



**‘THERE’S NO SUCH THING  
AS WASTE....’**

**GREEN ARCHITECTURE DAY**  
April 27th 2013

Presented by Duncan Baker-Brown RIBA  
of BBM sustainable design ltd

[www.bbm-architects.co.uk](http://www.bbm-architects.co.uk)

# What Architect's Like To Do



# What Architect's Like To Do



1919



2013



# What Architect's Like To Do

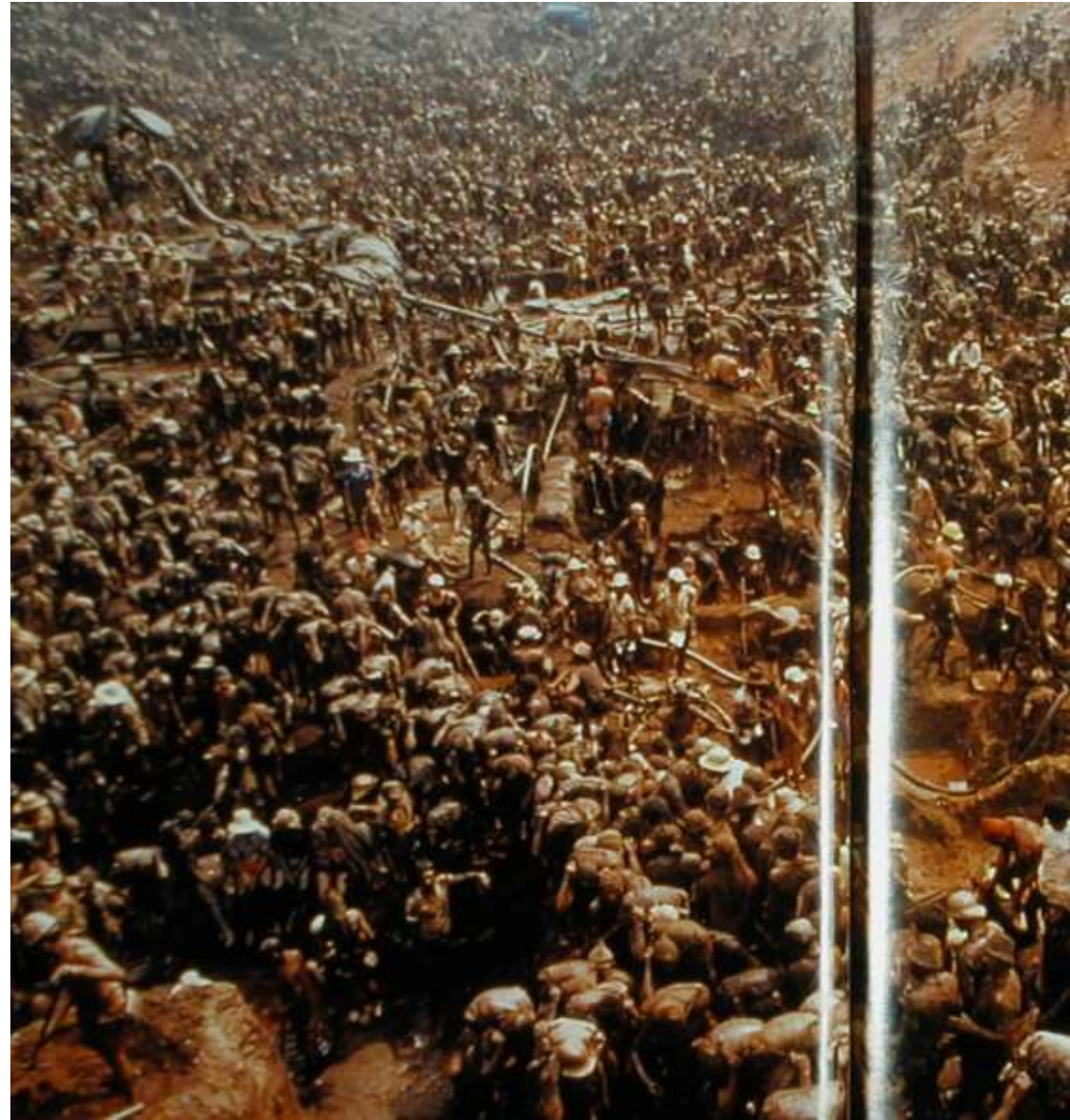


