Institution: University of Edinburgh and Heriot-Watt University (Edinburgh Strategic Alliance)

Unit of Assessment: 13 (Architecture, Built Environment and Planning)

Title of case study:
Accessing the outdoors: improving public policy on green spaces to benefit health and wellbeing

Period when the underpinning research was undertaken: 2006–2019

Details of staff conducting the underpinning research from the submitting unit:

Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Prof Catharine Ward Thompson (PI)	Professor of Landscape Architecture (UoE)	1981–present
Dr Jenny Roe	Research Associate (UoE); Lecturer (HWU)	2005–2011 2011–2013
Prof Peter Aspinall	Professor (HWU); Professor emeritus Honorary Professor (UoE)	2000–2014 2014–2020 2017–2020
Dr Lynette Robinson	Research Fellow (UoE)	2011–2013
Dr Katherine Brookfield	Research Fellow (UoE)	2013–2017
Prof Richard Coyne (Co-I)	Professor of Architectural Computing (UoE)	1995–present
Ian Scott (Co-I)	Lecturer in Architectural Design (UoE)	1996–present
Dr Sara Tilley	Research Fellow (UoE)	2013–present

Period when the claimed impact occurred: 2016–2020

Is this case study continued from a case study submitted in 2014? N

1. Summary of the impact

Getting outdoors is essential for maintaining health and wellbeing throughout life. OPENspace research has kept this issue on the public agenda, influencing local, national, and international strategies to improve access to public green space. Deploying surveys, mapping, biomarker, EEG and co-design methodologies, the research has provided new evidence about the health benefits of green environments, informing planning priorities, policy and guidance for bodies including the World Health Organisation (WHO), the UK Department for Environment, Food, and Rural Affairs (DEFRA), National Institute for Health and Care Excellence (NICE), Scottish Government and Parliament, and UK local councils.

2. Underpinning research

Research conducted through OPENspace, the research centre on inclusive access to outdoor environments based at the universities of Edinburgh and Heriot-Watt, has generated new evidence that links access to green open space with health and wellbeing. Four projects funded by UKRI, NIHR and commissions from UK and Scottish Government bodies, examined the relationship between socioeconomic deprivation, Black and minority ethnic (BME) demographics, older people, and quality of urban green space.

a. The research involved a study of how residents value their local outdoor green space in a project commissioned by Forestry Commission Scotland: Woods in and Around Towns (WIAT) (2006-11), followed by a quasi-experimental study funded by NIHR (GBP1.1M, 2012-2017). These studies evidenced how well-designed woodland interventions in deprived urban locations can enhance residents' perceptions and active use of open spaces in their neighbourhood, contributing to overall wellbeing and quality of life [3.1].

b. The research team collected and analysed quantitative data on access to green spaces and health outcomes among deprived urban communities with significant BME populations. This led to the Community Green study for the Commission for Architecture and the Built Environment, funded by the Department for Culture, Media & Sport and Department for Communities and Local Government (2008-9). The project findings identified significant associations between poverty, ethnicity, and potential wellbeing benefits from access to green space in the UK [3.2].

c. Supported by the GreenHealth project for the Scottish Government's Rural and Environment Research and Analysis Directorate (2008-2012), the researchers used GIS (geographic information system) green space data alongside measures of the diurnal patterns in participants' salivary cortisol (which act as biological indicators of chronic stress). The findings showed how the amount of accessible green space in deprived urban environments makes a difference to residents' mental health and social wellbeing [3.3, 3.4].

d. The GBP1.5M grant, Mobility, Mood and Place (MMP) (2013-2017) drew on participation from over 900 people aged over 65. One strand of this project deployed innovative mobile EEG (electroencephalography, the detection of electrical activity in the brain) to assess older people's neural responses to contrasting environments. It identified neural patterns generated by engagement with green space, as opposed to built environments, that indicate potential restorative health effects for older people, including relief from fatigue, stress and low mood [3.5]. MMP also used co-design research strategies to help older people in the community to articulate their criteria for age-friendly local environments. This research highlighted the need for suitable pavements, benches, and street lighting, as well as four characteristics of places that influence quality of life: access for all; access to nature; access to others; and access to light [3.6].

