

UNIVERSITY OF
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Green Infrastructure (& a little urban allometry)

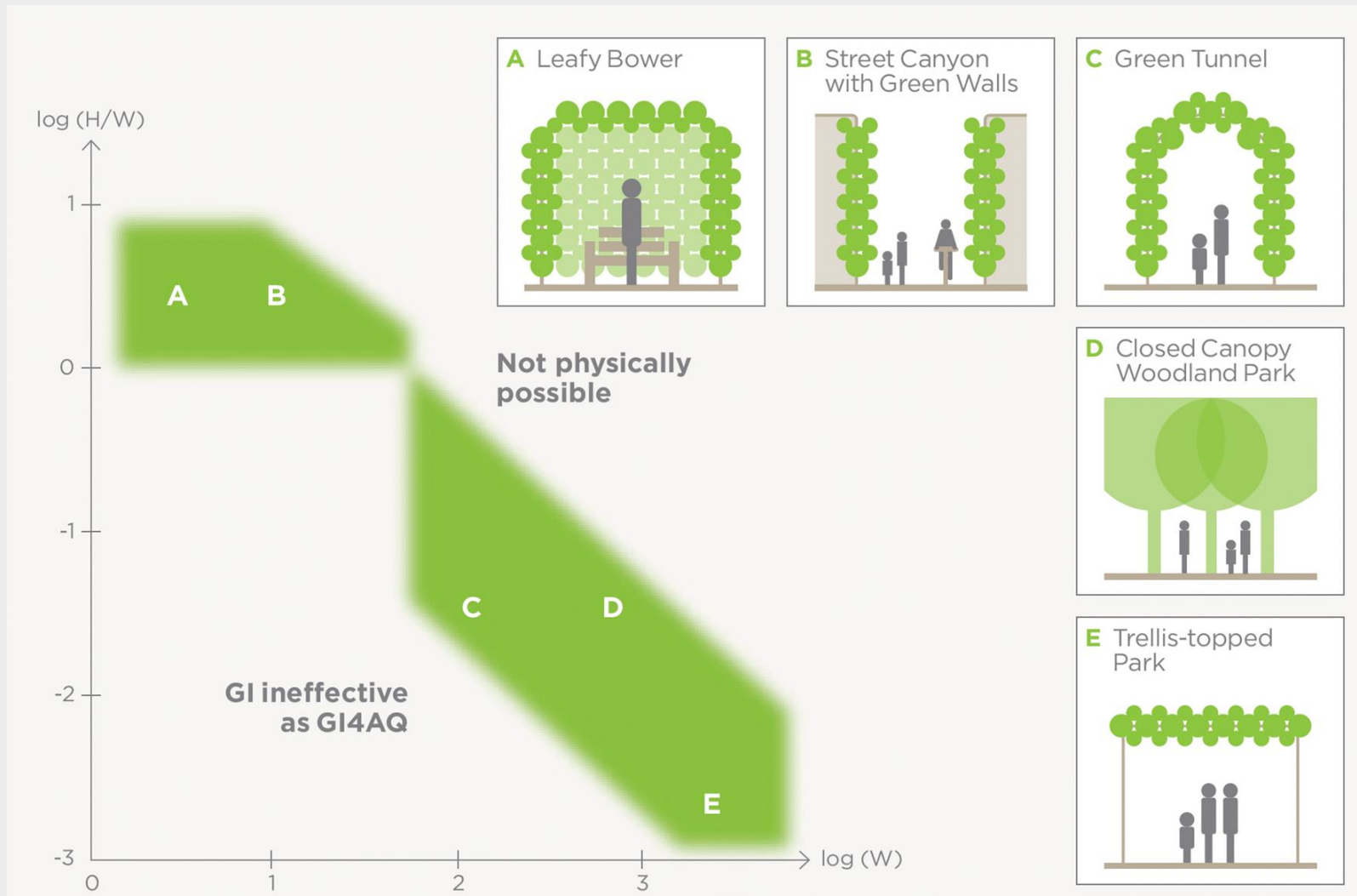
GI4AQ

Emma Ferranti, James
Levine, Helen Pearce,
Xiaoming Cai, Rob
MacKenzie, Nick
Grayson, Bill Bloss