# WATCH OUT FOR FIREWORK DISPLAYS





# The real cost of extracting raw materials...



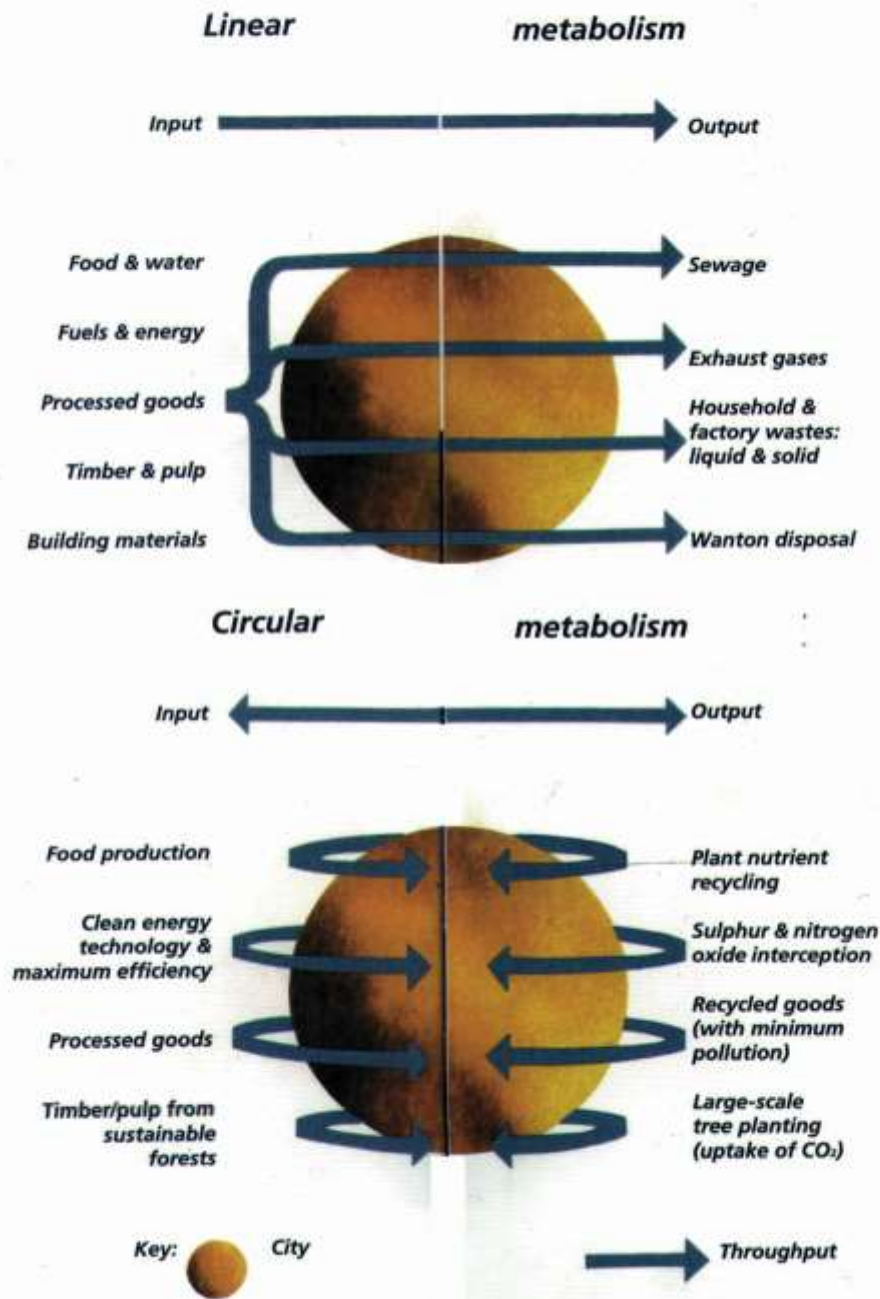


**And this is what we do to redundant buildings...**

*for every five houses built in UK the equivalent of one house worth of waste is sent to landfill*

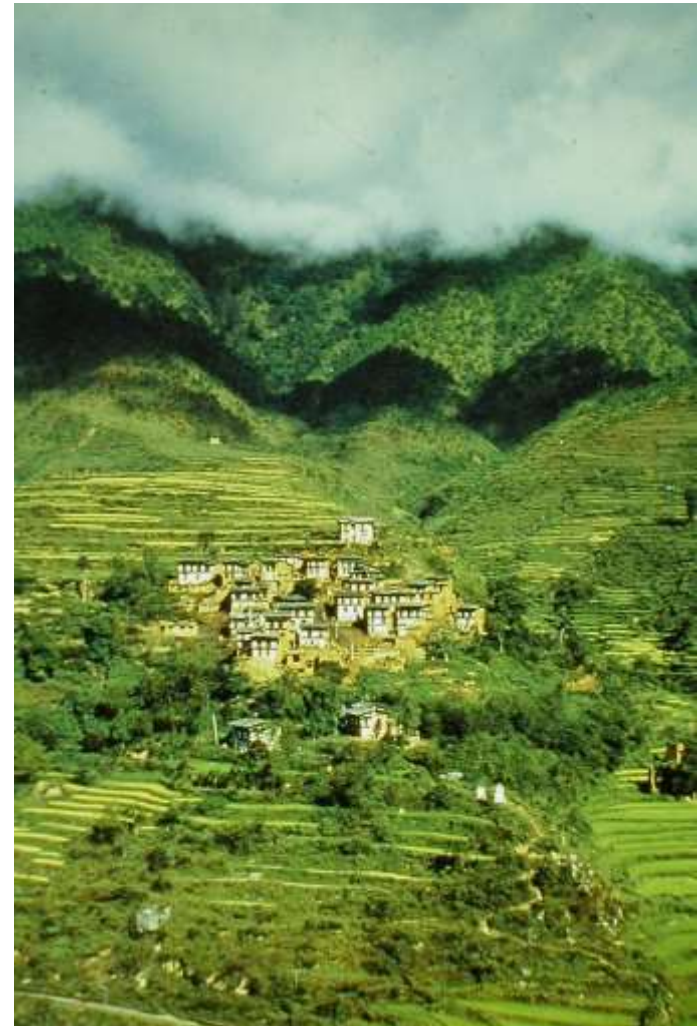
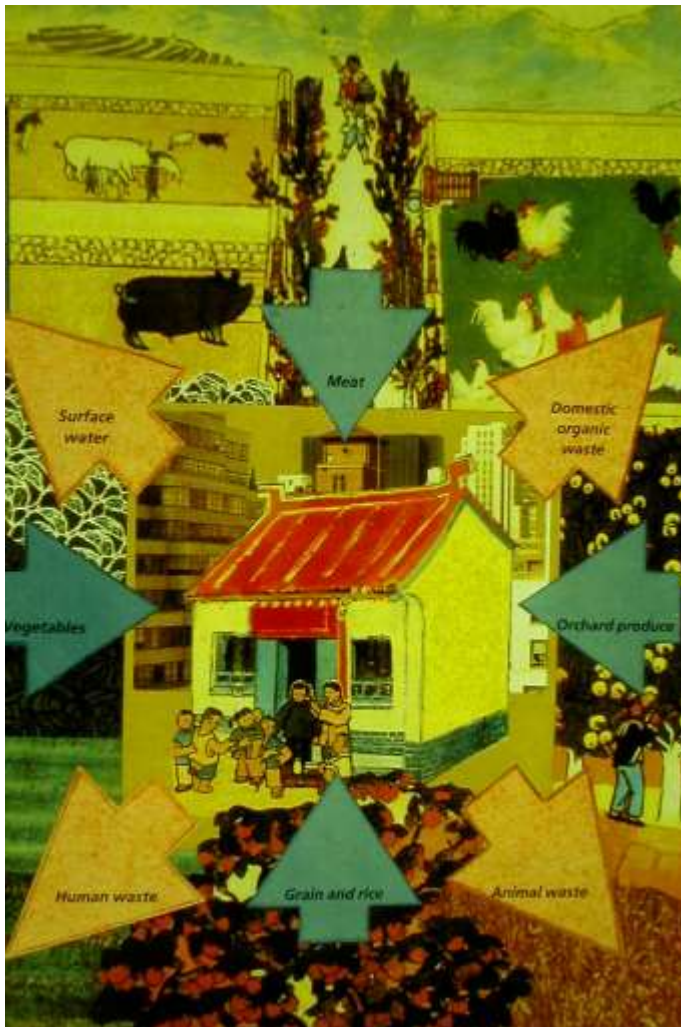


