



# **Not just a pretty place – the economic case for a Green City**

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# A little context...

**time**  
and  
**place**

# Time - Future Cities



- We shape our towns and cities in the context of
  - the surrounding buildings, streets and infrastructure
  - the local community
  - the policy context (national and local)
  - the present fashion
  - the past
- The places we create today will be used tomorrow.
- **We need to create our towns and cities in the context of the future**

# The Great Acceleration

1950 marked the beginning of a massive acceleration in human activity and large-scale changes in the Earth system.



SOURCE: igbp.net | Steffen et al., 2005, Global Change and the Earth System, Springer, pp. 132-133  
DESIGN: Globaia.org

- International Geosphere-Biosphere Programme - Global Change  
<http://www.igbp.net/globalchange/greatacceleration.4.1b8ae20512db692f2a680001630.html>

# Place – Ecosystem Cities



- **We need to create our towns and cities in the context the ecosystems**



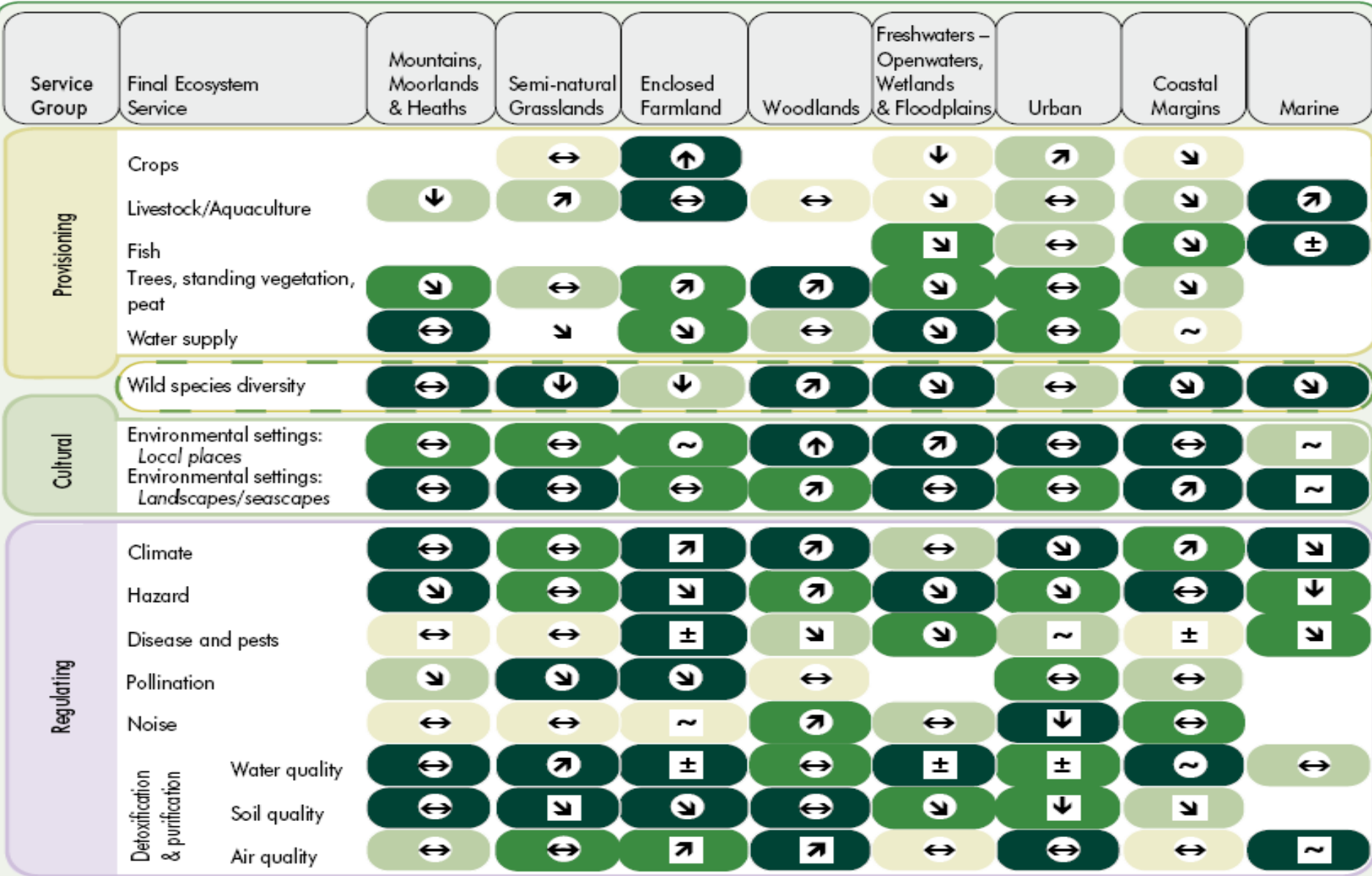


Figure 5 Relative importance of Broad Habitats in delivering ecosystem services and overall direction of change in service flow since 1990. This figure is based on information synthesized from the habitat and ecosystem service chapters of the UK NEA Technical Report (Chapters 5–16), as well as expert opinion. This figure represents a UK-wide overview and will vary nationally, regionally and locally. It will therefore also inevitably include a level of uncertainty; full details can be found in the Technical Report. Arrows in circles represent where there is high evidence for or confidence in the direction of service flow amongst experts; arrows in squares

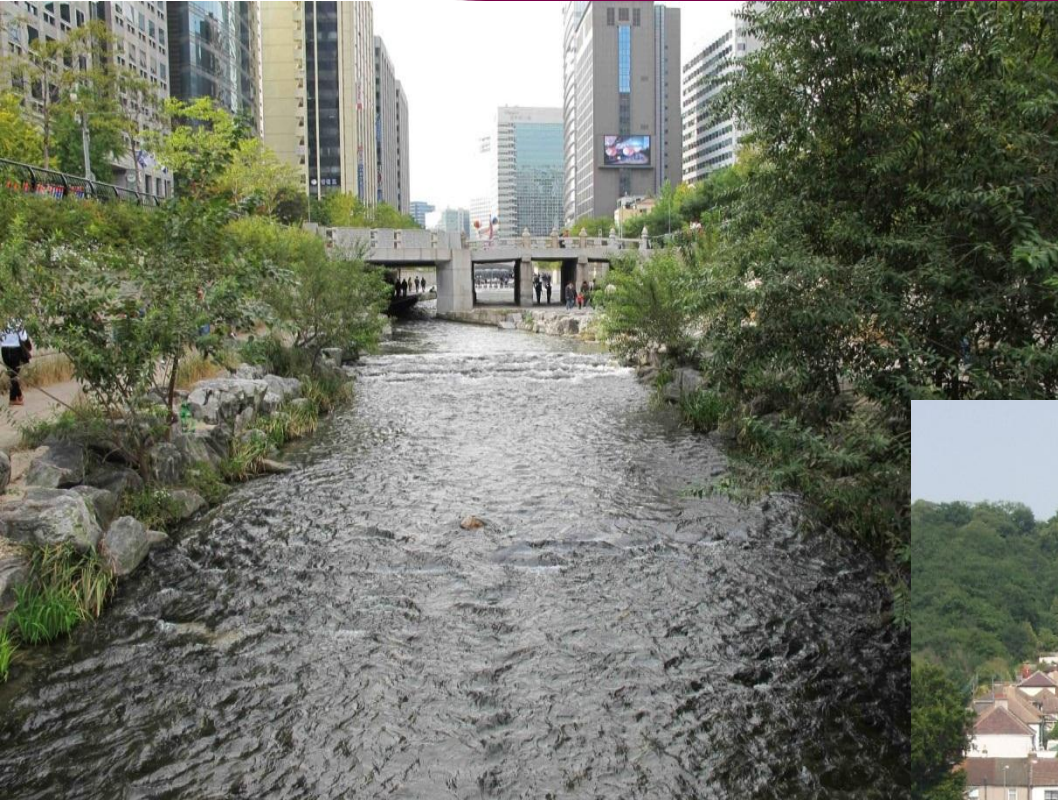
Importance of Broad Habitat for delivering the ecosystem service