3. References to the research

3.1 Ward Thompson, C., Roe, J.J. and Aspinall, P. 2013. Woodland improvements in deprived urban communities: what impact do they have on people's activities and quality of life? *Landscape and Urban Planning* 118: 79–89 https://doi.org/10.1016/j.landurbplan.2013.02.001

3.2 Roe, J., Aspinall, P. & Ward Thompson, C. 2016. Understanding Relationships between Health, Ethnicity, Place and the Role of Urban Green Space in Deprived Urban Communities. *International Journal of Environmental Research and Public Health* 13(7): 681 https://doi.org/10.3390/ijerph13070681

3.3 Roe, J.J., Ward Thompson, C., Aspinall, P.A., Brewer, M.J., Duff, E.I., Miller, D., Mitchell, R., Clow, A. 2013. Green Space and Stress: Evidence from Cortisol Measures in Deprived Urban Communities. *International Journal of Environmental*

Research and Public Health 10: 4086-4103
https://doi.org/10.3390/ijerph10094086

3.4 Ward Thompson, C. Aspinall, P., Roe, J., Robertson, L. & Miller, D. 2016. Mitigating stress and supporting health in deprived urban communities: the importance of green space and the social environment. *International Journal of Environmental Research and Public Health* 13(4): 440
https://doi.org/10.3390/ijerph13040440

3.5 Neale, C., Aspinall, P., Roe, J., Tilley, S., Mavros, P., Cinderby, S., Coyne, R., Thin, N., Bennett, G. & Ward Thompson, C. 2017. The ageing urban brain: Analysing outdoor physical activity using the Emotiv Affectiv suite in older people. *Journal of Urban Health* 94(6): 869-880
https://doi.org/10.1007/s11524-017-0191-9

3.6 Scott, I. 2017. 'Mobility, Mood and Place – Co-Designing Age-Friendly Cities: A Report on Collaborations between Older People and Students of Architecture', *Arts* 6(3), 12
https://doi.org/10.3390/arts6030012

4. Details of the impact

The research has been developed and conducted in partnership with national and international stakeholders, who have regularly invited OPENspace researchers to provide evidence and to join or chair working groups that set the premises for policy, guidance and debate on the benefits of access to green public space.

Helping create urban green space strategies for the WHO

Initially invited to contribute because of the innovative approach to using biological markers of mental health in the GreenHealth project, Ward Thompson co-authored section 2 of the WHO report 'Urban Green Spaces and Health: a review of evidence' (2016). This document summarises empirical evidence (including OPENspace publications), which led to recommendations for indicators measuring access to green space similar to the GIS data used in the GreenHealth study, and a toolkit for developing them [5.1].

Another WHO report, 'Urban Green Space Interventions and Health: a review of impacts and effectiveness' (2017) provides a platform for guiding the design, implementation and evaluation of future Greenspace research. The review cites examples of OPENspace research, including the Woods In And around Towns project [3.1] which, it notes, contributed to proposals for local action on delivering effective urban green space interventions [5.1]. These two reviews, in turn, contributed to WHO/Europe's 'Urban Green Spaces: A Brief for Action' written to support urban policymakers and practitioners in translating research findings into implications for urban planning practice. One of the key messages of this brief for action draws upon OPENspace work on inequalities [3.2], noting how urban green spaces deliver positive health, social and environmental outcomes; and upgrade the social and environmental quality of disadvantaged and deprived areas [5.1].

Influencing UK policy and NICE guidance relating to access to green space

OPENspace research connecting health and being outdoors (including [3.1]) was included in an evidence review published by the University of Exeter and DEFRA in 2018 [5.2a, b] which, along with the WHO reports mentioned above [5.1] underpinned one section of the UK government's 25-year plan to improve the environment published in 2018 [5.2c, pp. 71–82]. 'Connecting people with the environment to improve health and wellbeing' has, as one of its targets, high quality, accessible, natural spaces close to where people live and work,

particularly in urban areas, and encouraging more people to spend time in them to benefit their health and wellbeing [5.2c, p. 28].

In March 2018, OPENspace was invited to provide expert testimony to the National Institute for Health and Care Excellence (NICE), which provides evidence-based recommendations for health and care in England. The researchers contributed insights and evidence [5.3a] about the benefits from access to outdoor space, the barriers that elderly people face in engaging with the outdoors, and the ways in which these might be overcome. These were incorporated into published 'Guidance on Physical Activity and the Environment' [5.3b], which targets local authorities and other stakeholders, including public transport planners, workplaces, housing and local enterprise partnerships.