Try to change  
linear  
metabolisms  
into  
circular ones





# Until the early 1990's most Chinese mega-cities were completely circular metabolisms MacDonald's Changed that in 1990



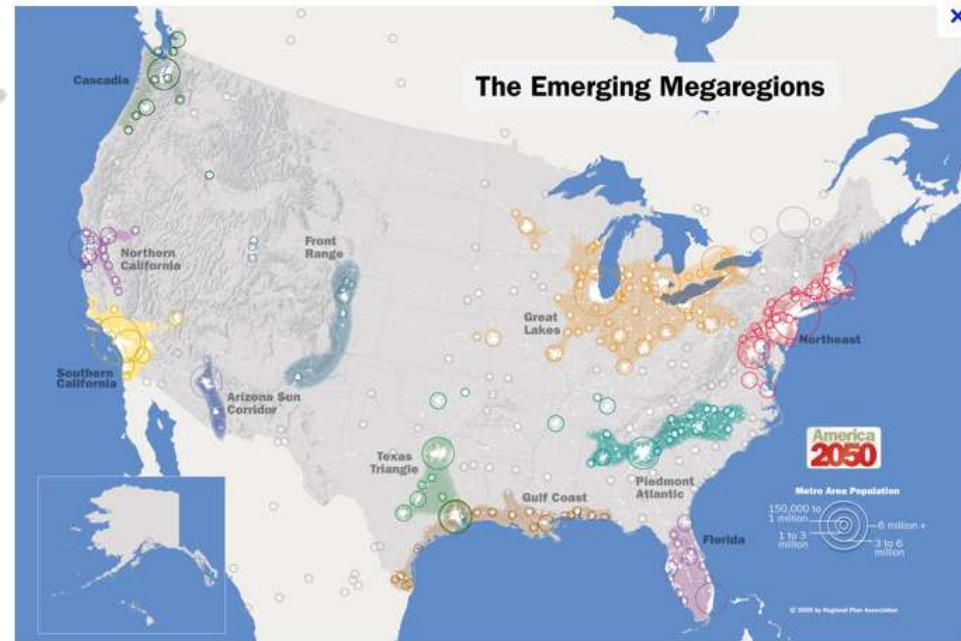
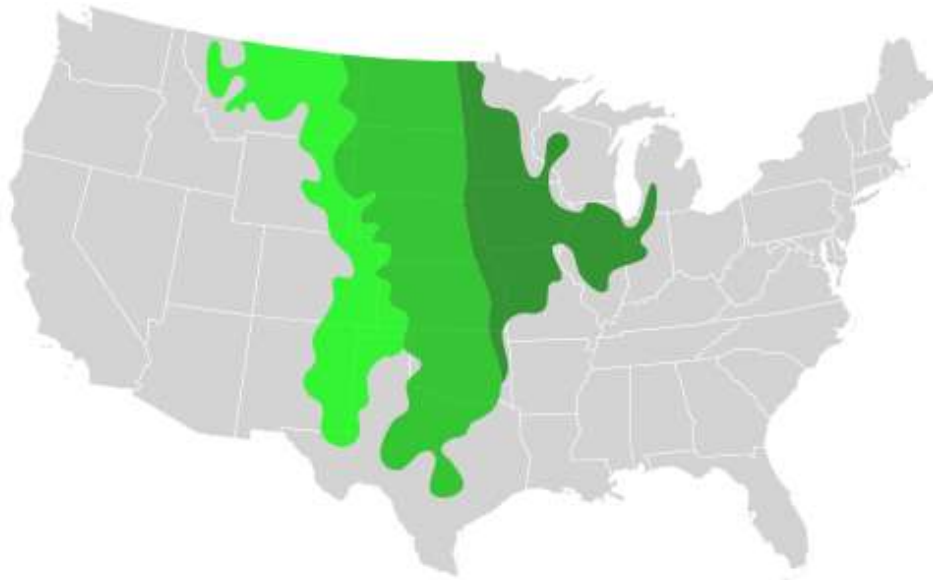
# MANAGING RESOURCES



Part of the last herd of wild, American Bison. This vintage photo by L.A. Huffman, published 1913, had the caption of "1880 Northern Montana". Historians estimate there were less than 300 wild buffalo in all of America by that date. Still, they were hunted until the last 23 individuals were found hiding in the Pelican Valley area of Yellowstone NP in 1900. It is from those surviving animals that today's Yellowstone herds of 3,700 descended!