WM-AIR
CLEAN AIR SCIENCE FOR
THE WEST MIDLANDS

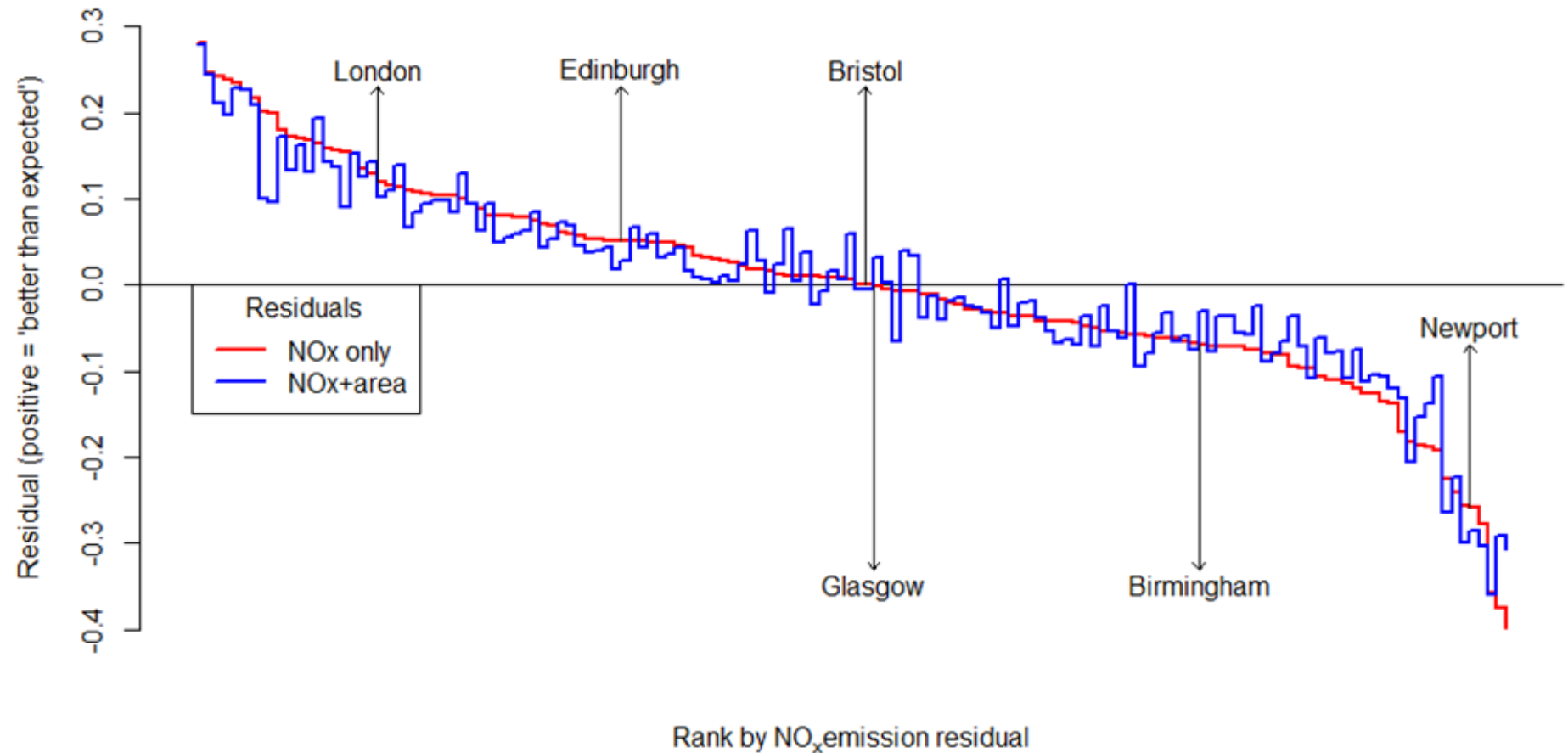


GI4AQ: when and where GI is useful



From: Hewitt, C. N., Ashworth, K., & MacKenzie, A. R. (2019). Using green infrastructure to improve urban air quality (GI4AQ). *Ambio*, 1-12.

