



# Identifying healthy green space interventions that work? Our tale of lists, valuations and barriers.

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The  
University  
Of  
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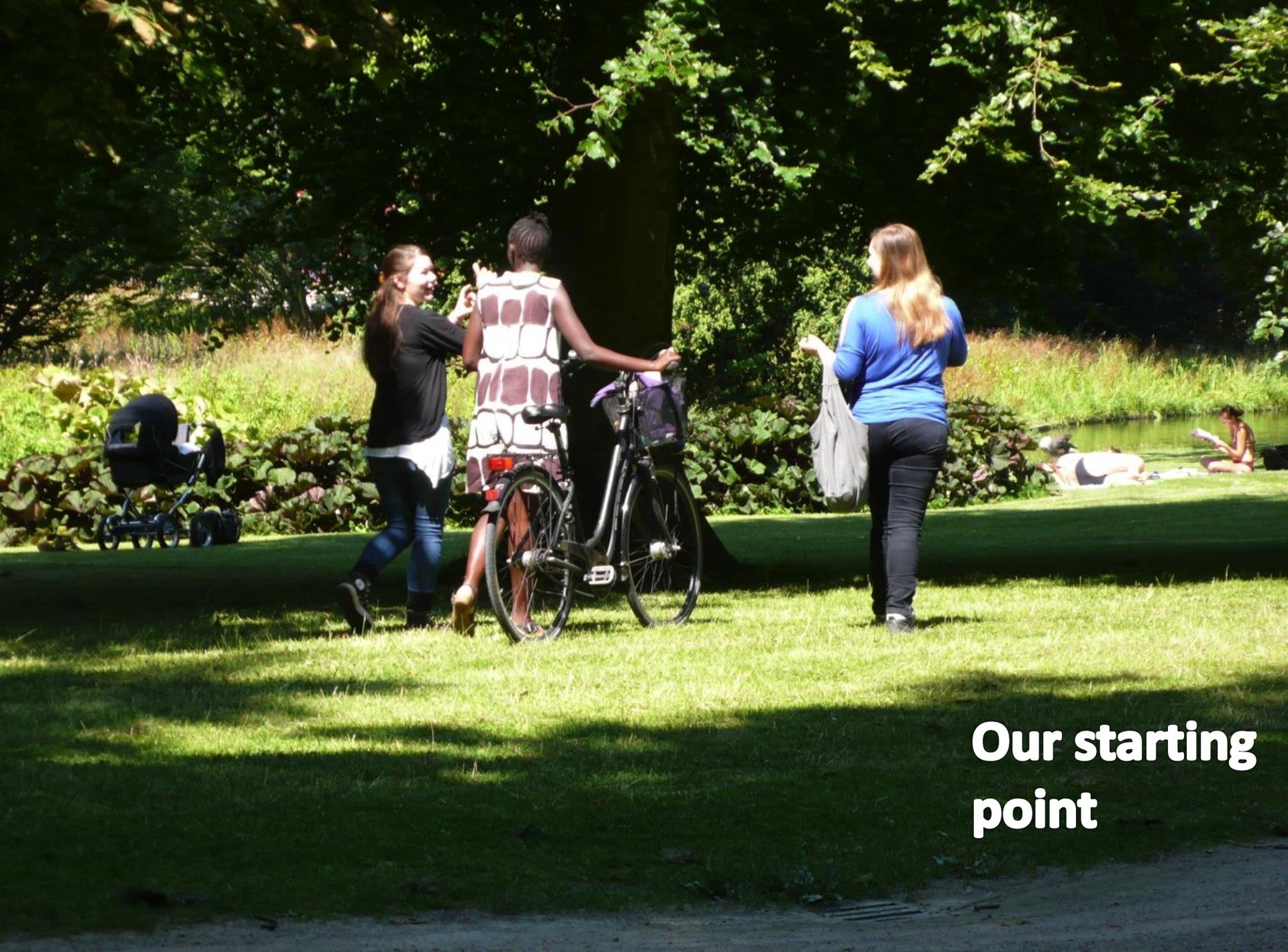


**Research Aims**

# The specific research aims

- What are the costs and benefits of “mental health friendly” natural environments?
- How can we best feed this knowledge into policy, delivery and investment decisions?