# MANAGING RESOURCES



## The Great Plains v's MegaCities



**REDUCE**

**REUSE**

**RECYCLE**

**Design for Demolition!**



# Rural Studio build with other people's rubbish



# Architecture Student Project's





# Architecture Student Project's





# Graduate Pavilion Made of Waste



From the new Amex Building



**Made Entirely of Waste**



**Architecture Graduation Pavilion**

**“THERE IS NO SUCH THING AS  
WASTE ONLY STUFF IN THE  
WRONG PLACE”**

**..... Someone blogging on Treehugger**



# SOME ISSUES TO CONSIDER

## Mining Raw Materials is Costing More

*UK, Europe, even USA don't own the resources they use to.*

## Throwing Stuff 'Away' is Costing More

*The price of skips doubled/trebled last year*

**Smart individuals with avoid doing both**

# WASTE HOUSE (THTKB) @ Faculty of Art University of BRIGHTON





# THE WASTE TOTEM @ ECOBUILD 2013



@Twitter Campaign



# THE WASTE TOTEM @ ECOBUILD 2013



Built with the help of Mears Apprentices



# THE WASTEZONE @ ECOBUILD 2013



# THE WASTEZONE @ ECOBUILD 2013



Students taking part in debate

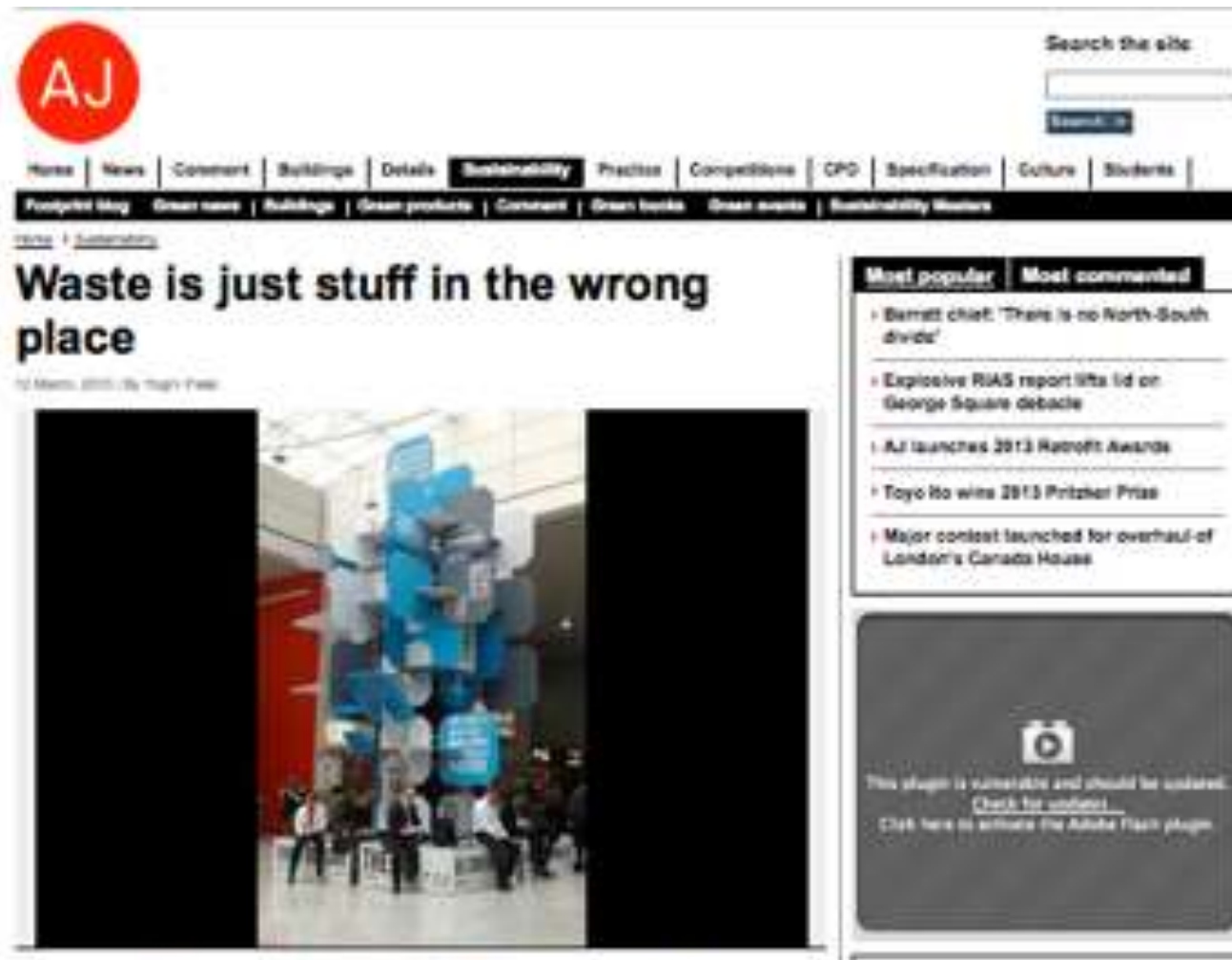


# THE WASTEZONE @ ECOBUILD 2013



With 'St'enches' by  