- High
- Medium – High
- Medium – Low

Direction of change in the flow of the service

- ↑ Improving
- ↗ Some improvement
- ↔ No net change
- ± Improvement and/or deterioration in different locations

# Place – Ecosystem Cities – towns and cities in the context the ecosystems



- **Green Infrastructure**  
=The ecosystems within  
which they are built





# Place – Ecosystem Cities – towns and cities in the context the ecosystems



- **Green Infrastructure = The ecosystems with which they are built**



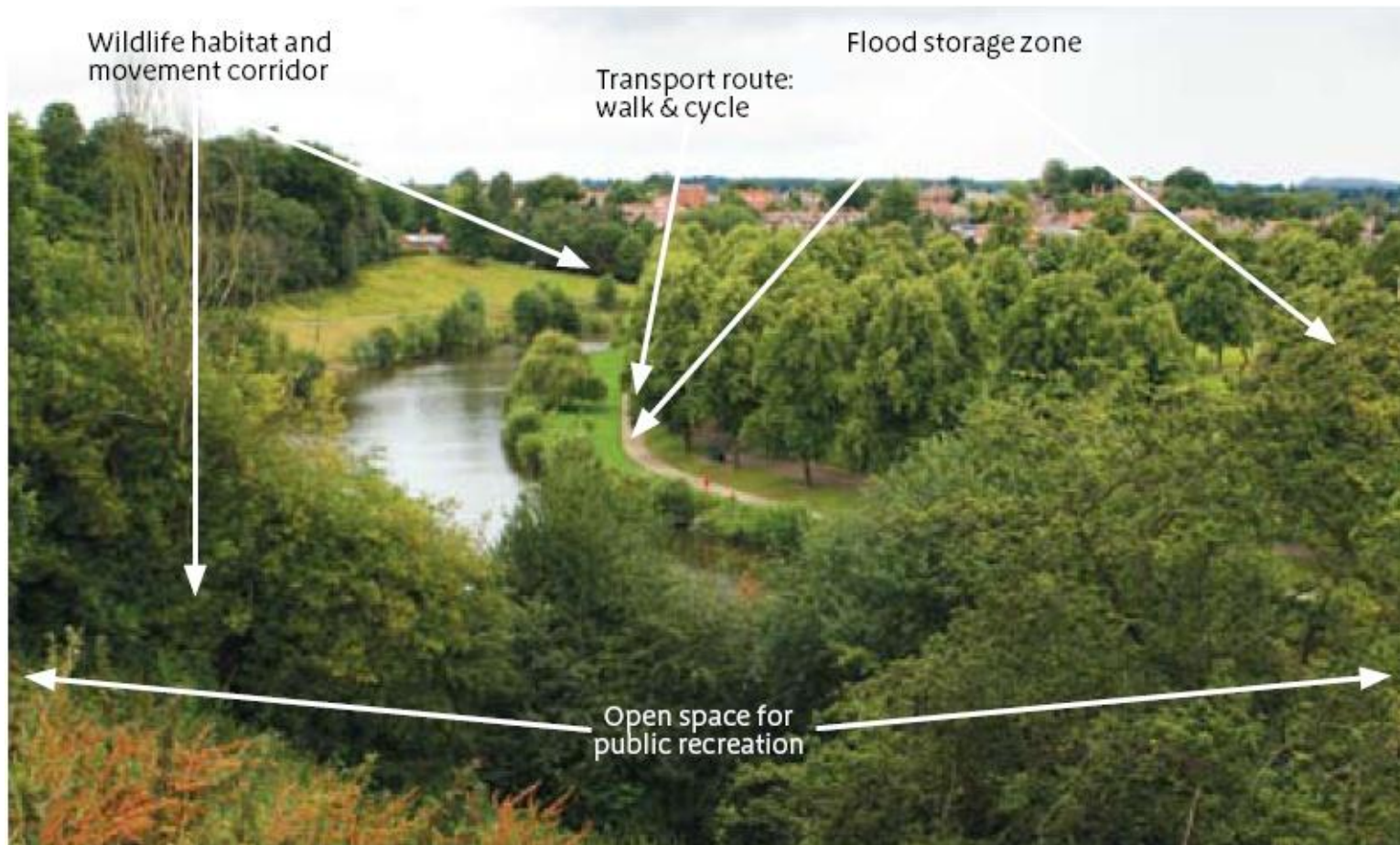
# GI = Ecosystems of which the town is built Eco Machines