**Our starting  
point**

# Our starting point

- the existing empirical evidence and knowledge on healthy green spaces
  - large-scale international review documents\*
- to identify interventions in urban parks, waterways and green spaces with broad applicability to the Sheffield context

\*e.g. *Urban Green Spaces and Health: A Review of Impacts and Effectiveness*. World Health Organization Regional Office for Europe, 2016





# Emerging issues

- priorities of academic researchers are not necessarily shared by green space practitioners
  - little research on implementation in practice\*
- dealing with assumption: experimental and ‘scientific’ research is ‘better’
- multiple contextual factors at play in urban nature-mental wellbeing relationship

\*A rare e.g.: A Franchina, AJ Scott and CE Carter: The Green Living Spaces Plan: Evaluation and Future Prospects. Report submitted to Birmingham City Council. Birmingham City University, Jan. 2017.





Photo: Dan Saunders

# Our approach

- 122 responses to stakeholder consultations: events, focus groups, interviews
- Cost Benefits Analysis for 5 urban nature interventions



MAIN INTERVENTIONS: DOWNING APPLES AND PEARS	INTERVENTION 1: Development workers to facilitate outdoor activities	INTERVENTION 2: Improve physical access	INTERVENTION 3: Outdoor learning in schools	INTERVENTION 4: Support volunteering opportunities in natural	INTERVENTION 5: City centre green space	INTERVENTION 6: Increase variety of planting	INTERVENTION 7: Support fitness and exercise in green spaces	INTERVENTION 8: re-use vacant land	INTERVENTION 9: 'play and play' areas	INTERVENTION 10: 'green prescriptions'	INTERVENTION 11: walking and cycling routes	INTERVENTION 12: nature based activities for people with mental health problems	INTERVENTION 13: greenways activities in deprived areas
DESCRIPTION	provide development workers (e.g. park warden)	improve physical access to green and blue spaces for all	provide opportunities for outdoor learning in schools	support voluntary and community organisations in	increase amount and variety of city centre green space to meet	increase the variety of planting in green spaces to attract	support fitness and exercise groups in green spaces	re-use vacant land as temporary or permanent green	provide areas alpha existing green spaces where	offer 'green prescriptions' of activities in natural	provide a variety of green outdoor walking and cycling routes	provide nature-based activities in public green spaces	support voluntary and community organisations in
TYPE OF INTERVENTION (MAKING, KEEPING, PRESCRIBING)	keeping, prescribing	making, keeping	making, prescribing	Prescribing	Making	Keeping	Prescribing	Making	Prescribing	Prescribing	Making, keeping	Prescribing	Prescribing
INDICATIVE ACADEMIC LITERATURE	Keenan et al 1948 - link between use of outdoor green space and stronger social ties et al	Douglas et al (2017) de Vries et al (2013) (prescriptions); de Vries et al (2009); Sugiyama et al	Chen et al 2014; Roe & Apprial 2011; Ward Thompson, Apprial, and Montarino (2007)	Sugiyama et al (2007); Markevych et al (2017) (importance of social contacts in	Sugiyama et al., 2008 (importance of walking & social ties); Sui et al (2015) Azobek et al	Douglas et al. (2017) de Vries et al (2013) (prescriptions); Taylor et al (2010) (street trees);	Gardner et al. (2014); Roe et al (2017); Anderson & Andersen, 2004; Gardswani, Tarr, &	Sugiyama et al. (2008); Van den Berg et al (2010); de Vries et al (2013) (prescriptions);	Ward Thompson, Apprial, and Montarino (2007); Goggin-Toussaint, O'H, and Hest	Allen, 2010 Ashburn, Mitchell, & Hartig, 2014, Ashburn, Fong, & Hart, 2010, Nulford,	(Davies, Sanyal et al., 2010, Agui-Gray et al., 2014, Hayes et al., 2010) (Sardard et al.	Sugiyama et al (2007) Markevych et al (2017) (importance of social contacts in	(Davies, De Natale et al. 2012) (increased turn weights among mothers with lower
GREY LITERATURE		Living Streets audits				see Nature Connectors conference, Forest Bathing		see 50:50 project					