UOB Interior Architects

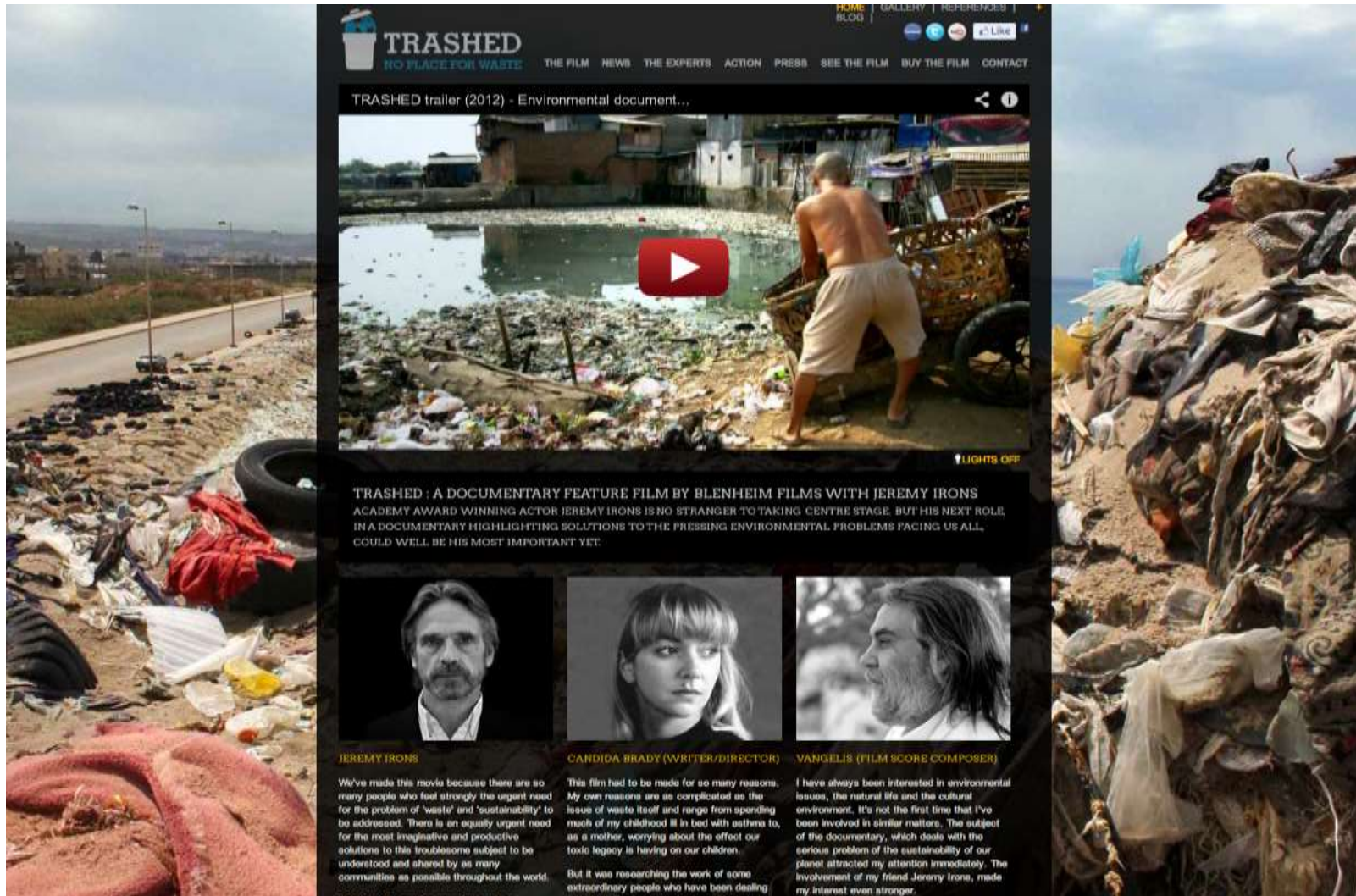
# THE WASTE TOTEM @ ECOBUILD 2013



Press coverage in Architects' Journal



# TRASHED @ THE WASTEZONE @ ECOBUILD



**TRASHED**  
NO PLACE FOR WASTE

HOME | GALLERY | REFERENCES | BLOG | LIKE

THE FILM | NEWS | THE EXPERTS | ACTION | PRESS | SEE THE FILM | BUY THE FILM | CONTACT

TRASHED trailer (2012) - Environmental document...

↑ LIGHTS OFF

**TRASHED : A DOCUMENTARY FEATURE FILM BY BLENHEIM FILMS WITH JEREMY IRONS**  
ACADEMY AWARD WINNING ACTOR JEREMY IRONS IS NO STRANGER TO TAKING CENTRE STAGE. BUT HIS NEXT ROLE, IN A DOCUMENTARY HIGHLIGHTING SOLUTIONS TO THE PRESSING ENVIRONMENTAL PROBLEMS FACING US ALL, COULD WELL BE HIS MOST IMPORTANT YET.

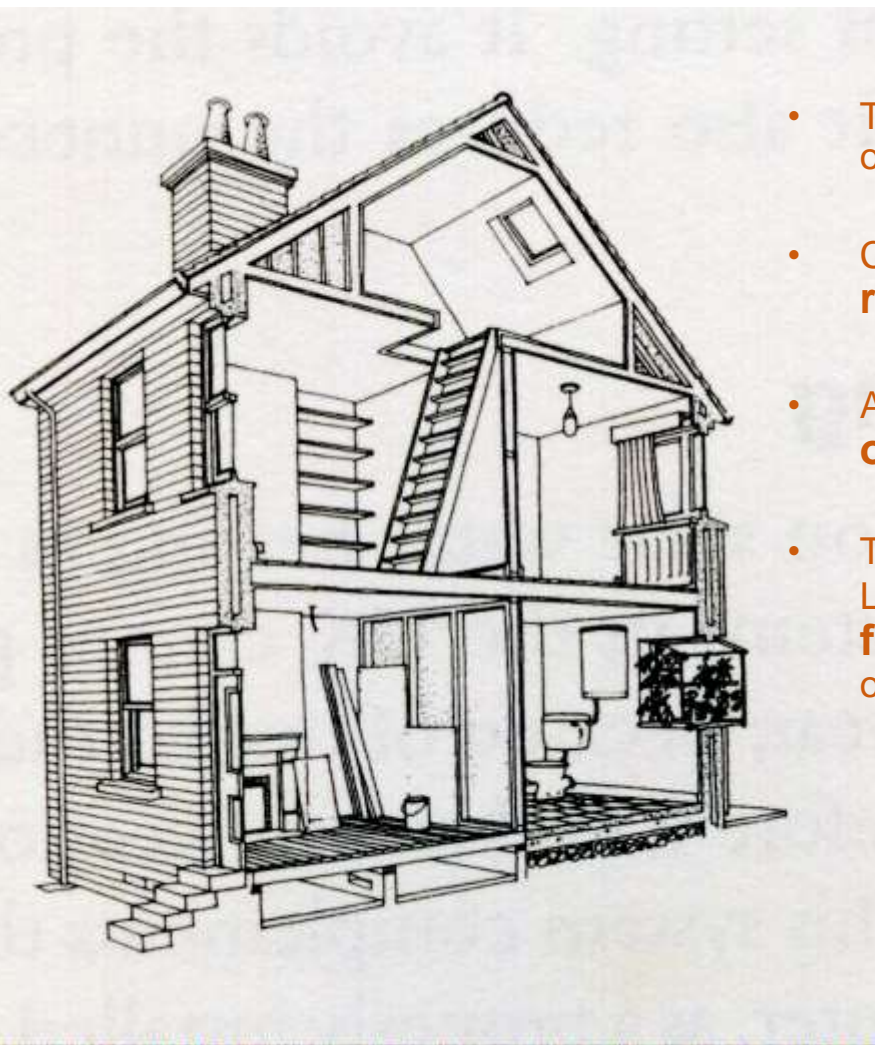
**JEREMY IRONS**  
We've made this movie because there are so many people who feel strongly the urgent need for the problem of 'waste' and 'sustainability' to be addressed. There is an equally urgent need for the most imaginative and productive solutions to this troublesome subject to be understood and shared by as many communities as possible throughout the world.