<http://toddecological.com/eco-machines/>

<http://greenfootprintsblog.wordpress.com/2010/12/01/dr-john-todd/>

# Multi-functional use of land



The multifunctional role of green infrastructure, an example from Shrewsbury  
Photo by Nigel Jones, Natural England



# But does it all really add up?

Introducing the Microeconomic Evidence for the Benefits of Investment in the Environment - review



# Green Infrastructure can improve



- **Air Quality**
- **Flood Control**
- Urban run-off and pollution
- Noise pollution
- Business investment
- Wealthier places
- Mental health
- Physical activity and health
- **Future proofing**
- Sociability
- Tourism

- Within high income countries, **2.5% of all deaths are estimated to be attributable to urban outdoor air pollution**, specifically particulate matter
- In 2010, there were 48,016 deaths in the UK attributed to air pollution. By comparison, there were 52,490 attributed to physical inactivity, and 18,833 attributed to alcohol and drug use.
- Research in Torbay showed that Torbay's trees removed 22.88 tonnes of O<sub>3</sub>, 17.97 tonnes of PM<sub>10</sub>, 7.91 tonnes of NO<sub>2</sub>, and 1.3 tonnes of SO<sub>2</sub> annually
- **This leads to an annual health benefit of £1.33 million** (central estimate), without including the SO<sub>2</sub> <sup>(3)</sup>.
- But need to pick the right trees



# Flood control



- **5.2 million houses in the UK are at risk of flooding.**
- The average annual cost of flooding in England is estimated at over **£1 billion.**
- By 2035 there will be an additional **350,000** properties in England at significant risk of flooding.
- Test plots in Manchester demonstrated that over a year, the addition of a street tree could reduce stormwater runoff by between **50 and 62 percent.**

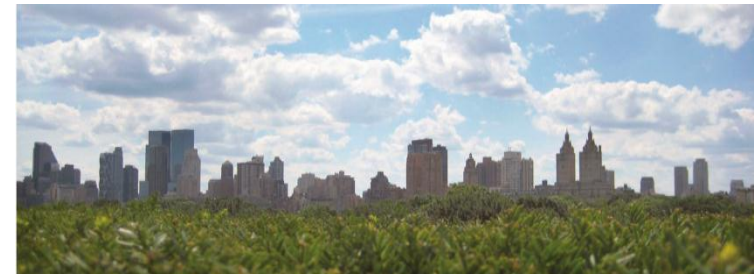




# A New York example



- Aim: to reduce combined sewer outflows into the harbour
- Method: using street trees, swales, bio-infiltration, blue and green roofs to capture first inch of rainfall on 10% of the city<sup>(1)</sup>.
- This will save \$1.5 billion dollars over a grey only approach <sup>(1)</sup> .



## NYC GREEN INFRASTRUCTURE PLAN

A SUSTAINABLE STRATEGY FOR CLEAN WATERWAYS

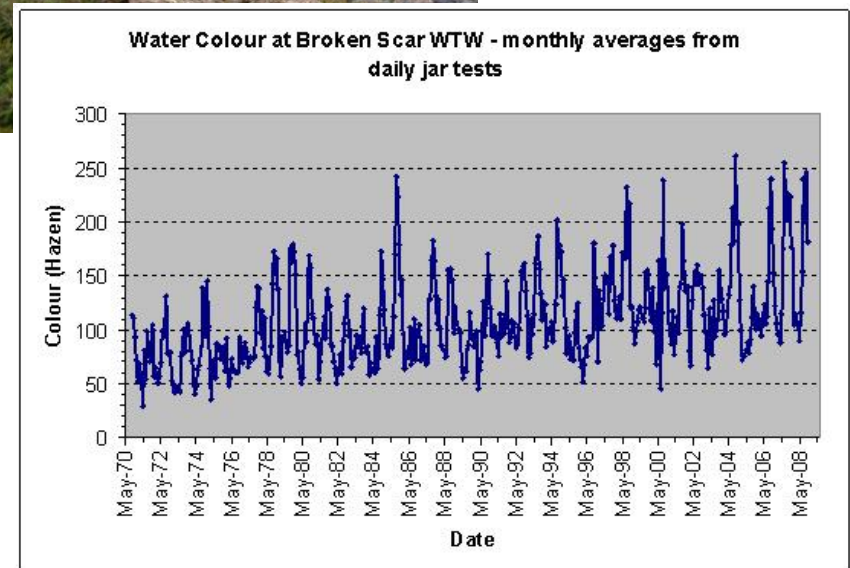
Michael R. Bloomberg, Mayor  
Cas Holloway, Commissioner



