



environmental design in practice

TS_02 - autumn term

Giles Bruce - MArch SED (dist) BArch, RIBA, ARB

What does **'green'** mean?

What does 'green' mean?

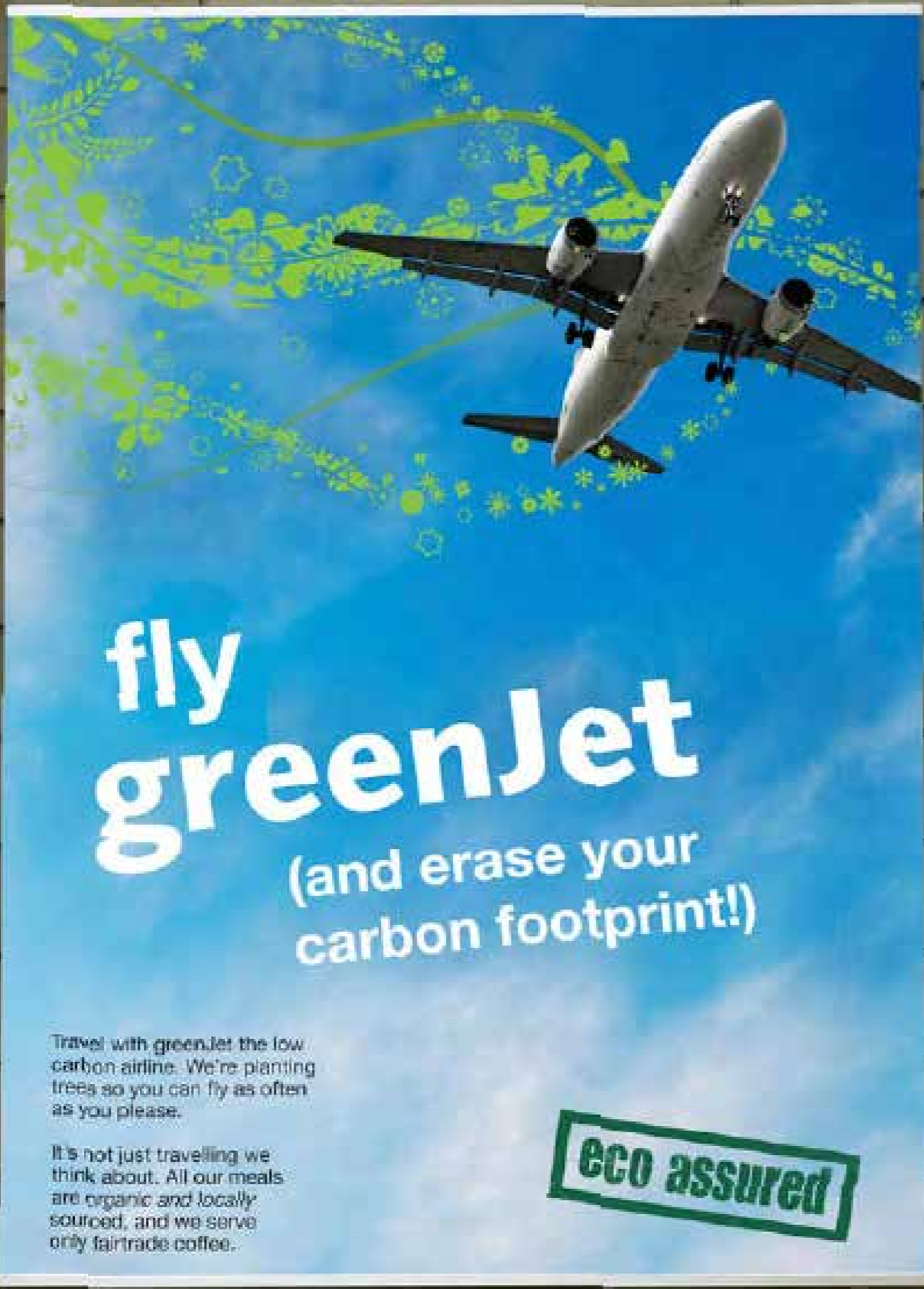


**fly
greenJet**
(and erase your
carbon footprint!)

Travel with greenJet the low carbon airline. We're planting trees so you can fly as often as you please.

It's not just travelling we think about. All our meals are organic and locally sourced, and we serve only fairtrade coffee.

eco assured



OVER THE TOP images



OBVIOUS LIES!

fluffy language

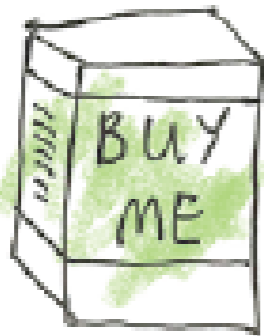
Nothing to do with the product!

No data, specifics or certified labels



1. Fluffy language

Words or terms with no clear meaning
e.g. 'eco-friendly'



2. Green products v dirty company

Such as efficient light bulbs made in a factory which pollutes rivers



3. Suggestive pictures

Green images that indicate a (un-justified) green impact e.g. flowers blooming from exhaust pipes

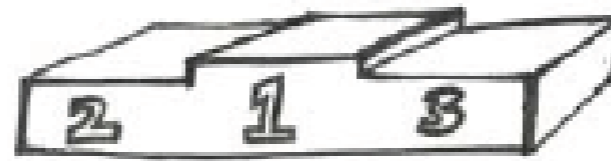
4. Irrelevant claims

Emphasising one tiny green attribute when everything else is un-green



5. Best in class?

Declaring you are slightly greener than the rest, even if the rest are pretty terrible



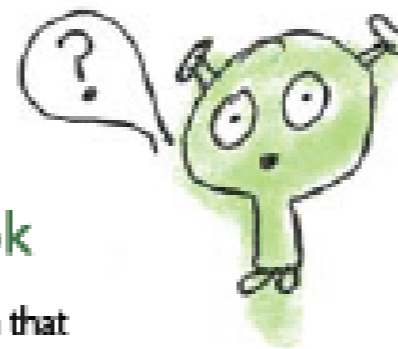
6. Just not credible

'Eco friendly' cigarettes anyone? 'Greening' a dangerous product doesn't make it safe



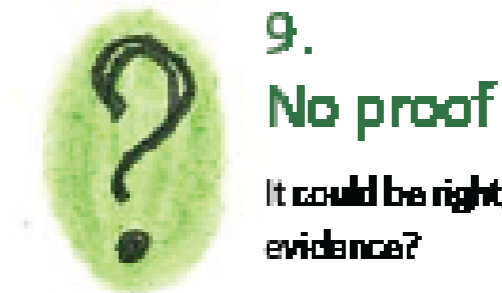
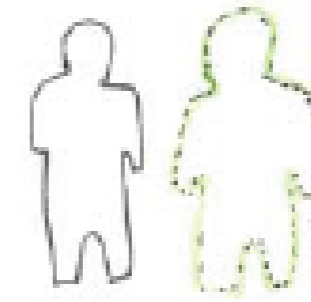
7. Gobbledygook

Jargon and information that only a scientist could check or understand



8. Imaginary friends

A 'label' that looks like third party endorsement ... except it's made up

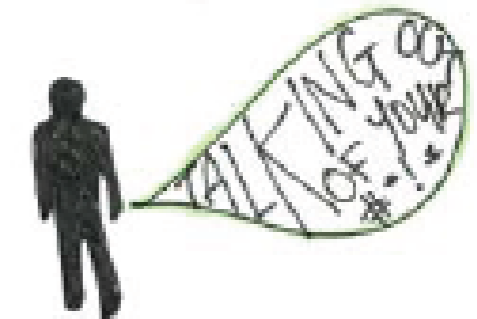


9. No proof

It could be right, but where's the evidence?