**CANDIDA BRADY (WRITER/DIRECTOR)**  
This film had to be made for so many reasons. My own reasons are as complicated as the issue of waste itself and range from spending much of my childhood ill in bed with asthma to, as a mother, worrying about the effect our toxic legacy is having on our children.  
But it was researching the work of some extraordinary people who have been dealing

**VANGELIS (FILM SCORE COMPOSER)**  
I have always been interested in environmental issues, the natural life and the cultural environment. It's not the first time that I've been involved in similar matters. The subject of the documentary, which deals with the serious problem of the sustainability of our planet attracted my attention immediately. The involvement of my friend Jeremy Irons, made my interest even stronger.

On general release next week

# THE REAL CHALLENGE



- To make a real impact on CO2 emissions we must focus on improving energy efficiency of existing building stock
- Central government requires CO2 emissions to be **reduced by 80% by 2050**
- At current demolition rates we should expect to have **80% of our current building stock in 2050**
- Therefore we need to retrofit existing homes to a Code Level 4 standard at least at **a rate of 500,000 per year for 40 years!!.....** And that doesn't allow for schools, offices etc..



# WE ALREADY LIVE IN OUR FUTURE ECO TOWNS





# Working with Existing Places



# Working with Existing Places





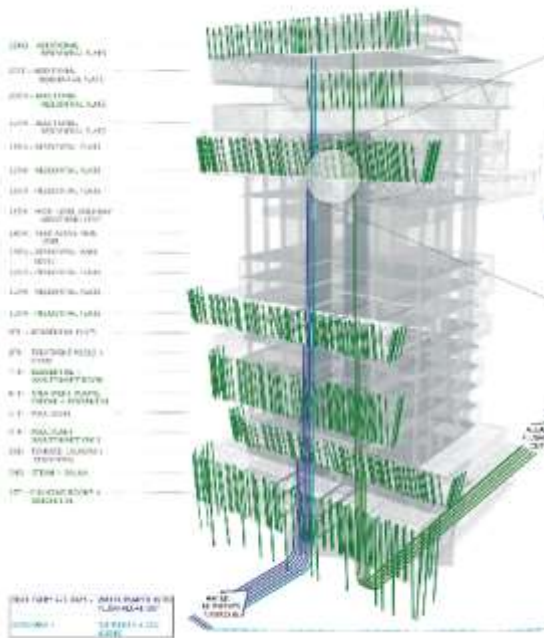
# ANOTHER CHALLENGE



- UK has the Least Energy Efficient Housing Stock in Europe
- Colder countries such as Finland have lower rates of excess winter mortality than UK simply because their homes are better insulated and cheaper to heat.
- 6m UK households in FUEL POVERTY
- Richer people overheat because we don't want to tinker with the boiler!
- Top Floor Flats experience 6 TIMES the OVERHEATING of ground floor flats & 9 TIMES Victorian Terraces. In Winter they experience over 6 times the HEAT LOSS
- Turning up the heat is paying to heat THE SKY as 35% of heat is lost through our roofs