1) NYC ENVIRONMENTAL PROTECTION 2010. NYC Green Infrastructure Plan: A sustainable strategy for clean waterways.

# Links to water companies programmes

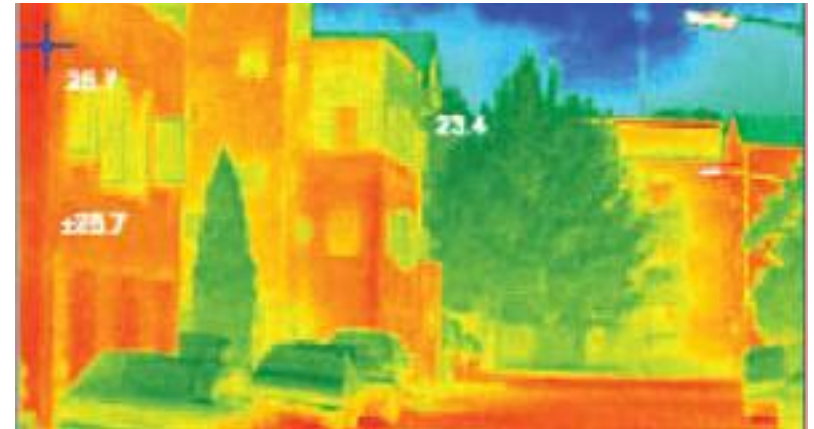
- Upland catchments suffering from deteriorating colour
- Expensive to treat - end of pipe solutions are not sustainable
- Catchment solutions provide additional benefits
- Combining public and private funds



# Future proof?

**South-East England has less water per head than Morocco or Egypt<sup>(1)</sup>.**

- **SUDS can recharge aquifers through supporting infiltration and hold water for non-drinking water uses.**
- Trees, parks, green roofs, and ponds/lakes can all help to reduce heat retention.
- Parts of the food system are vulnerable to higher energy costs. Green Infrastructure can allow food to be grown near home.





# Victoria Business Improvement District



- Fitting 25 ha of green roofs could deal with 80,000m<sup>3</sup> of rain water each year and prevent future surface water flooding in Victoria BID
- When implemented, green infrastructure opportunities identified by Victoria BID could reduce peak summer temperatures by up to 5.1°C

# GI as a catalyst for economic growth



- *GI encourages inward investment to an area*
- *GI attracts increased visitor spending in an area*
- *GI saves environmental costs*
- *GI provides health benefits*
- *GI generates employment*