10. Out-right lying

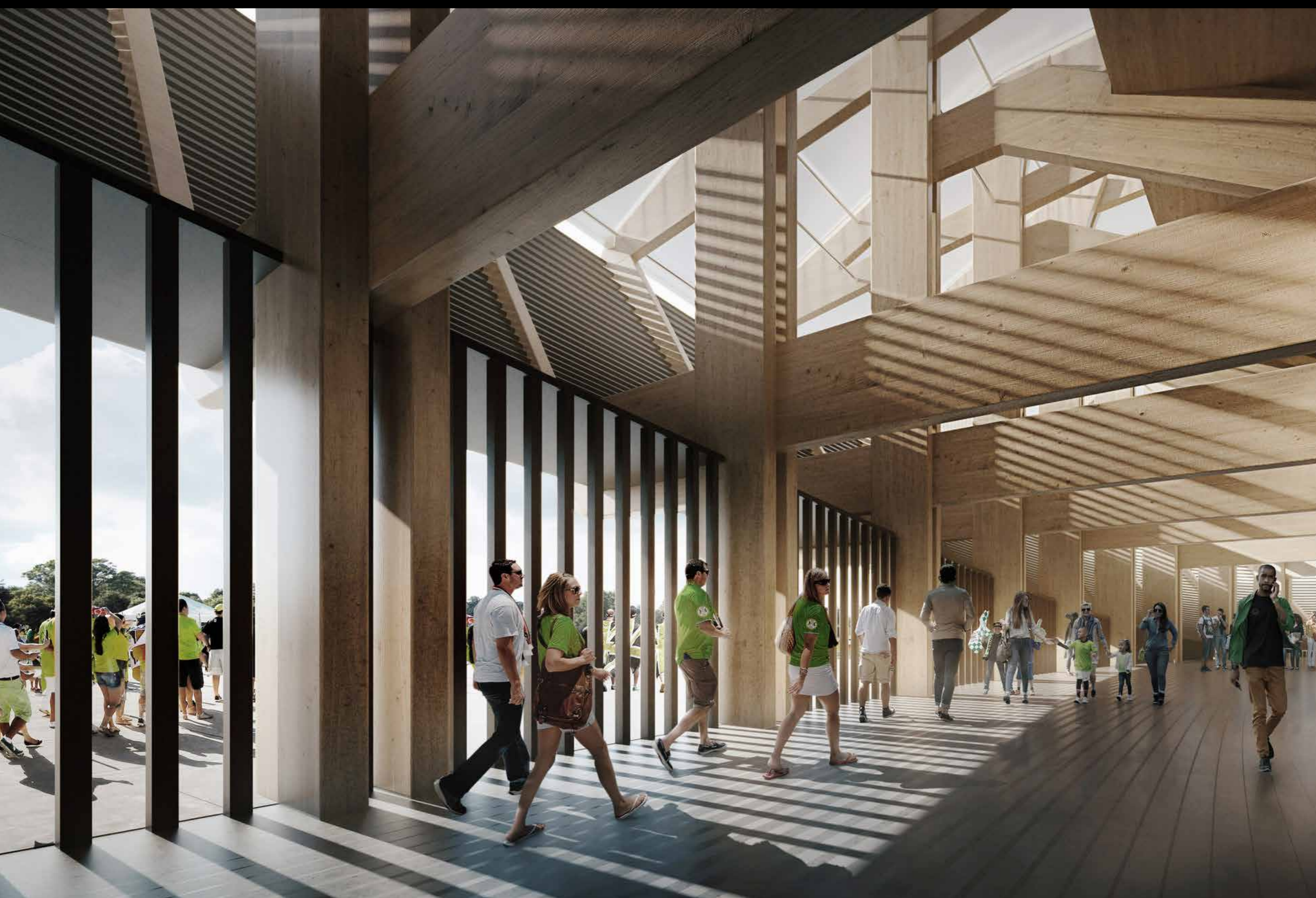
Totally fabricated claims or data





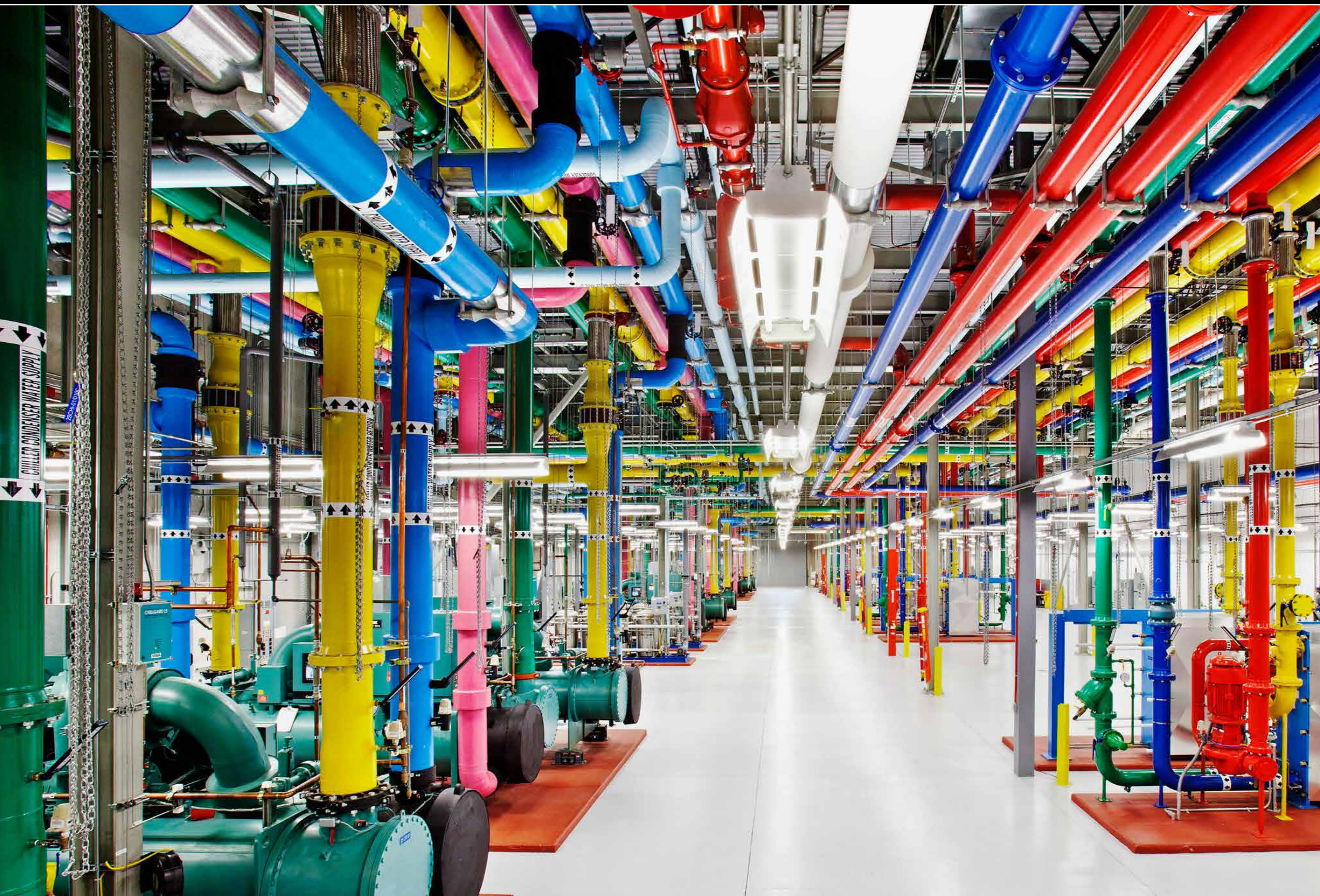
Zaha Hadid Architects has been commissioned to design a 5,000-seat stadium built entirely from wood, for the British football club Forest Green Rovers.