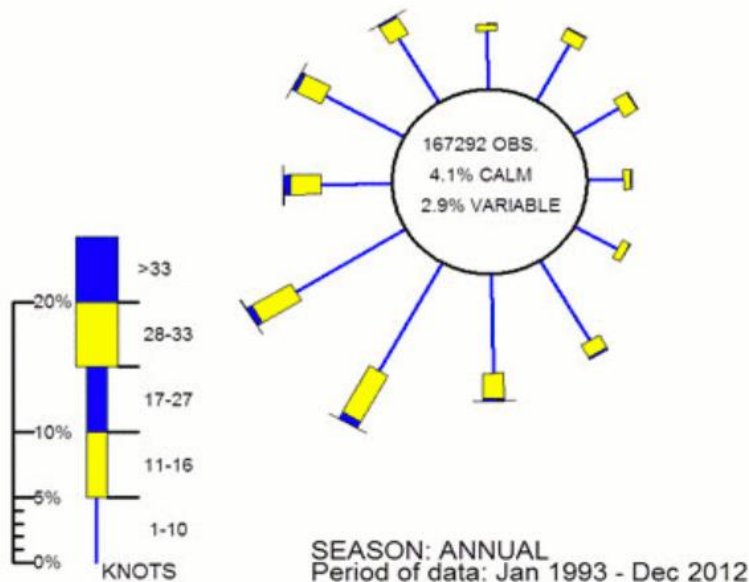
Cities doing better or worse than expected



GI4AQ for developments: multiple scales

1. Regional scale

- prevailing wind influences dispersion
- prevailing wind determines sources & receptors
- large-scale regional green infrastructure (ozone)



