineering, and data analysis. I have a PhD in Urban Science from the University of Warwick, where my research focussed on studying the relationship between urban greenspace characteristics and human wellbeing. I am currently a Lecturer in the School of Geography at the University of Leeds, where I focus on using data science methods to tackle genuine urban challenges using real data, working with academic, policy, and industry partners. Alongside researching the effects of access to different types of greenspaces, I have more recently begun looking at biodiversity and ecosystems, and how these relate to human health, particularly mental wellbeing. In 2018, I published a widely-cited systematic review into the relationship between urban greenspace characteristics and mental wellbeing.
Vittoria Danino Anglian Water	I currently work for Anglian Water developing the Anglian Centre for Water Studies which aims to become an industry led research centre focussed on Water, Society and Environment. The work we have done spans psychology, behavioural economics, climate science, water quality, biodiversity net gain and social practice. I have worked at the interface of academia and industry for the last 12 years, first as a relationship manager at the University of East Anglia and most recently within Anglian Water. My expertise is around bringing together people from different disciplines and sectors to work together to provide tangible impact from research and business benefits. I am currently the Deputy Director of the NERC ARIES DTP with a focus on strategic partnerships.

6. Suggested reading and glossary of key terms

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Jimenez et al. (2021) ***Associations between Nature Exposure and Health: A Review of the Evidence.*** Int. J. Environ. Res. Public Health, 18, 4790.

Lovell et al. (2020) ***A rapid scoping review of health and wellbeing evidence for the Green Infrastructure Standards*****.** European Centre for Environment and Human Health, University of Exeter Medical School. For: Natural England, Department for the Environment, Food and Rural Affairs, Public Health England, and Ministry for Housing, Communities and Local Government, England. Summary and full report available for download here: https://beyondgreenspace.net/2020/10/05/rapid-review-green-infrastructure-standards/

Marmot et al (2020). ***Health Equity in England: The Marmot Review ten years on***. London: Institute of Health Equity. Executive Summary available from: https://www.instituteofhealthequity.org/resources-reports/marmot-review-10-years-on

Public Health England (2020). ***Improving access to greenspace- a new review for 2020.*** Available from: https://beyondgreenspace.net/2020/07/29/improving-access-to-greenspace-a-new-review-for-2020/

Richardson et al. (2020) ***Applying the pathways to nature connectedness at a societal scale: a leverage points perspective***, Ecosystems & People, 16:1, 387-401

UK Government (2018). ***The 25 Year Environment Plan. Chapter 3: Connecting people with the environment to improve health and wellbeing***, Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf

Glossary of key terms

Ecosystem Services	The many and varied benefits provided to humans by ecosystems
Environmental Net Gain	The overall improvement of environmental quality through a scheme or project that may comprise of environmental losses or gains in multiple aspects.

Ecosystem/ Environmental Quality	In QUENCH, we use these terms to refer to the properties, and characteristics that pertain to the functioning of ecosystems or environmental spheres such as air, water, and soils, with a focus on urban ecosystems/environments. It is the quality of urban ecosystems/environments from an environmental science or ecological perspective, which may be understood through variables relating to air, water or soil quality, geospatial arrangement of habitats, or biodiversity, for example.
Green/Blue Infrastructure	An interconnected network of natural areas and other open spaces that conserves natural ecosystem values and functions, sustains clean air and water, and provides a wide array of benefits to people and wildlife
Greenspace	Any area of vegetated land, urban or rural. This includes both public and private spaces such as parks, gardens, playing fields, woods and other natural areas, grassed areas, cemeteries, allotments, green corridors, disused railway lines, rivers and canals, derelict, vacant and contaminated land which has the potential to be transformed.
HiAP (Health in All Policies)	Health in All Policies is an approach for policies that systematically and explicitly considers the health implications of the decisions we make; targets the key social determinants of health; looks for synergies between health and other core objectives and the work we do with partners; and tries to avoid causing harm with the aim of improving the health of the population and reducing inequity.
Integrated Care Systems	Integrated Care Systems are a way of working, collaboratively, between a range of health and social care organisations, to help improve people's health. It's when organisations work together in a shared way; sharing budgets, staff, resources where appropriate, to coordinate care and best meet people's needs.

Index of Multiple Deprivation	The official measure of relative deprivation for small areas. It follows an established methodological framework in broadly defining deprivation to encompass a wide range of an individual's living conditions. England, Scotland, Wales and Northern Ireland each have their own IMD.
Local Planning Authority	The local planning authority is the public authority whose duty it is to carry out specific planning functions for a particular area.
Local Nature Partnerships	A coalition of organisations, businesses and individuals from a variety of sectors tasked with improving the local natural environment.
Local Nature Recovery Strategies	A new, England-wide system of spatial strategies that will establish priorities and map proposals for specific actions to drive nature's recovery and provide wider environmental benefits.
Natural Capital	The elements of nature that directly or indirectly produce value to people, including ecosystems, species, freshwater, land, minerals, the air and oceans, as well as natural processes and functions.
Natural Capital Accounting	Provides a variety of mechanisms to calculate the total stocks and flows of natural assets, resources and services within a designated area or ecosystem, allowing environmental considerations to be taken into account in making policy and investment decisions. NCA produces formal accounts using methods and reports that are recognisable to those working within finance and management.
Nature Connectedness	Refers to an individual's subjective sense of their relationship with the natural world. There is emerging evidence that connection to nature is associated with certain wellbeing, educational outcomes and pro-environmental behaviours.

Public Realm	All parts of the built environment, including greenspace, where the public has free access. It encompasses all streets, squares, and other rights of way, and are the everyday spaces that are used by people to socialise, play, work, shop, traverse and use for a range of activities.
Social prescribing	Social prescribing enables GPs, nurses, link workers and other professionals to refer people to a range of local, non-clinical services. It seeks to address people's needs in a holistic way and can involve a variety of activities which are typically provided by voluntary and community sector organisations.