EXAMPLES	Health trainers working in GP settings; positive roles of park wardens in Australia	Wild at Heart connecting older people to nature	Sage GreenFingers work in schools; Forest Schools	Blue Loop work with young offenders; Good Gym; community gardens and social	Fountain precinct, but neglected; Victoria Quays but poorly connected; Gray to Green	Winter Gardens; 'secret places' in Brixton Gardens; Phoenix Meadows; 'bee food'	Circuit skills as incentive - entertainment, not just exercise	Love Squares; interim project on vacant plots; London pocket parks; Woodmill Hill		Lowfield - Alan Williams (check); green circuits; GP prescriptions; Voluntary Action	Woodrope Ravine; Phoenix Rec; Burgessmoor; New school at Woodside; Steel Valley Park;	Sage GreenFingers; People Keeping Wild; Wild at Heart; Conservation volunteers; Darval	Minor Fields - shows importance of animating the space; Green Estate work; Gladness Valley
WHO BENEFITS?	all groups and users, potentially those with mobility problems	all groups and users, especially those with mobility problems	school children from early years on, parents (indirectly)	All groups and users, potentially, including volunteers	City centre workers, residents, shoppers and visitors; quiet	Children, schools; people with dementia; ex	All, but barriers for people with disabilities, health	Local residents, neighbourhoods; baronesses; pattern	Children, parents and carers	Those within 100m system - referred or self-referred	Cyclists, walkers, skateboarders, school run, dog walkers,	Older people; isolated people; those with or	People on low incomes or in poor neighbourhoods
MENTAL HEALTH BENEFITS	alleviates low-level anxiety	alleviates	greater energy, concentration;	Confidence, self-esteem, sociability	Alleviates workplace stress; improves	Alleviates stress and depression	Confidence, self-esteem	Volunteering opportunities;	Reduces anxiety among children et	Reduced anxiety, isolation, possibly	reduced	Reduced anxiety, depression;	Reduces fear of green spaces &
PHYSICAL HEALTH BENEFITS	greater use of green space	walking, cycling, avoidance of areas of poor air quality	physical exercise; movement	Fitness, exercise, physical work	Short walks out of office environments; occupational health	?	Wide range	Limited	Wide range	reduced blood pressure, obesity	Exercise, movement, etc.	Exercise, movement, etc.	
SOCIAL BENEFITS	increased social	encouragement to	socialisation;	Confidence;	Better use of team	Volunteering	Confidence;	Community	Socialisation (both	Potentially	casual meetings;	Reduced isolation;	Reduced isolation;
THRESHOLD FOR BENEFITS	Short to medium term	Medium to long term	Short, medium, long term	Medium to long term	Short, medium, long term	Short, medium	Short to medium	Short term but temporary can	Immediate to long term	Requires sustained course of activity -	Depends on users & time than planning	Minimum 4-6 weeks important to have	Medium to long?
PLACE BENEFITS - BIODIVERSITY	Yes	depends on design	only if few environments	No	Potentially - see Gray to Green	Yes	No	Short term - eg wildflower meadows	No	No	If well designed	No	Not unless designed in
PLACE BENEFITS - ECOSYSTEM SERVICES	cultural	supporting, provisioning, cultural?	only if few environments created	cultural - Improves connections with nature	Supporting, cultural, regulating?	Supporting, provisioning, cultural	Cultural	Supporting, provisioning (green limit, cultural	Cultural	Supporting	Supporting, cultural, regulating (air quality?)	Supporting, cultural	Cultural
PLACE BENEFITS - OTHER	Sense of safety, security, community	connectivity	greater use of existing green	Community engagement;	Economic benefits; city centre	Increased use, economic benefits?	Increased use, encourages	Increased land values? Builds	Builds local social capital	?	Connectivity	Not directly	Reduce stigma, poor reputation
WHERE ARE BENEFITS REALISED?	wherever workers are present	neighbourhood level, residential areas, transport	In and immediately around school environments	Depends on make-up of volunteer groups	Immediate vicinity of green spaces	Depends on extent of intervention	Locally to site of intervention/catchment area	Local to site of intervention	Mostly at site of intervention	Person-specific rather than place-specific	Local to sites but could be citywide if reducing air/mgmg	Person-specific rather than place-specific	Neighbourhood scale, mainly among participants