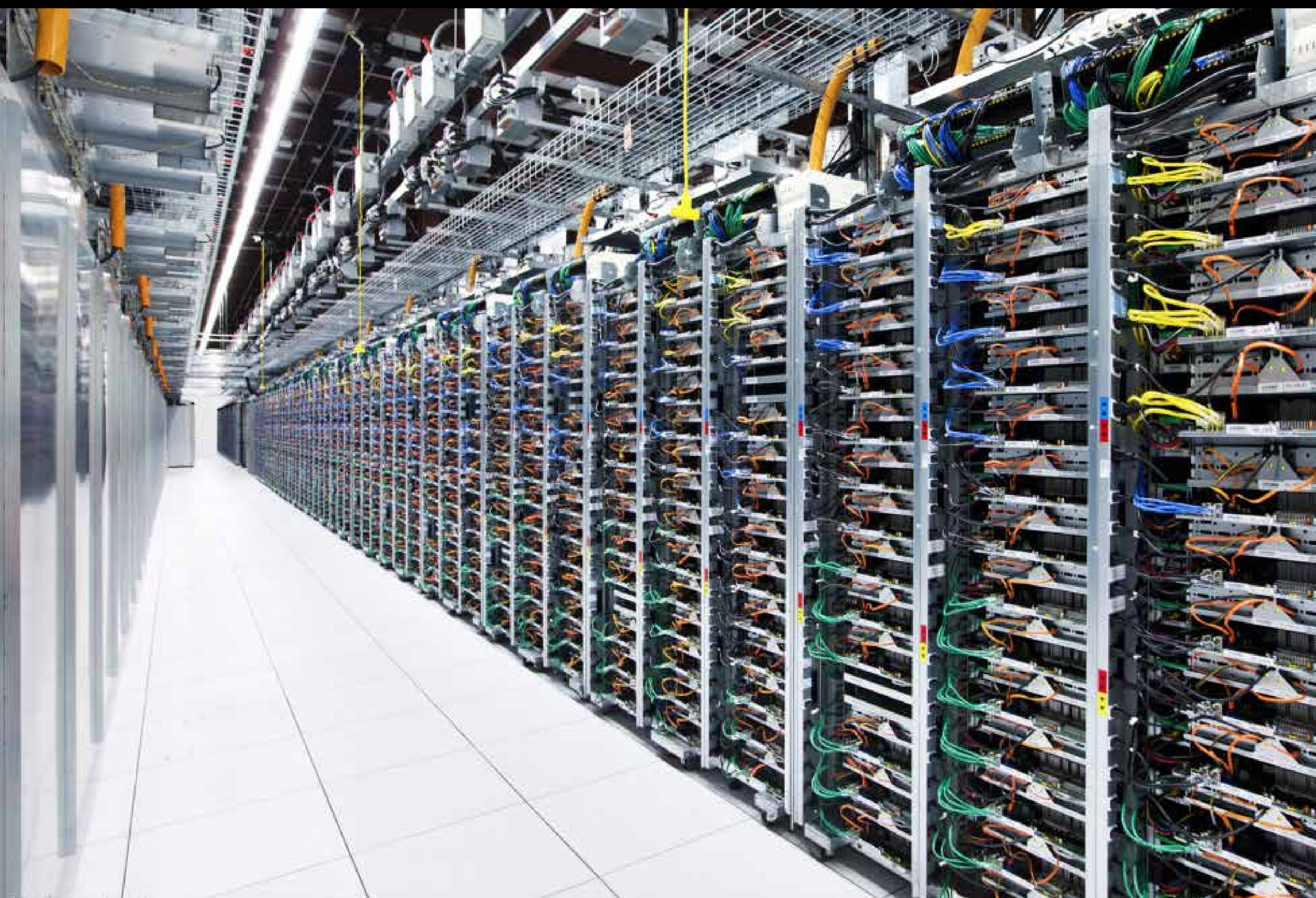


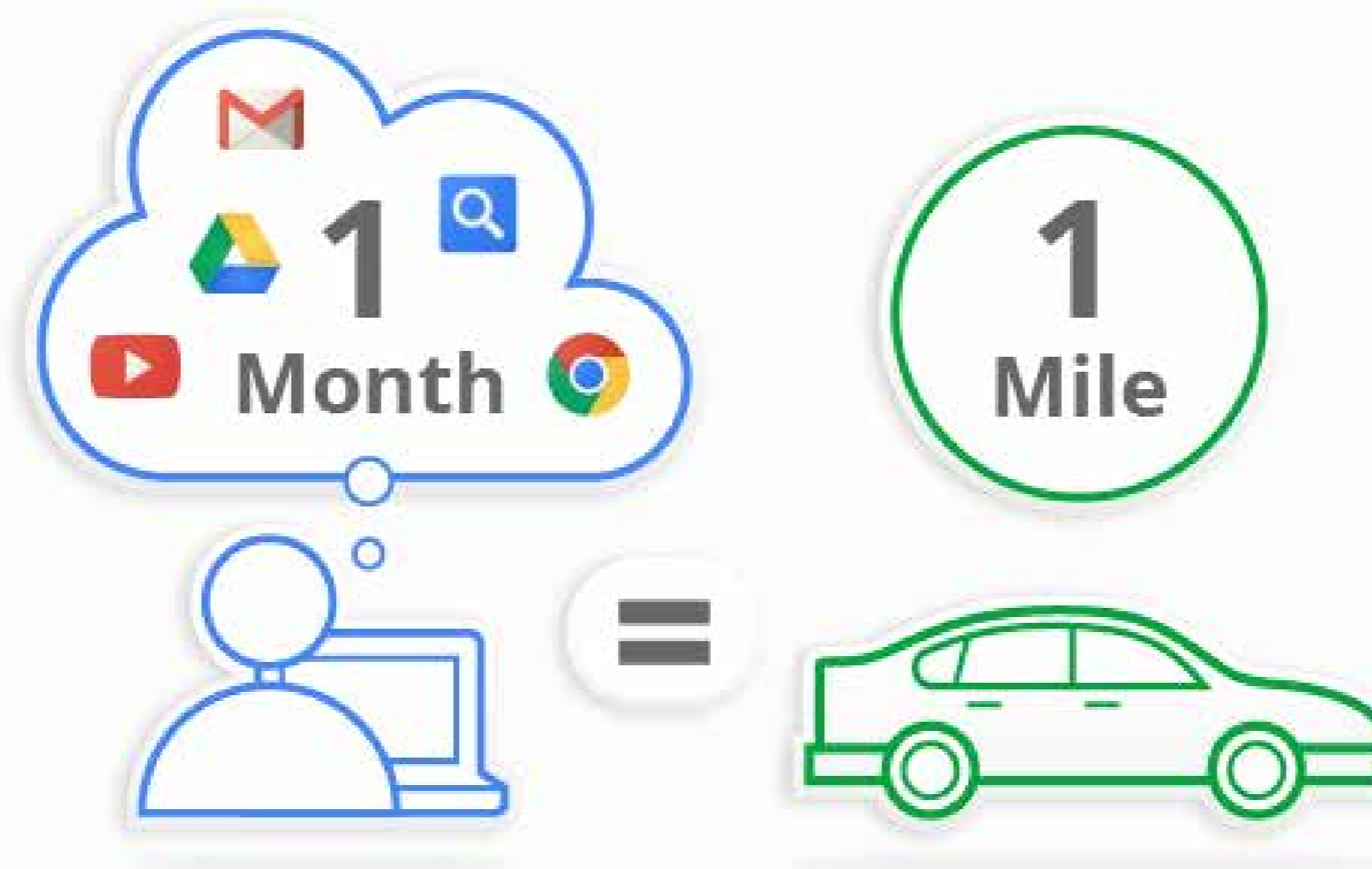


“The importance of using wood is not only that it’s a naturally occurring material, it has very low carbon content – about as low as it gets for a building material,” he added.

“Our new stadium will have the lowest carbon content of any stadium in the world. This really will be the greenest football stadium in the world.”







A Google user

If you take an active Google user—someone who does 25 searches and watches 60 minutes of YouTube a day, has a Gmail account and uses our other services—Google emits about 8 grams of CO₂ per day to serve that user. In other words, serving a Google user for a month is like driving a car one mile. And after we offset our footprint to zero, it's like not driving a car at all.

[Sources](#) 

Google Data Centers

G+1

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Data center locations

We own and operate data centers around the world to keep our products running 24 hours a day, 7 days a week. Find out more about our data center locations, community involvement, and [job opportunities](#) in our locations around the world.

Americas

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The Dalles, Oregon

Asia

Changhua County, Taiwan
Singapore

Europe

Dublin, Ireland
Eemshaven, Netherlands
Hamina, Finland
St Ghislain, Belgium





Data centers › Inside look › Locations › Hamina

Welcome

Working here

Community outreach

Hamina, Finland



A view from outside

A beautiful landscape forms during winter in Finland, as the gulf ices over and creates a picturesque view of our data center.



From paper mill to data center

In March 2009, we purchased the Summa Mill from Finnish paper company Stora Enso and outlined our plans to convert the 60 year old paper mill into a data center. After investing an initial €200 million, we completed the first phase of the project in September 2011. More than 2,000 individuals working for 50 companies (mostly Finnish and from the local area) contributed to the project.

In August 2012, we announced an additional €150 million investment in Phase II of the data center, which will involve the restoration and conversion of an Alvar

Who do I contact for more information?

For community-related inquiries, email googlehaminadc@google.com. If you are a member of the media, please contact press@google.com.

For more answers to our most frequently asked questions, [visit our FAQ section](#).

“Our data centers are designed to use as little energy as possible...”

“We recycle 100% of the electronic equipment that leaves our data centers...”

“We promote green commuting...”

“We’re committed to sustainable food...”

“We’re reducing the amount of waste we send to landfills...”

Giving Back

America Recycles Day 2016: How Coca-Cola Supports Community Recycling and Recovery

By: Major Rick Galeano | Nov 14, 2016

Like 1.4K people like this. Be the first of your friends.

SHARE:

IT TAKES HUMAN RESOURCES...

3+ innovative PARTNERSHIPS

500+ COMMUNITIES

TO SAVE NATURAL RESOURCES...

100+ MILLION POUNDS of recyclables spared from landfills this year

THANK YOU FOR RECYCLING.

The Coca-Cola Company

KEEP AMERICA BEAUTIFUL

Lakeshore Recycling Facility in Illinois separates and prepares potential refuse for manufacturers to repurpose.