## ***GI saves environmental costs:***

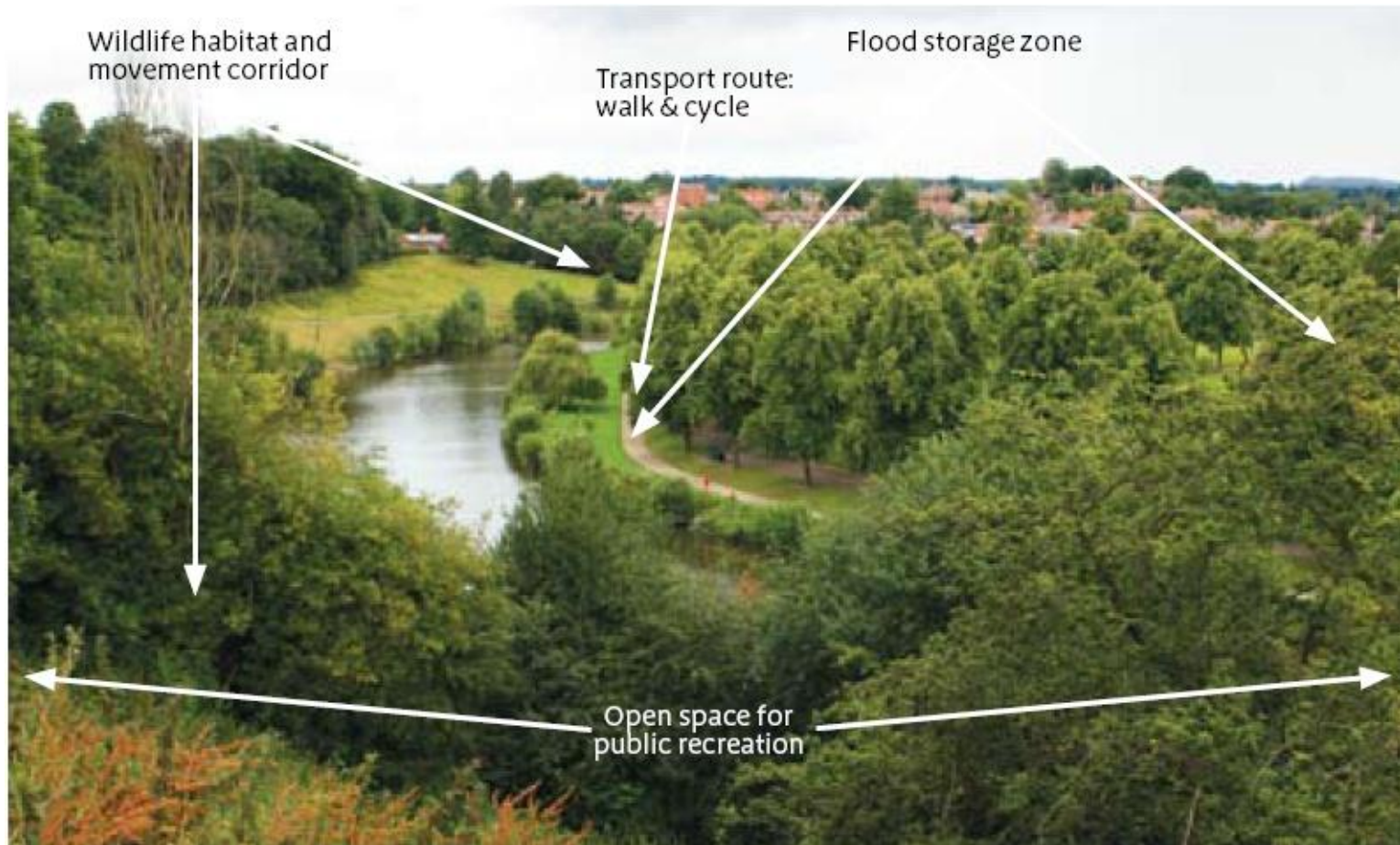
- Unearthing of the Cheonggyecheon Stream in Seoul and related greening of the area

reduced the temperatures to 3 – 6 °C less than those on a parallel road four to seven blocks away.

lead to a 35% reduction in the small particle concentration in the air leading to noticeable improvement in air quality in the area.



# Green Infrastructure multi-functional use of land



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# Thank you

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# Natural England's Role

Evidence, advice, expertise, support



- **Microeconomic Evidence for the Benefits of Investment in the Environment ([MEBIE](#))**
- **Monitor of Engagement with the Natural Environment ([MENE](#))**
- An assessment [GI valuation tools](#)
- [GI as a catalyst for economic growth](#) (with Defra)
- [Economic Benefits of Greenspace](#) a Forestry Commission report
- **Natural England's [Health and the Natural Environment](#) web page** info pack contains a wealth of research references.
- Financial support for GI delivery and strategy development
- **Natural England's [Green Infrastructure webpage](#) – including links to case studies**