IMPACT ON DEPRIVED AREAS	depends on resource allocation	depends on resource allocation	depends on resource allocation	Fixedly based, potentially N/A	none	Only if targeted	Only if targeted	Only if targeted, more likely to	Only if targeted	Only if targeted	Potentially	Only if targeted	Yes but hard to quantify
SPATIAL COVERAGE (LOW, MEDIUM, HIGH - RESOURCES NEEDED)	Depends on resource allocation	low if location but potentially high cumulative coverage Opportunity to take	Likely to be small scale, localised	N/A	Low	Potentially high	Low	Low but cumulative impact could be high	Low but potential cumulative impact	Low	Potentially quite high	Low but potential cumulative impact	Low to medium
COSTS - CAPITAL	initial	new infrastructure;	new and improved	Minimal	Depends on site and	Low	Equipment	Dependent on site	Range from	Low	initial capital costs	No	Basic facilities -
COSTS - REVENUE	mainly revenue; £25-£27k fee per worker	Ongoing maintenance;	Staffing, training, equipment	Staffing, volunteer support, equipment;	May need high levels of care and	Planning, maintenance needs	Facilitating maintenance of	Low but depends on planned	Maintenance; safety & security	Healthcare professionals, staff	Maintenance	Facilitation, volunteer support;	Guides for walks/activities for
COSTS - OTHER (E.G. TIME, VOLUNTEER HOURS)	?	Volunteer maintenance?	volunteers, staff time	Volunteers, staff time	Stakeholder engagement?	Volunteers?	Volunteers, facilitators, coaches	Volunteers, Community animators, artists etc?	Mostly informal volunteering but may require some animation	GP time for having and information, referred healthcare staff as volunteers?	Volunteer time picks up? Events?	Volunteer time, equipment for activities	Volunteer time, equipment for activities
KEY STAKEHOLDERS	all groups and users, potentially	Partners, special interest orgs.	school leaders; governors; parents;	Public health, NHS, voluntary orgs.	Planning; city centre employers and retail	Planners; developers;	Public health, sports clubs/agencies;	Community organisations;	Community groups, parents, children	GPs, health professionals;	Planning, community groups;	Healthcare professionals, GPs;	Groups to organise activities/animate
DECISION MAKERS	local authority / VOS	Local authority - planning	School leaders	Local authority / NHS	Planning	Planners, developers	Public health, partners, LEA	Landowners, planners	Partners, parks department	Clinical commissioning	Planning, partners (S Yorks Dept?)	Parks department permission for	Parks, planning, service providers
OPERATIONAL STAFF	Neighbourhood based teams, third	highways, parks & countryside	Teachers, external workers	Voluntary and community	City centre ambassadors;	Maintenance	Tenants/coaches	Security, facilitation	No specific staff needed	GPs, healthcare staff, community	Maintenance	Community workers	Facilitators/organise
VOLUNTEERS	Female groups	usually	usually	Yes	Unlikely	Possibly	Possibly	Depends on planned	Possibly	Refined third staff?	Cycling groups;	Local residents;	Local residents;
BENEFICIARIES AS LOGICS: Medium	all user groups	potentially all user	Limited	Essential - especially	Unlikely	As actor research -	Potentially	Potentially	Yes, if possible	Via patients' groups	All except those with	People with	Local residents
Cost	yes - increases	yes - better	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Potentially	Yes	Yes	Yes
Equity	potentially	potentially	Potentially	Yes	No	No	Potentially	Potentially	Potentially	Potentially	Potentially	Potentially	Yes
Scientific	?	yes (see literature)	Yes	?	?	Yes - biodiversity	Yes	Yes (but a little)	Yes (check literature)	Yes (check literature)	Yes (check literature)	Yes (check literature)	?
Political	?	? As quality?	Potentially	Potentially	Yes	Potentially	Potentially	Potentially - removing	Not obviously	Potentially	Potentially	Not obviously	Yes
Financial	?	Yes - 'gradual rise'	?	Potentially	Potentially	Potentially	Public	Yes	Not obviously	Yes, probably	Potentially positive	Possibly - speaker	Possibly