SCREAMIN' REELS

IPA



SALT WATER BREWERY

12 FL. OZ.

SCREAMIN' REELS

IPA

12 FL. OZ.

EXPLORE THE DEPTHS OF BEER
BREWED AND CANNED BY SALTWATER BREWERY - DELRAY BEACH, FLORIDA



SCREAMIN' REELS

IPA



~~~~~  
EDIBLE  
SIX PACK RING

SCR

who to believe?



## Cladding 01

***This one because it uses no chemicals.***

Prototype of a cladding material. The wooden panel was milled by a robotic arm to produce a snakeskin-like pattern, then burnt with a blow torch to char the visible surface. As an alternative to applying toxic chemicals, charring the wood makes it resistant to biological degradation.

Project by Snohetta; Oslo (Norway), 2012.

## Cladding 04

***This one because is made of reused waste materials.***



Mock-up of timber cladding made out of dismantled wooden cable drums. The material is particularly suitable for reuse because it's already heat-treated to protect it from weathering. It was used on a private villa made primarily from locally sourced discarded materials. "Facade construction produced only 5% of the CO2 emissions that would have resulted from new materials."

Project: VillaWepeloo, by 2012  
Architecten / Superuse Studios;  
Enschede, Netherlands, 2009.

## Cladding 05

***This one because it can be fully recycled.***



Titanium zinc cladding that is “non-combustible, 100% recyclable, and has a long life span”. This product is Cradle to Cradle, BREEAM, LEED, and German Sustainable Building (DGNB) certified.

Project: Zinc Sheet Cladding, by Rheinzink; Datteln, Germany, 2009. Used in Zaha Hadid’s Glasgow Riverside Museum.