# Buildings Creating their own energy

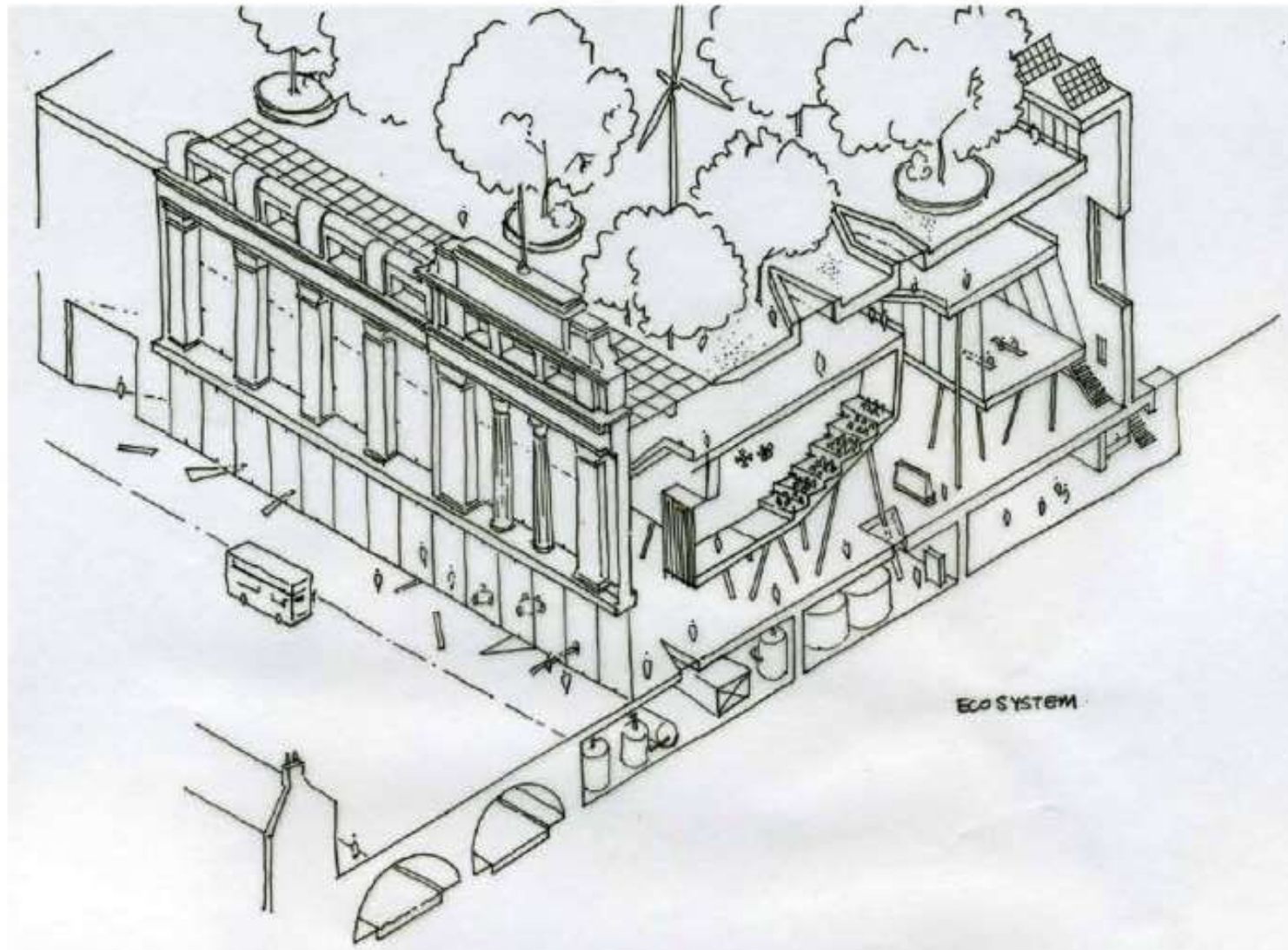
## BBM's UNPLUGGED STUDIO 2009



# Working with Existing Buildings

Explorative sketches

BBM's UNPLUGGED STUDIO 2009





# Working with Existing Places

*Lacaton & Vassal - Paris 17, Tour Bois le Petre - Druot*



**BEFORE**



**AFTER**

# Working with Existing Places

Lacaton & Vassal - Paris 17, Tour Bois le Petre - Druot