### **Capital investment in green spaces**

- Create a variety of 'green corridor' walking and cycling routes to and from major green and blue spaces away from busy roads.
  - Improve physical access to green and blue spaces for all residents: disability adaptations, public transport, and cycle or walking routes to and from green/blue spaces within easy reach of homes.
  - Re-use vacant land as temporary or permanent green spaces (including pop-up parks, temporary wildflower meadows, and community growing projects).
  - Increase the amount and variety of city centre green space to meet the needs of different users.
  - Increase the number, diversity and locations of urban trees.
  - Provide 'natural meeting places' outdoors in each neighbourhood: sheltered open locations with a variety of natural features.
  - Create new large urban parks and woodlands.
  - Create a network of micro or pocket parks.
  - Install simple buildings to serve as bases within parks – 'shipping container' model.
  - Harness employer contributions/involvement to support provision of city centre green spaces.
  - Provide toilets and cafés ('a loo and a brew').
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### **Maintenance, support and policy for green spaces**

- Increase the variety of planting in green spaces to attract more species and provide greater interest, including colourful, flowering vegetation.
  - Set minimum standards for regular sustained maintenance of green spaces, covering safety, cleanliness, variety of planting, and accessibility.
  - Facilitate enjoyment of woodlands and forests through the provision and maintenance of paths, toilets, and shelters.
  - Create planning guidance on the provision of gardens in new developments and on maximising views of green space from new buildings.
  - Ensure that all open green and blue spaces have a mix of benches and other seating, designed to maximise enjoyment of natural views.
  - Provide wayfinding, signposting and information to encourage longer stays.
  - Improve lighting and safety features to make natural spaces more accessible.
  - Introduce electric bike hire/loan to make green spaces more accessible.
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### **Social and healthcare interventions**

- Provide development workers (for example park rangers) to encourage and facilitate outdoor activities among a range of groups; and increase the visible presence of park workers to promote a sense of safety.
  - Offer 'green prescriptions' of activities in natural environments to supplement medication or talking therapies.
  - Support voluntary and community organisations in providing volunteering opportunities in natural environments.
  - Run nature-based activities in public green spaces for people with or recovering from mental health problems.
  - Support voluntary and community organisations in providing activities that encourage people (including family groups) in deprived neighbourhoods to enjoy green space.
  - Provide areas within existing green spaces where children can stay and play or be outside, within walking distance of their homes.
  - Provide opportunities for outdoor learning in schools, including forest schools and 'exploring nature' classes.
  - Support fitness and exercise groups in public green spaces and advise on appropriate provision of play/fitness facilities.
  - Provide 'know your patch' green neighbourhood guides to residents, especially in deprived communities.
  - Provide organised social or health walks in green spaces to encourage people to spend time outdoors.
  - Support gardening projects (including shared allotments) in deprived areas and in schools.
  - Offer green space guides and information about the therapeutic uses of natural environments to all mental health service users.
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### **Cross-cutting interventions to facilitate specific green space initiatives**

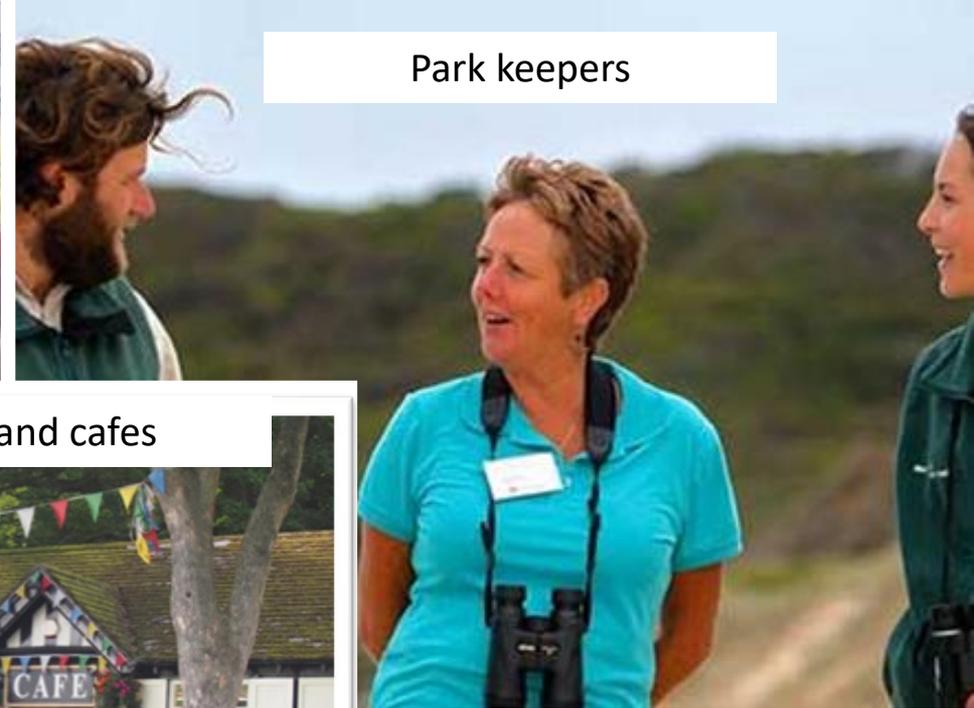
- Provide generic community development workers within a neighbourhood management setting that brings different professional interests together.
  - Slow down traffic flow – limiting the dominance of motor traffic through traffic light sequencing, crossings and speed limits.
  - Take action to tackle air quality as a means of encouraging the use of green space, walking, and cycling.
  - Change educational curricula to support outdoor learning.
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Cycling & walking routes



