



## Greening the Urban Infrastructure:

Living Walls, Green Roofs & Rainwater

## AGENDA

1. Environmental challenges and solutions for urban areas
2. How we benefit through urban greening
3. Pushing the Green envelope
4. Storm water attenuation & rain gardens
5. What the future holds
6. Questions



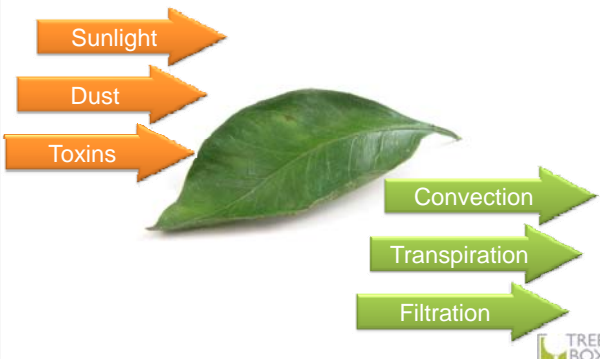
## 1. ENVIRONMENTAL CHALLENGES & SOLUTIONS FOR URBAN AREAS

### 1. ENVIRONMENTAL CHALLENGES



### 1.2 NATURE'S SOLUTION

Does it all



### 1. LEAF STRUCTURE

BIOMIMICRY – Embracing Nature's solution is the way forward



### 1. ACCEPTED GREENING SOLUTIONS

- Trees**
  - Effective solution when already in place
  - Challenges to planting new trees in urban environments
- Green Roof**
  - 25% reduction in cooling required on top floor, steeply drops to 1% within 3 floors
- Living Wall**
  - 25% reduction to cooling on all floors
  - Urban canyon solution



### 1. TRANSFORMATIONAL URBAN GREENING

Greener cities are:

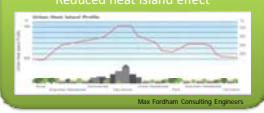


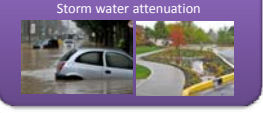
- cleaner
- healthier
- more attractive






### 2. HOW WE BENEFIT THROUGH URBAN GREENING

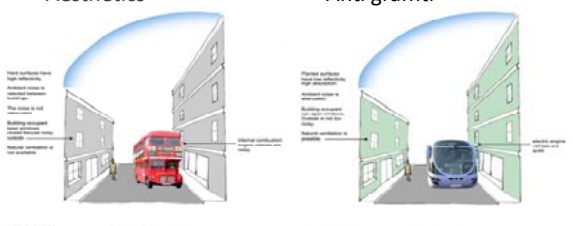
### 2. ENVIRONMENTAL BENEFITS

- Reduced heat island effect**  

- Air purification**  

- Increased biodiversity**  

- Storm water attenuation**  





### 2. HUMAN BENEFITS

- Dust suppression
- Noise reduction
- Aesthetics
- Air quality
- Health & wellbeing
- Anti graffiti

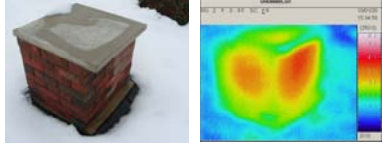


Max Fortham Consulting Engineers

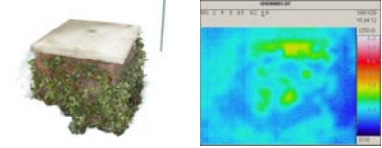


### 2. THERMAL BENEFITS OF VEGETATED SURFACES


Harborne blocks brick box – no plant covering



Harborne blocks brick box – lightly covered in Hedera Helix



Russ Cameron University of Reading (Jan 2003)



## 2. THERMAL BENEFITS



## 2. THERMAL BENEFITS OF VEGETATED SURFACES



## 3. PUSHING THE GREEN ENVELOPE



## 3 GREEN ROOFS

- Passive reduction in thermal loads
- Storm water attenuation
- Lower CO<sub>2</sub>, NO<sub>2</sub> and VOC levels



## 3. ROOF TOP GARDENS



- Local food
- Community gardens
- Reclaim unused spaces



## 3. CHANGING PERCEPTIONS

More than just aesthetics..... does green infrastructure have a payback period? Good design pays for itself.