## Cladding 06

***This one because it is made of an easily available renewable material.***

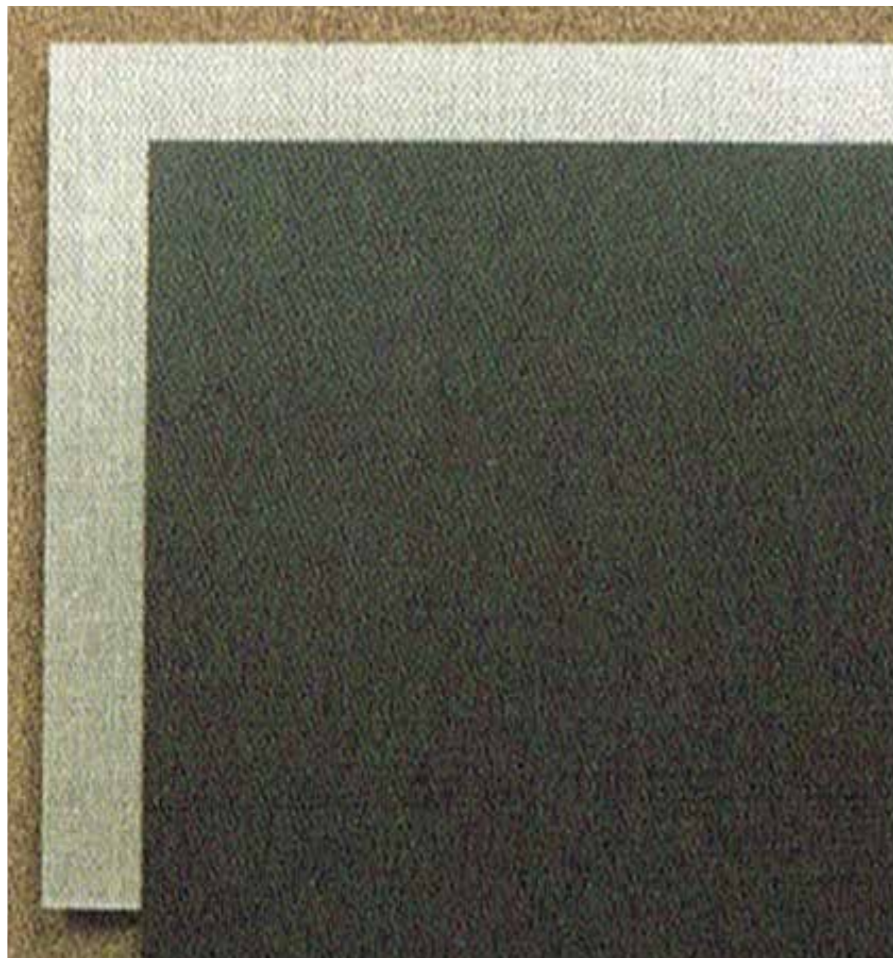


“Seaweed is at once very old and very ‘just-in-time’, because it is in many ways the ultimate sustainable material. It reproduces itself every year in the sea, it comes ashore without any effort from humans, and it is dried on nearby fields by the sun and wind. It insulates just as well as mineral insulation, it is non-toxic and fireproof, and it has an expected lifespan of more than 100 years!”

Project: Seaweed House, by Vandkunsten & Realdania Byg; Lasso Island, Denmark, 2013.

## Cladding 09

***This one because it is ultra thin.***



The Lamborghini prototype factory is Italy's first multistorey industrial building with a Class A environmental rating. Part of the luxury car manufacturer's environmental strategy is "a commitment to reduce car emissions by 35% and make the plant carbon-neutral before 2015". The manufacturer points out that the sports cars they produce are usually their owner's sixth or seventh car. a. Samples of Slimtech tiles in 'Nero Lamborghini', a colour developed for the factory. Slimtech is a laminated porcelain tile that is 3.5mm thin but can be up to 3x2 metres in size. b. Image of factory interior. c. Image of factory exterior.

Project: Lamborghini Factory  
'Protoshop', by Archilinea and  
Lea Ceramiche; Sant'Agata  
Bolognese, Bologna, Italy, 2012.  
Photo: Matteo Serri

minimisation pollution

GREEN

resource

environment

EMBODIED ENERGY

optimisation

bioclimatic

sustainability

CO

ECO

ecology

EFFICIENT

emissions

2

climate change