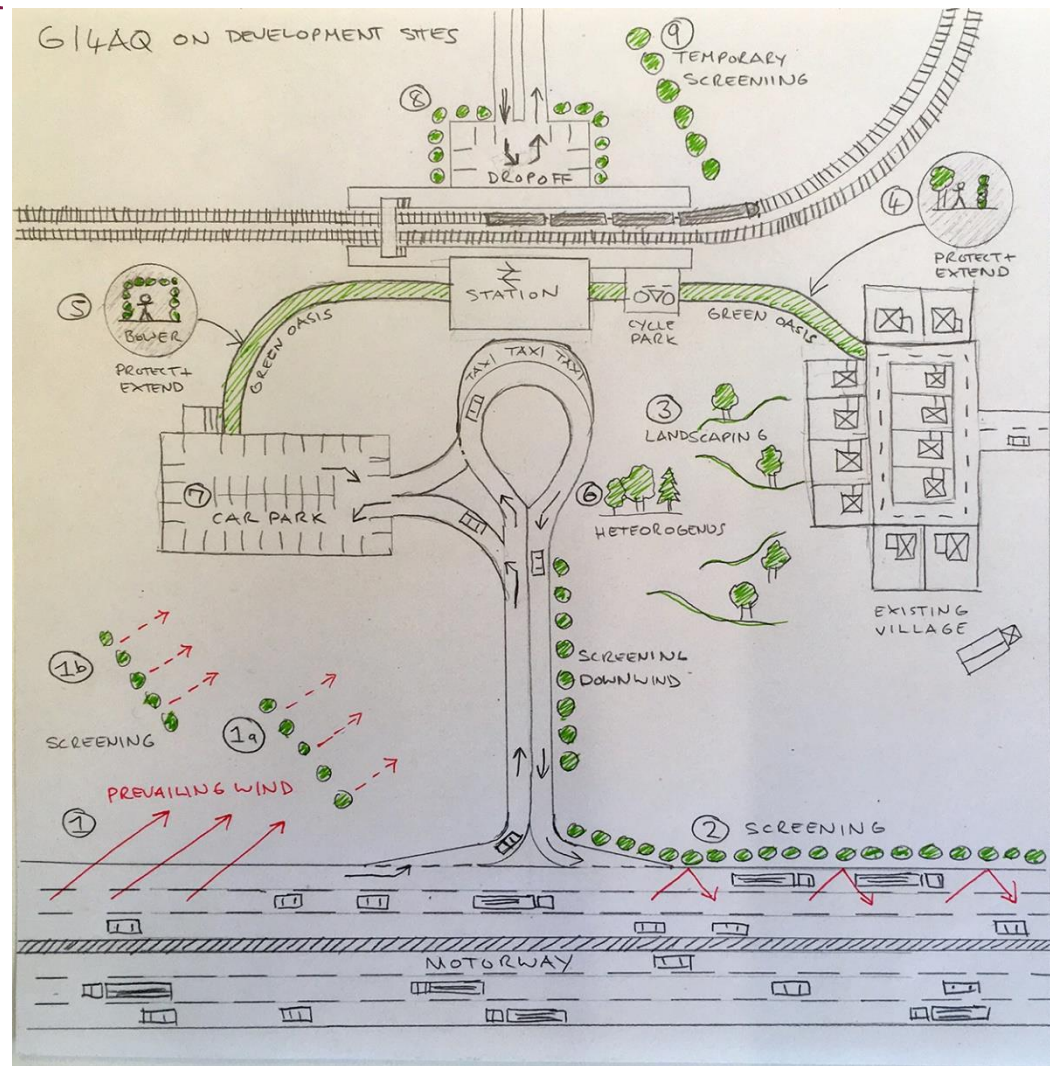
GI4AQ for developments: multiple scales

2. Regional/site scale

- ❑ REDUCE: facilitate active transport
- ❑ REDUCE: minimise distance of private vehicle journeys & make these smooth / free-flowing
- ❑ EXTEND: GI and water make space for clean air
- ❑ EXTEND: diverse landscaping to increase turbulence and promote dispersion
- ❑ EXTEND/PROTECT: GI screening to keep pollution at source where people are near roads
- ❑ EXTEND/PROTECT: landscaping to enhance dispersion ahead of downwind receptors

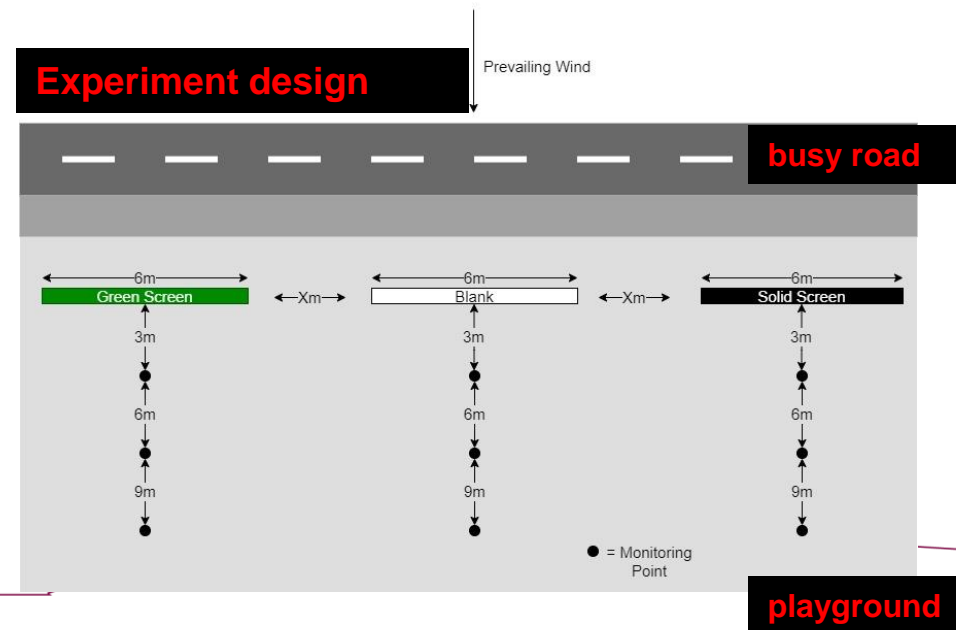
GI4AQ for developments

- Developing guidance with stakeholder on GI4AQ for developments, using a specific site as exemplar
- Guidance approaches GI4AQ at multiple scales: regional, site, local, vegetation
- Measurements and test interventions on site to support initially qualitative guidance



Experimental Work: Vertical Greening Systems

- Collaborating with PhD research at University of Glasgow by Neil Jackson
- Monitoring (PM) the effectiveness of green screens on school playgrounds
- Monitoring to take place summer 2020 (currently recruiting school in WMCA – **contact Emma to suggest schools**)



GI4RAQ tool is coming soon!

GI4RAQ

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Register Now!



Final Comments on GI

- ❑ As part of urban infrastructure, **Green Infrastructure (GI)** can influence **Reduce**, **Extend**, and **Protect**
- ❑ If strategically designed, **GI** can mitigate poor air quality on a local-scale
- ❑ **BUT GI** can never remove all air pollutants, & is less efficient with distance from the pollutant source
- ❑ In certain circumstances, **GI** can exacerbate poor air quality (e.g. by putting a lid on street canyons)
- ❑ **GI** produces VOCs that form ozone. To be significant for poor air quality you need millions of trees & strong sunlight