Park keepers



Toilets and cafes

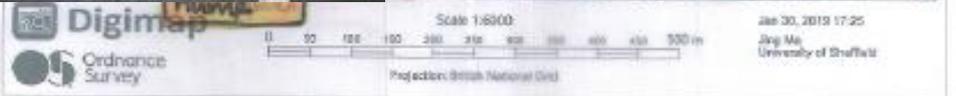
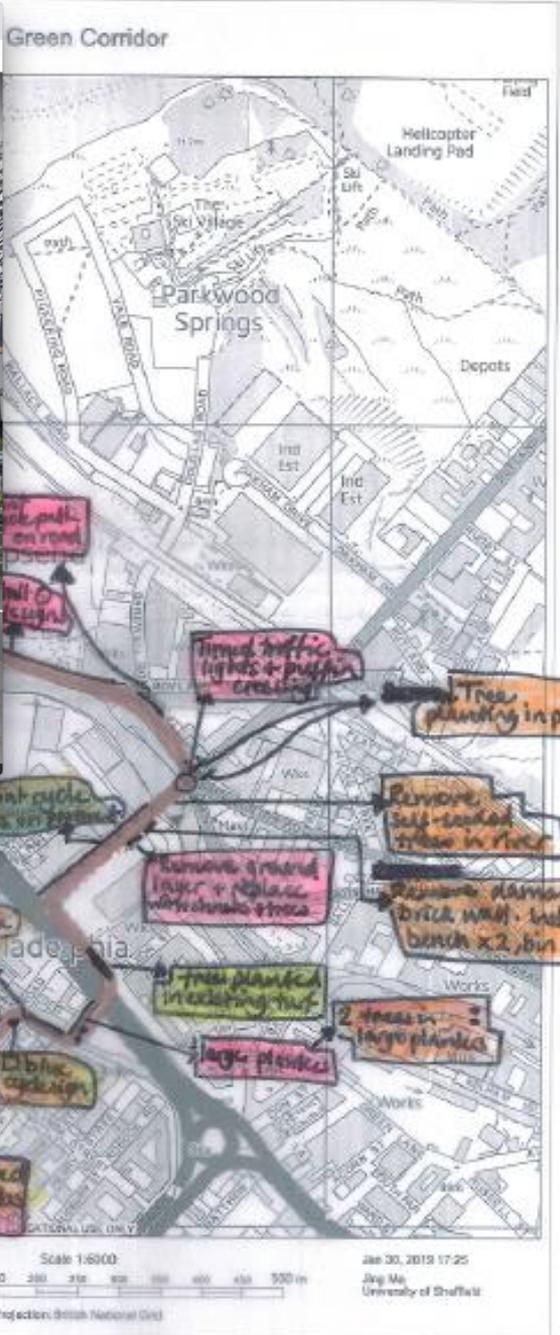


Social activities



Maintenance standards





# CBA results: creating a cycling and walking route

	Estimation 1: 500 users	Estimation 2: 1,000 users	Estimation 3: 1,600 users	Estimation 4: 3,000 users	Estimation 5: 5,000 users
Total costs	1,529,109	1,529,109	1,529,109	1,529,109	1,529,109
Total benefits	545,000	1,090,000	1,744,000	3,270,000	5,450,000
Net cash flow	-984,109	-439,109	214,890	1,740,890	3,920,890
NPV	-947,149	-493,894	50,011	1,319,125	3,132,145
IRR	NA	-13%	5%	30%	61%








**WHAT GREENSPACE MANAGERS NEED TO KNOW**



Improving wellbeing through urban nature




**WHAT HEALTHCARE PROFESSIONALS NEED TO KNOW**



Improving wellbeing through urban nature




**WHAT PLANNERS AND LOCAL GOVERNMENT POLICYMAKERS NEED TO KNOW**



Improving wellbeing through urban nature




**WHAT POLICYMAKERS NEED TO KNOW**



Improving wellbeing through urban nature





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