ozone

carbon footprint

minimisation pollution

GREEN

resource

environment

EMBODIED ENERGY

bioclimatic

optimisation

sustainability

CO

emissions

ECO

ecology

EFFICIENT

2 climate change

ozone

carbon footprint

*Sustainable Development is....*

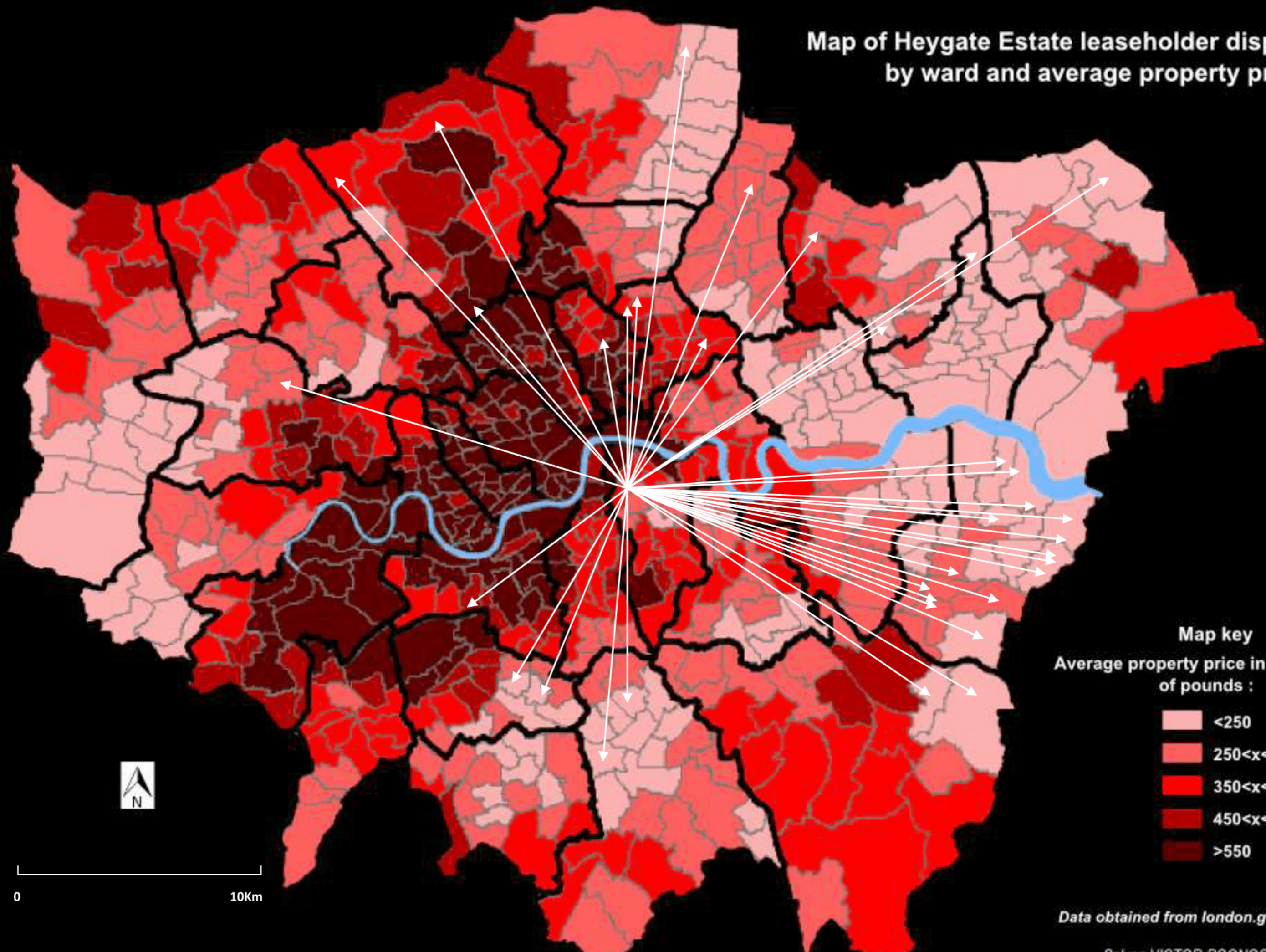
**”Development that meets the needs of the present without compromising the ability of future generations to meet their own needs....”**

**from the World Commission on Environment and Development's (the Brundtland Commission) report Our Common Future (Oxford: Oxford University Press, 1987).**





Map of Heygate Estate leaseholder displacement by ward and average property price



**Map key**  
 Average property price in thousands of pounds :

- <250
- 250<x<350
- 350<x<450
- 450<x<550
- >550



0 10Km

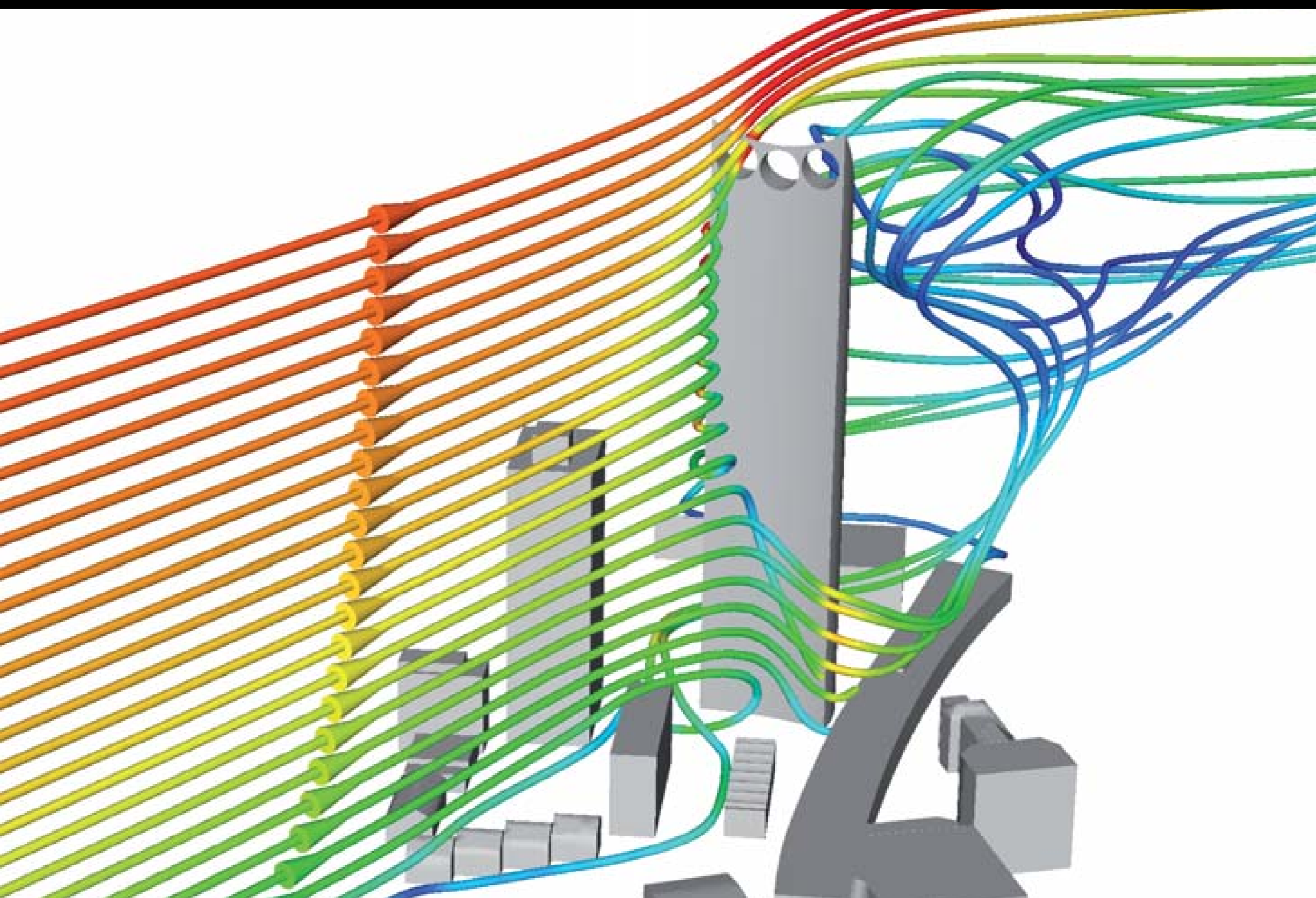
Data obtained from london.gov.uk - 2013

Silver VICTOR-POONOSAMY











**“Live exclusively in  
London’s newest, tallest,  
most energy efficient  
residential mega tower”**

**ECP Estate Agents**

**Monday 13<sup>th</sup> September, 2010**



## **“London’s Strata tower wins Carbuncle Cup as Britain’s ugliest new building**

The 42-storey building in Elephant & Castle was nominated for its ‘plain visual grotesqueness’ and ‘Philishave stylings’”

**The Guardian Newspaper,  
Thursday 12 August 2010**



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3 bedroom flat for sale  
Strata,, Elephant & Castle, SE1

From **£1,650,000**





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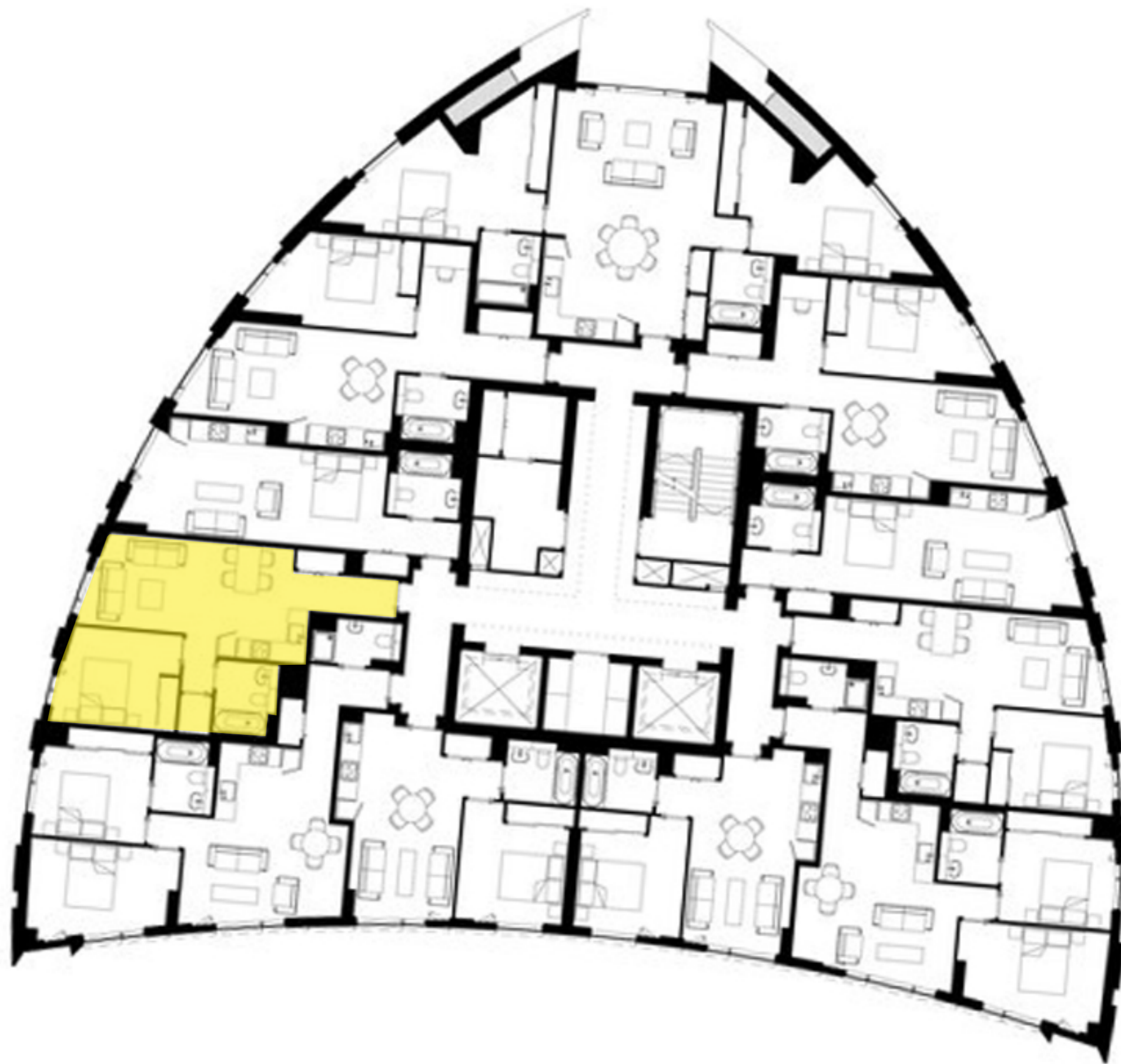
[House Prices](#)