### 3. LIVING WALLS

ANS System

BioTecture

Patrick Blanc

Treebox

### 3. HIGH IMPACT FEATURES

- Aesthetic appeal
- Uplifting
- Scalable

### 3. WHERE DO WE FIT IN?

Vertical Growing Products, Solutions & Services

- Ornamental feature
- Vertical allotments
- Living louvers
- Rain gardens
- Reusable green hoarding
- Leasing/ hire solutions



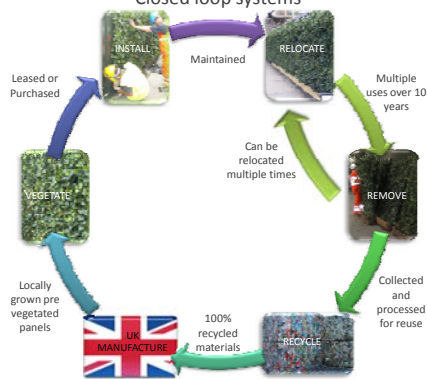
### 3. REUSABLE GREEN WALLS

- Instant greening solutions for short & long term applications
- Construction sites & roadsides
- Dust suppression & noise abatement
- No water, power or waste
- 100% reusable



### 3. SERVICING GREENER CITIES

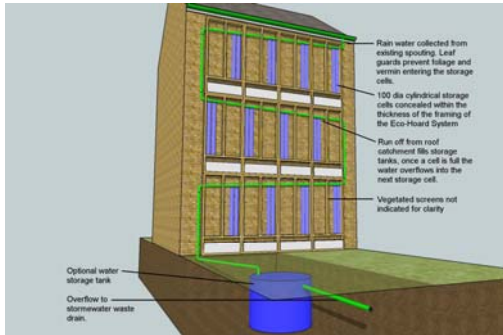
Closed loop systems



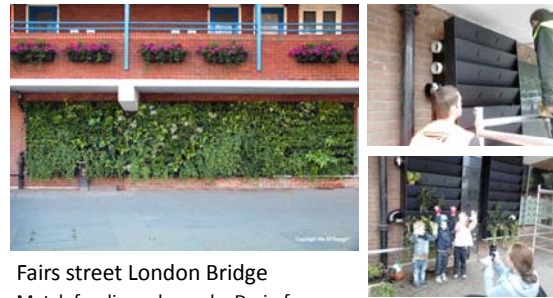
### 4. STORM WATER ATTENUATION & RAIN GARDENS



#### 4. VERTICAL RAIN GARDENS



#### 4. VERTICAL RAIN GARDENS



Fairs street London Bridge  
Match funding scheme by Drain for London to attenuate storm water



#### 5. WHAT THE FUTURE HOLDS

Transformational Urban Greening

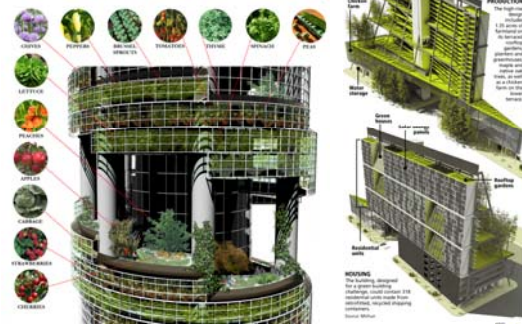


- Alternative to cladding
- Greenfrastructure
- Changing Cityscapes
- Urban Farming



#### 5. URBAN FARMING

Retrofitted or purpose built structures



#### INTEGRATED GREEN FACADES

Living cladding and weather protection



Paris Hotel by Patrick Blanc

London Atheneum hotel by Patrick Blanc



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QUESTIONS