Five specific recommendations were based on OPENspace research [5.3b]:

1. Ensuring that people with limited mobility can safely move along and across streets and in public open spaces
2. Ensure that footways, footpaths and cycle routes are convenient, safe and appealing to users, and are built and maintained to a high standard
3. Making it as easy as possible for people with limited mobility to move around their local area
4. Considering ways to enhance the accessibility, quality and appeal to users of local open spaces, focussing particularly on communities who may not currently use them, for example those with low mobility, low income and some black and minority ethnic communities
5. Involving community groups and volunteers in decisions on how to design and manage public open spaces, including trails, footpaths and towpaths.

Influencing Scottish policy about access to, and the benefits of, green space

The GreenHealth report [3.3, 3.4] was commissioned to inform government understanding and policy on access to green space. Along with those of the WHO review [5.1], its conclusions, especially the emphasis on equitable access to green space that can be enjoyed and used recreationally for all Scotland's people, was highlighted in the Scottish Government's consultation paper [5.4a] and discussed in the Scottish Parliament committee hearing [5.4b] as part of its 2018 review of environment policy. This review committed the Scottish Government to the continuation of the use of 'Access to Green and Blue Space' [5.5] as an indicator in the Scottish National Performance Framework.

This research also informed the development of the Place Standard by NHS Health Scotland, the Scottish Government and Architecture and Design Scotland [5.6], launched in 2016, which incorporates 'natural space' as an indicator of community wellbeing and demonstrates policy recognition of the link, reinforced by our research, between place and health. The Place standard quotes directly from section 2 of the WHO report [5.1], as well as the 'GreenHealth' project outlined above [3.3, 3.4].

NatureScot, Scotland's Nature Agency, used the research [3.3, 3.4] in a key paper to the then Cabinet Secretaries for Health and Environment in 2015, which led to the setting up of Our Natural Health Service (ONHS) in 2016. This is an action programme developed as a partnership between NatureScot, the National Health Service (NHS) Scotland and a range of cross-sectoral national and local partners. The programme addresses the barriers within health and social care professions to recommending outdoor physical activity and

contact with nature. A pilot evaluation in 2019 found that the four regional Green Health Partnerships (GHPs) established in 2018 as the cornerstone of the ONHS programme, had engaged with 230 partners, promoting 350 green health opportunities, delivered 225 capacity building activities, and connected with an estimated 11,200 people in the health and environment sectors. GHPs are referred to in 35 policies and plans across a range of sectors [5.7].

These national engagements have catalysed change in local environments, for example by informing planning guidance for Moray Council (pop. over 90,000). Their Local Development Plan 2020 [5.8], which sets out priorities for the region over the next decade, now assesses compliance against key findings from MMP. The principal planning officer for Moray Council has endorsed our recommendation to institute "simple measures such as providing additional footpath links into landscaped areas, over and above the minimum, ensuring seating is provided for people to rest and reflect…and ensuring that landscaping stimulates the senses through colour, seasonal variation, promotes biodiversity and is accessible and multi benefit" [5.8]. Moray Council uses the MMP project materials to instruct planners of the link between "demographic and health pressures with spatial planning" [5.8].

5. Sources to corroborate the impact

5.1 WHO: a) *Urban Green Spaces and Health: a review of evidence and 'Urban green spaces: a brief for action*, b) *Urban Green Space Interventions and Health: a review of impacts and effectiveness*, c) *Urban Green Spaces: a brief for action*

5.2 DEFRA/HM Government: a) *Health and the natural environment: A review of evidence, policy, practice and opportunities for the future 2018* b) *Evidence Statement on the links between natural environments and human health*; c) *A Green Future: Our 25 Year Plan to Improve the Environment*

5.3 NICE: a) *Physical activity and the environment update Evidence reviews/Expert testimony* (pp16-21), b) *Guidance on Physical Activity and the Environment*

5.4 a) *Developing an Environment Strategy for Scotland: discussion paper* (Scottish Government) b) Local and Communities committee meeting 23 May 2018 (Scottish Parliament)

5.5 a) Scottish National Performance Indicator Access to Green and Blue Space. b) Scotland's people annual report 2019 Reference to access to green and blue space pp.25-26

5.6 NHS Scotland Place standard online tool and document

5.7 NatureScot statement

5.8 Moray Council testimonial, quality assurance document and development plan