3 bedroom flat for sale

Strata,, Elephant & Castle, SE1

From **£1,650,000**















**“we have improved public spaces, with a woodland walk, new thoroughfares and an attractive new central square, which serves as a central community space and covers a subterranean car park beneath. Our commitment to environmentally aware and responsible building is further demonstrated by the construction of two buildings made from cross-laminated timber, a first for developers Lend Lease”**

**Trafalgar Place – dRMM, 2016**



*Stock Orchard Street House, Sarah Wigglesworth, 1998*

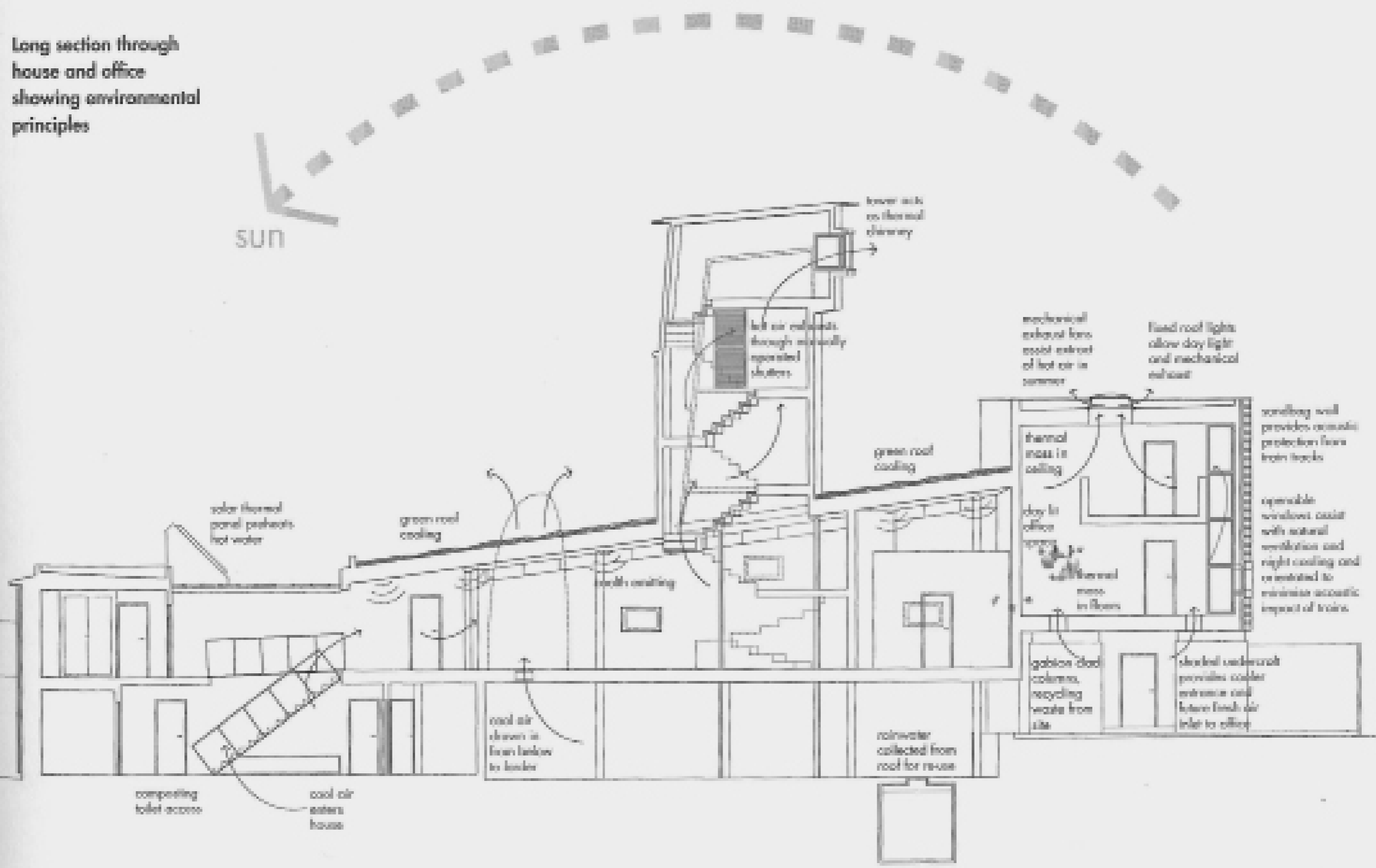


**Stock Orchard Street House**  
Sarah Wigglesworth, 1998



*Stock Orchard Street House, Sarah Wigglesworth, 1998*

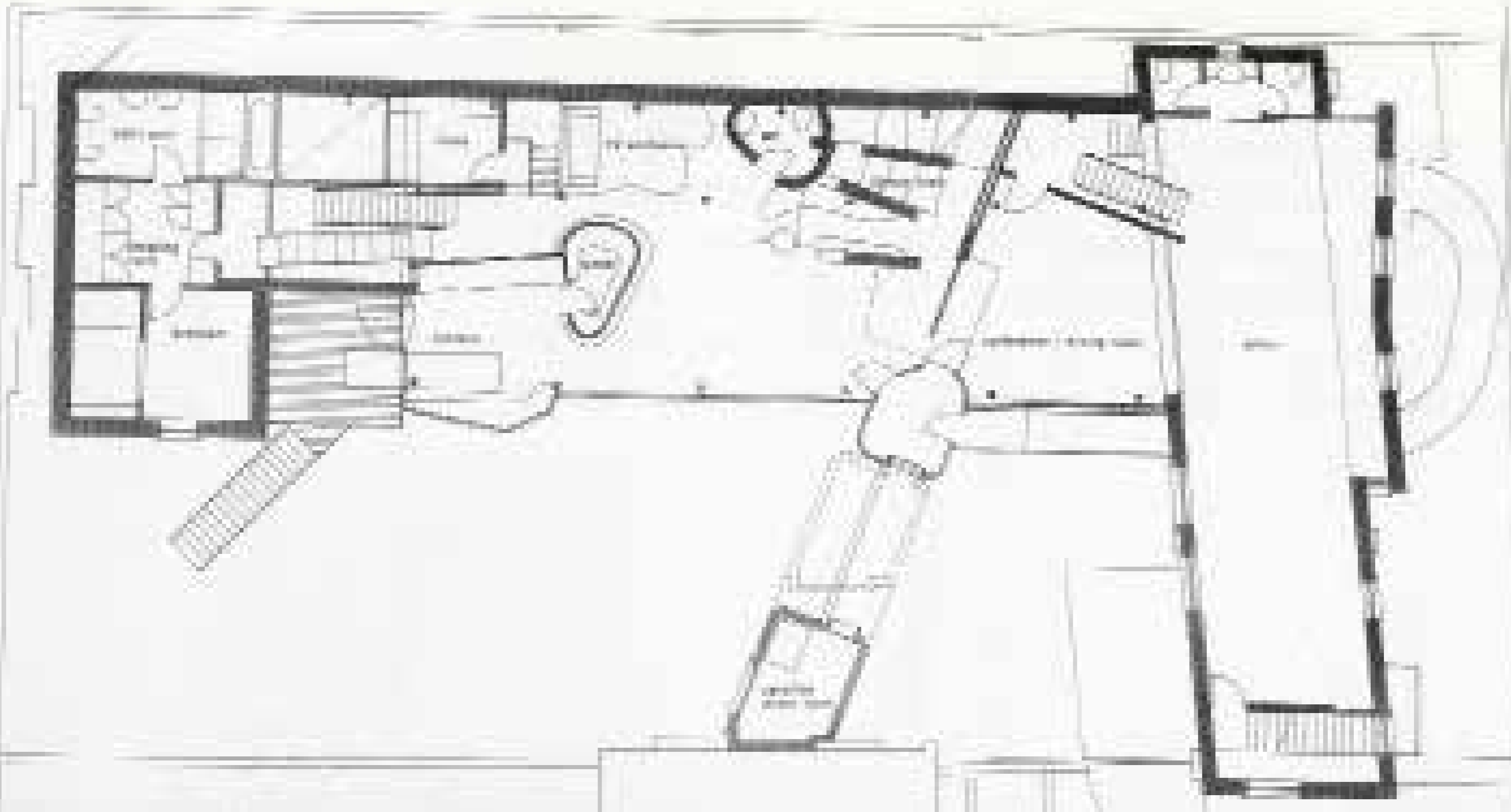
Long section through house and office showing environmental principles



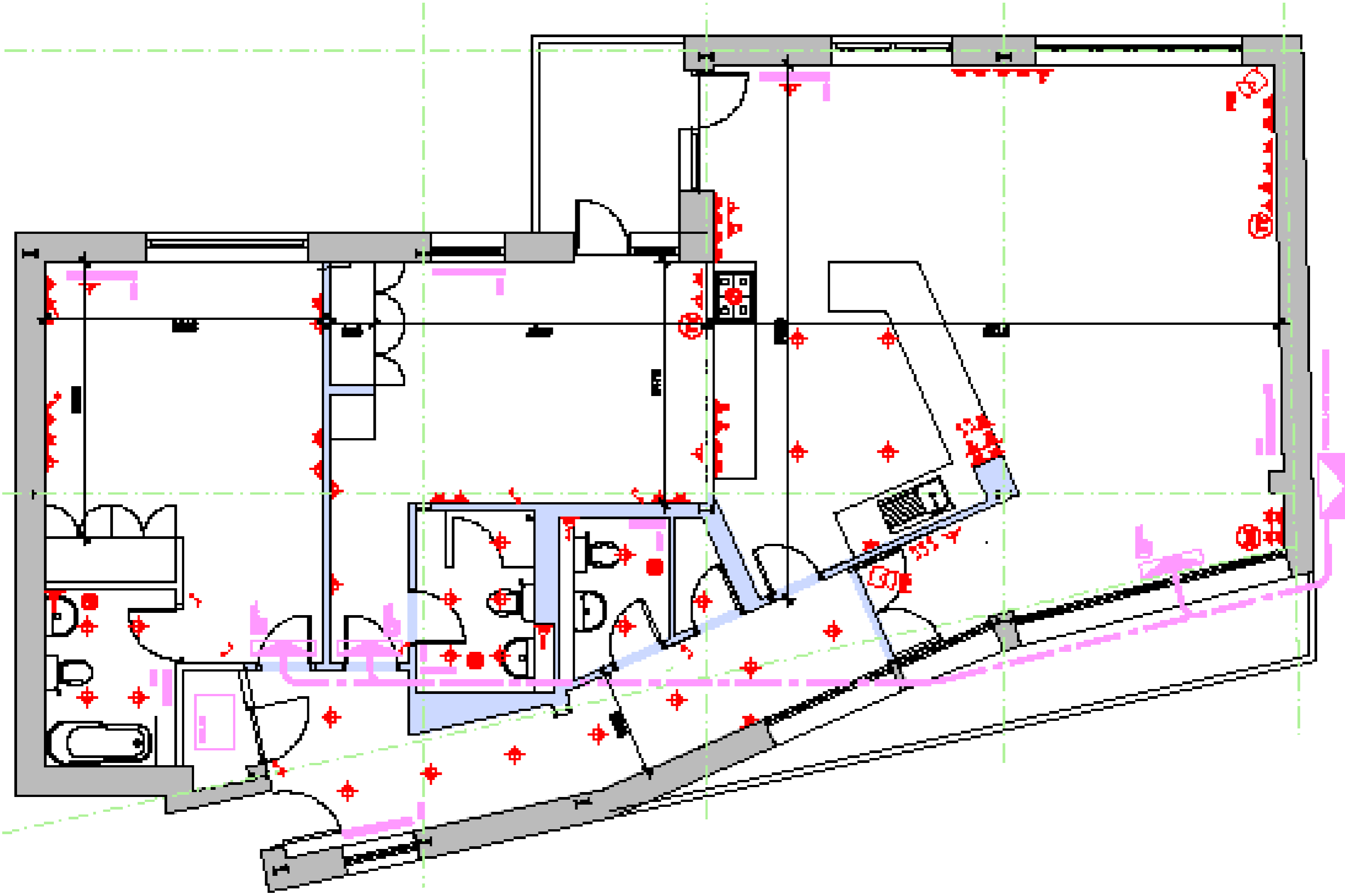
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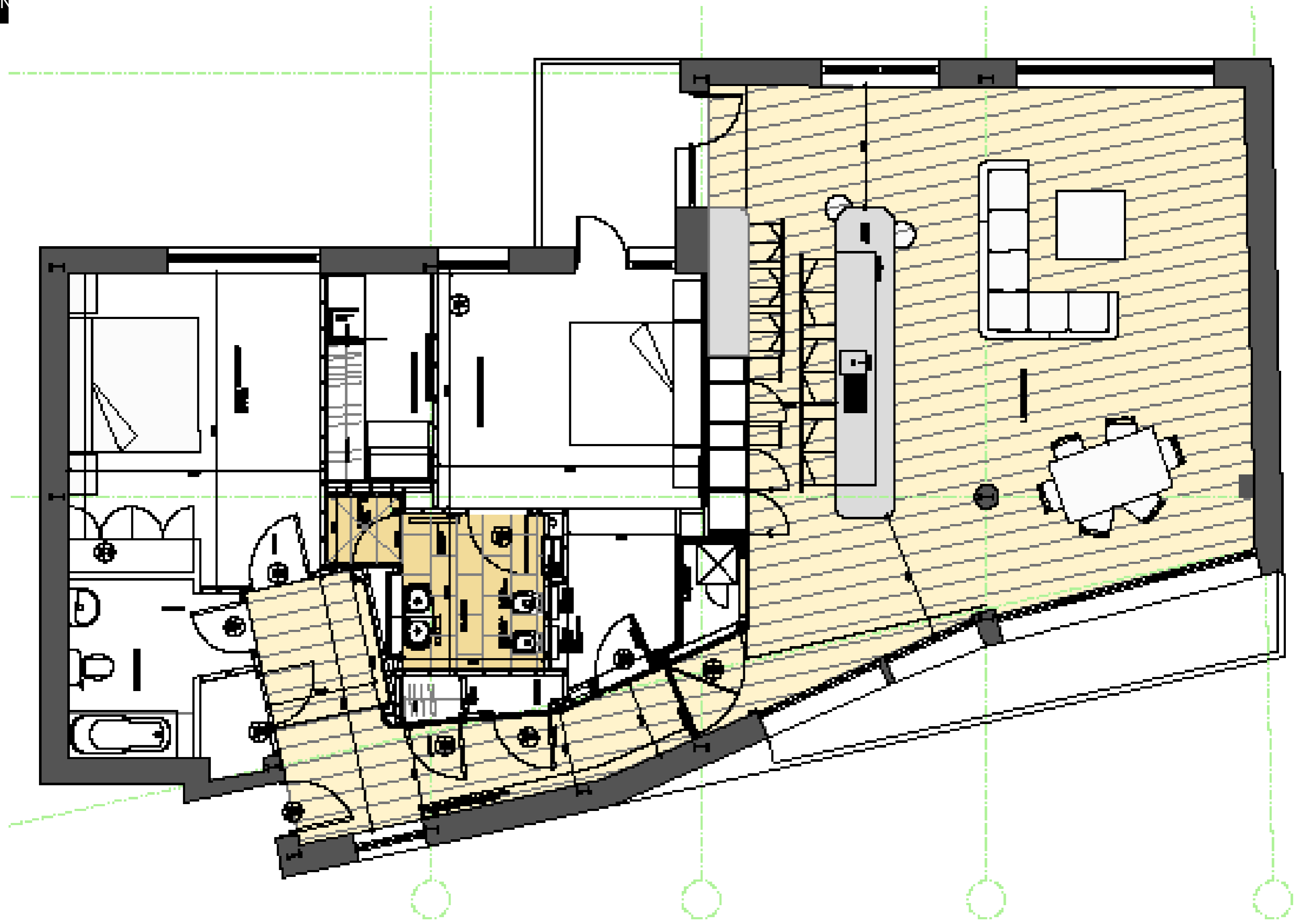


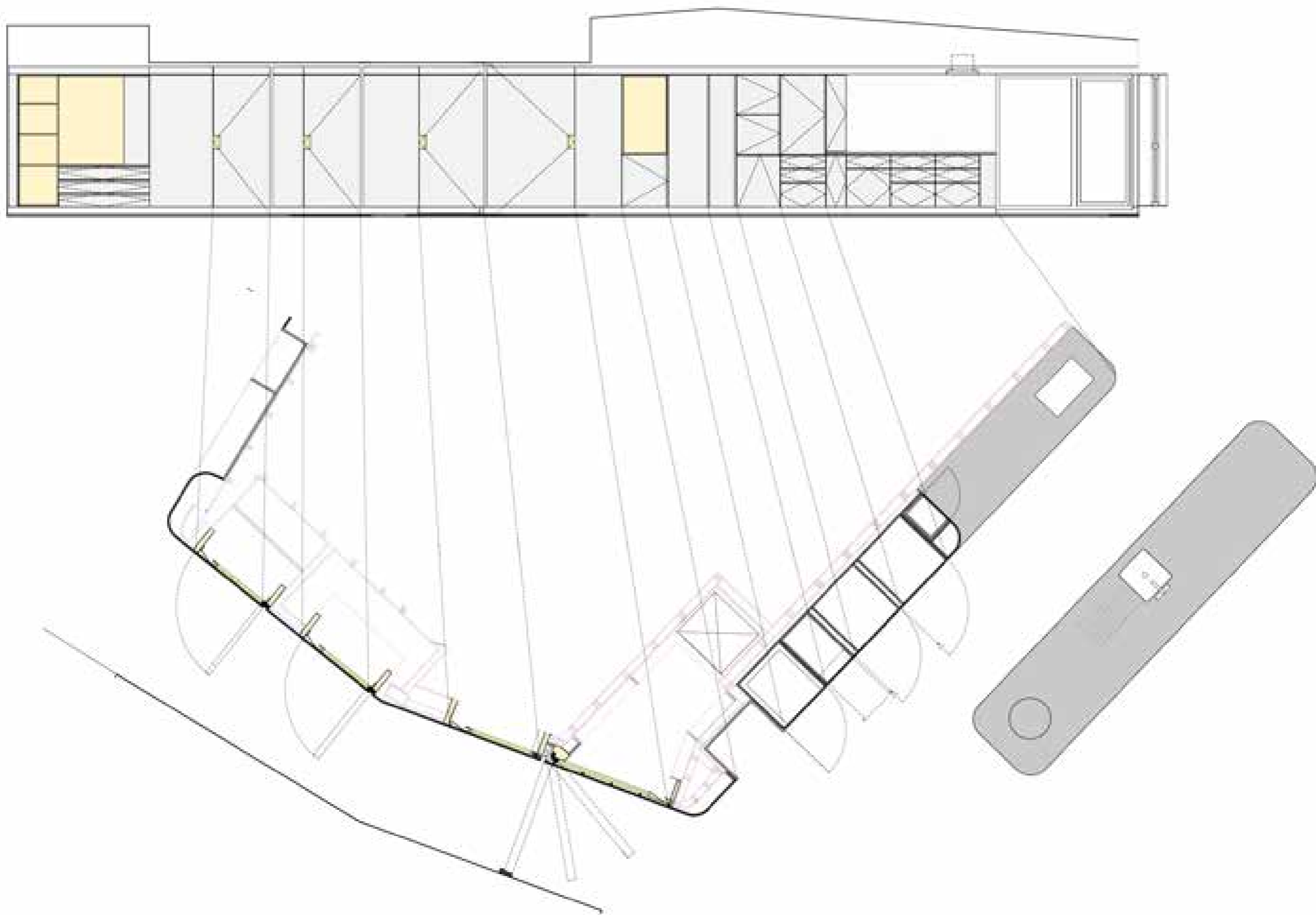




*Stock Orchard Street House, Sarah Wigglesworth, 1998*















*BedZed, Bill Dunster Architects, London 2002*



## Health and happiness

BedZED residents say they know on average 20 of their neighbours by name; the local average is eight





*BedZed, Bill Dunster Architects, London 2002*

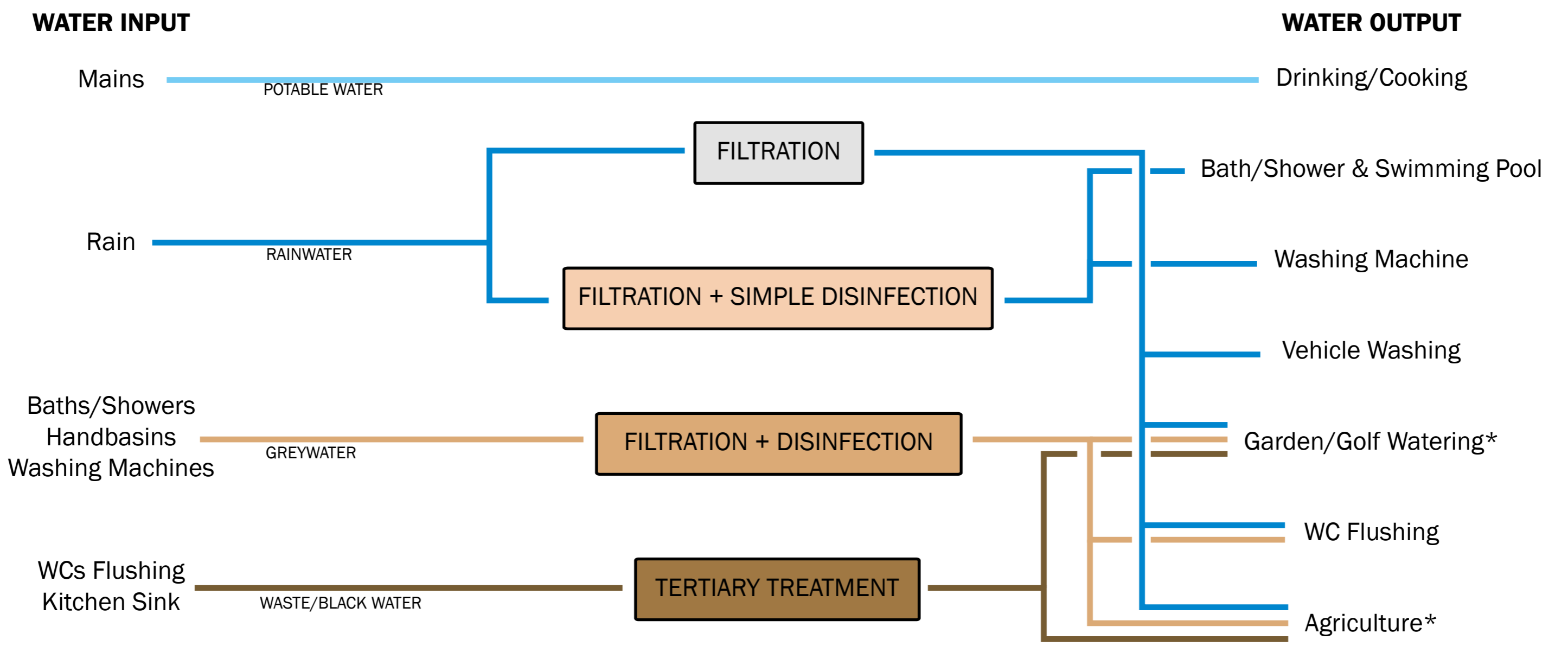


## Sustainable materials

Just over half of the construction materials by weight came from within 35 miles

# Sustainable Water

## Water consumption per BedZED resident is about 50% of the London average



\* Black Water can only be used in gardening and agriculture provided it does not get in DIRECT contact with people (i.e. in an underground irrigation system).

## Zero Carbon

We estimate BedZED produces 37% less carbon dioxide emissions from gas and electricity use than an average development of the same size and mix of uses



# Bjarke Ingels - Hedonistic sustainability?



**54%** of Copenhagen's waste is used to generate energy (heat + power)



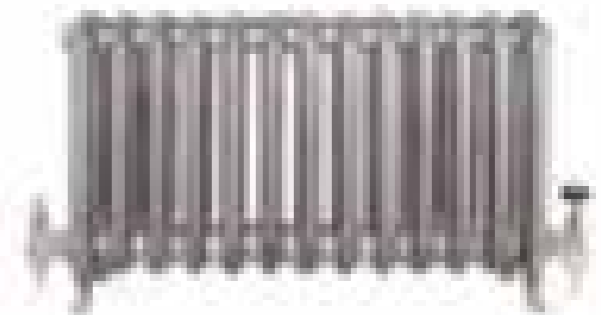
3 kg

=



4 hr

+



5 hr





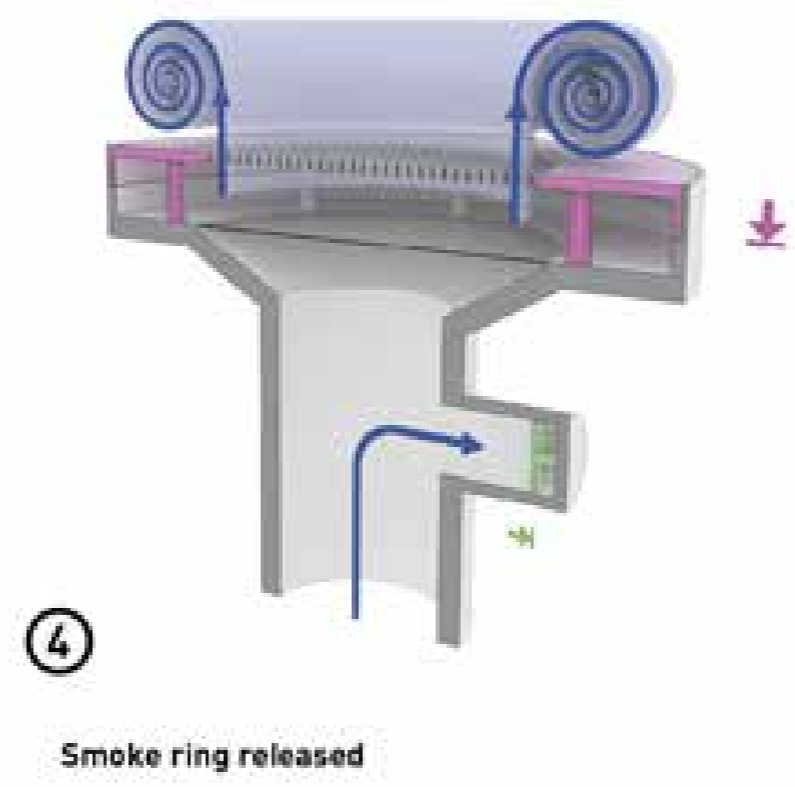
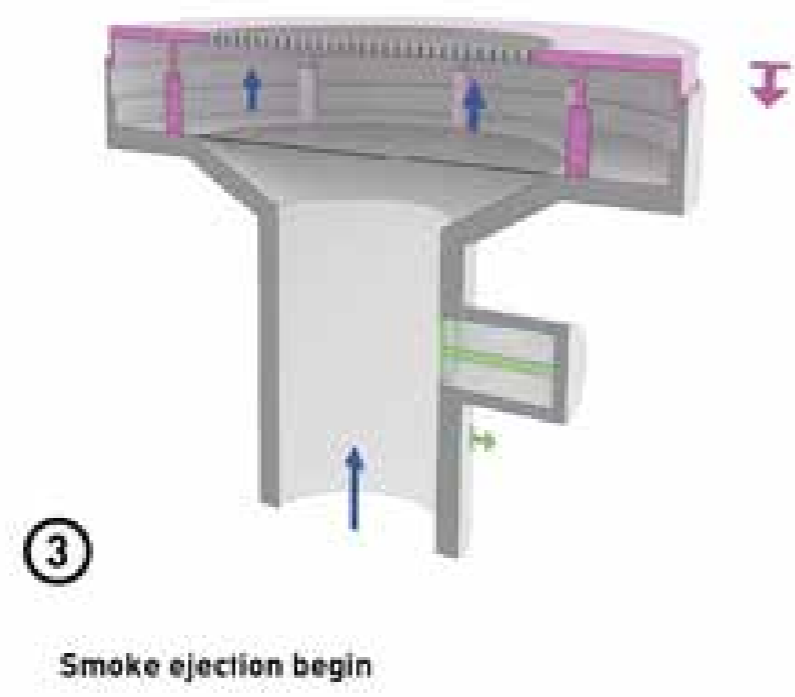
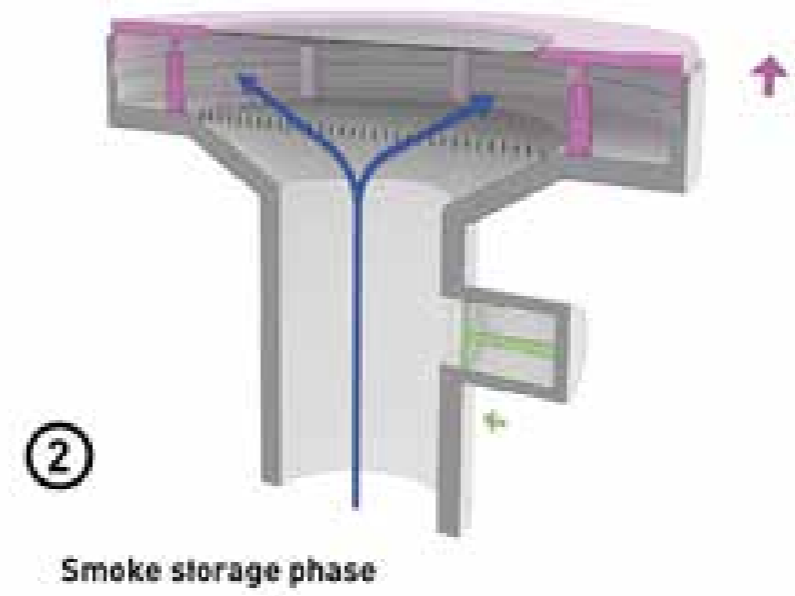
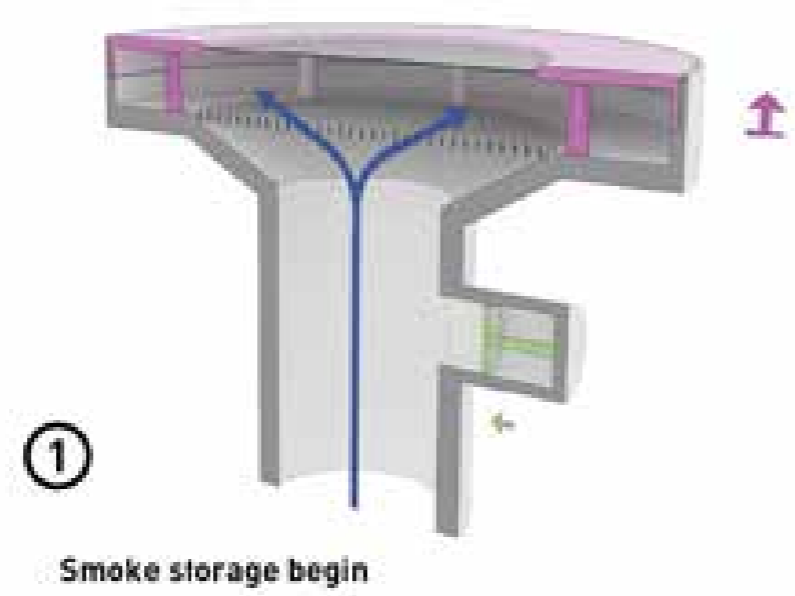
*Amagerforbraending ski slope incinerator, Bjarke Ingels Group*

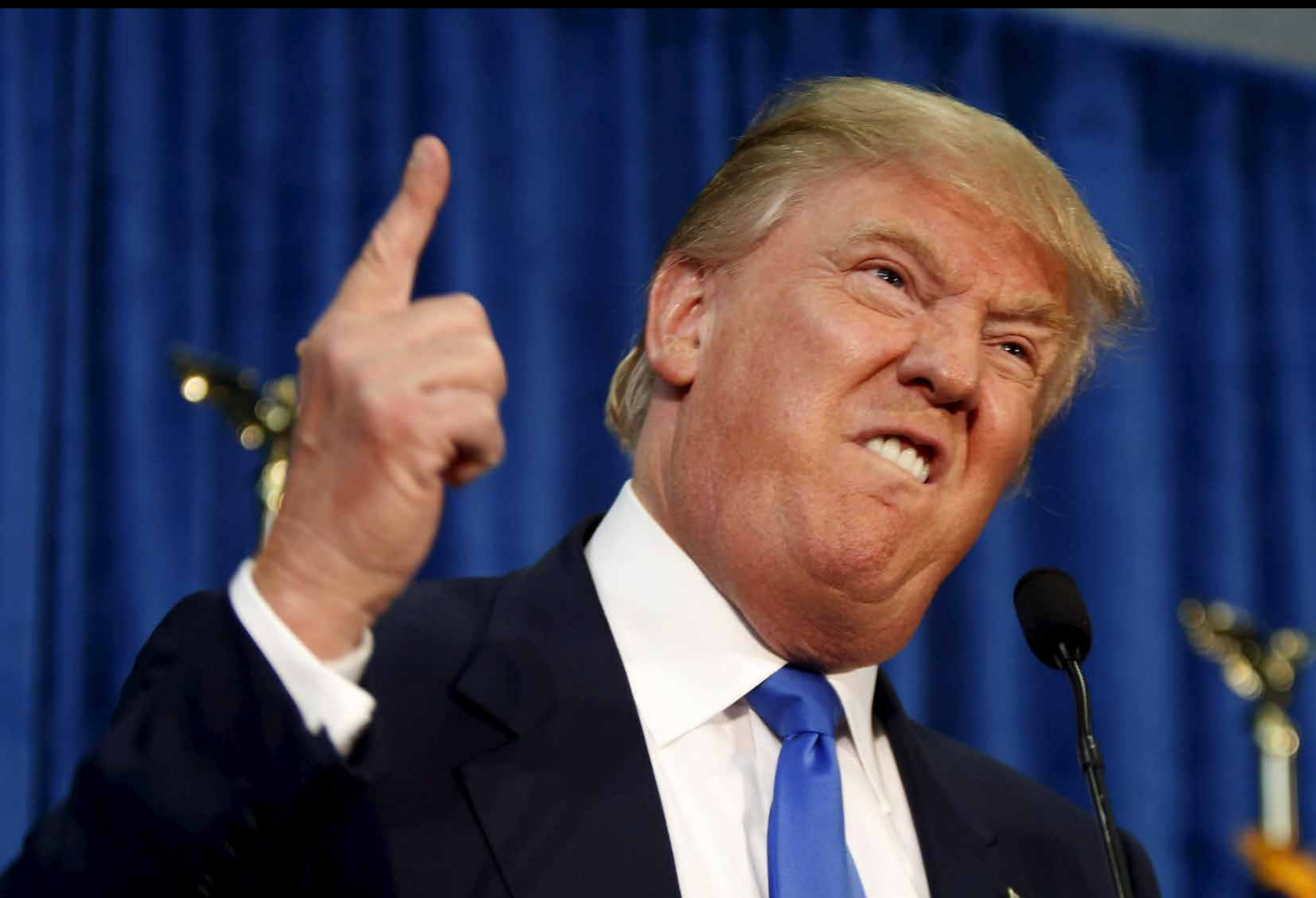


*Amagerforbraending ski slope incinerator, Bjarke Ingels Group*



*Amagerforbraending ski slope incinerator, Bjarke Ingels Group*









**What do I think?**



**Reliant Robin.**  
**You can't beat it for all round economy.**





*ECOHOUSE, David Wilson Homes, University of Nottingham*

# Sustainability in architecture ....

- means designing buildings which are **fundamentally** good, and not being ignorant of their performance.

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# Sustainability in architecture ....

- means designing buildings which are **fundamentally** good, and not being ignorant of their performance.
- means buildings which have **embedded efficiencies** which will last - buildings which are comfortable and adaptable.
- means designing buildings which will sustain because people **love** them.