## BEFORE

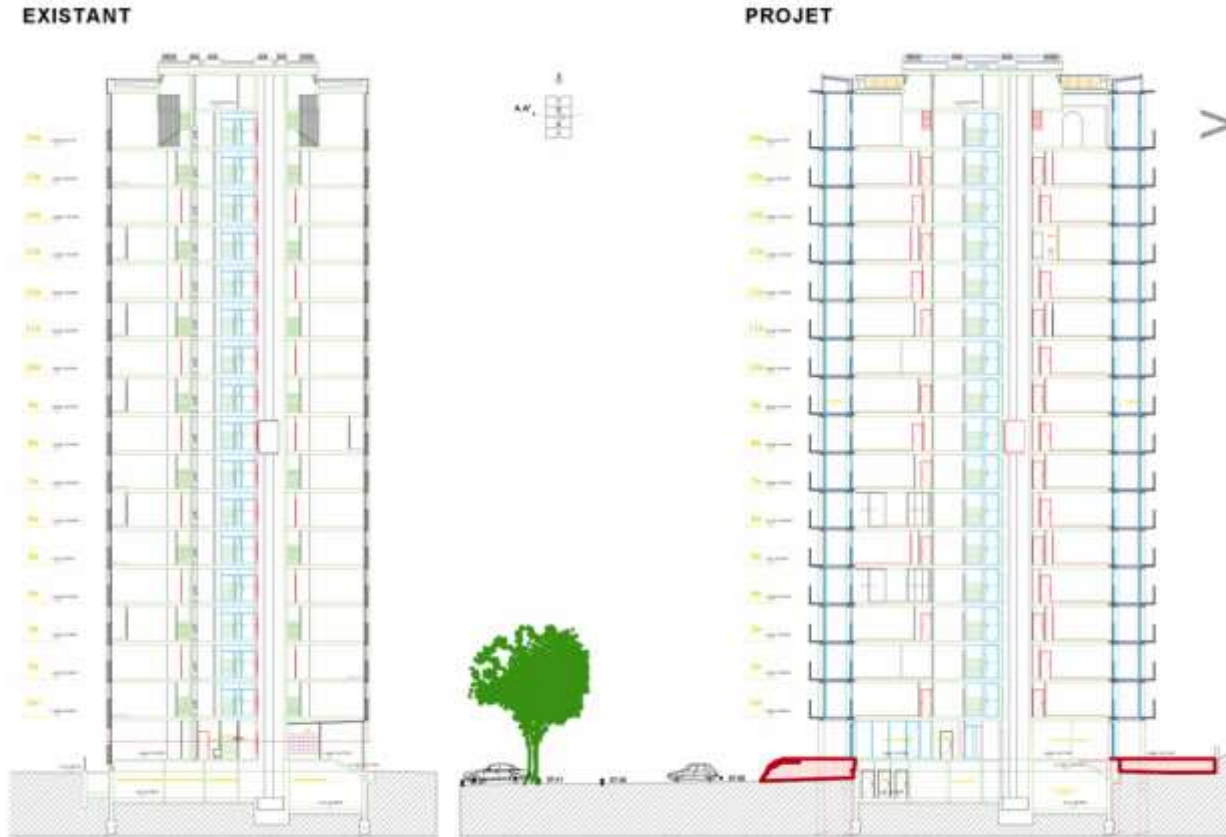


## AFTER



# Working with Existing Places

Lacaton & Vassal - *Paris 17, Tour Bois le Petre - Druot*

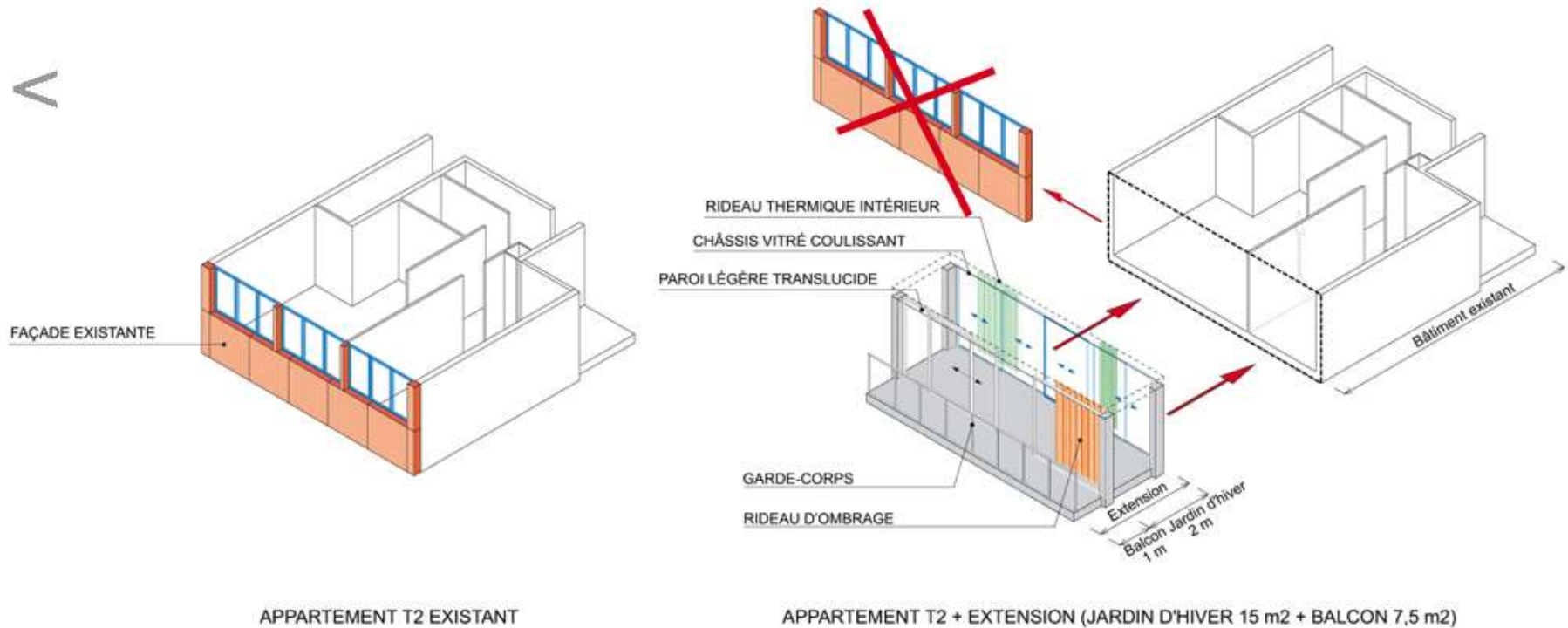


**BEFORE**

**AFTER**

# Working with Existing Places

Lacaton & Vassal - Paris 17, Tour Bois le Petre - Druot

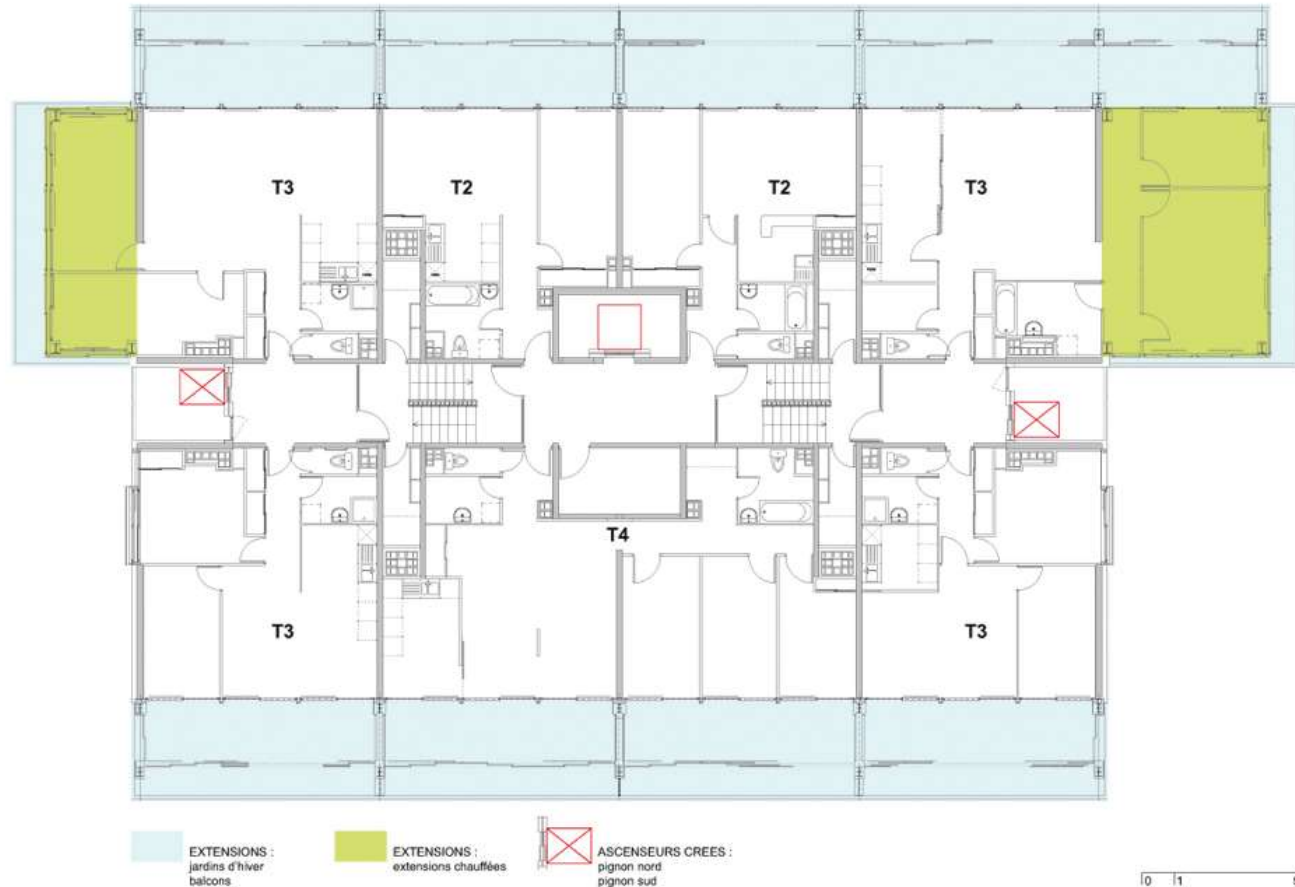


Layering the façade while tenants stay



# Working with Existing Places

Lacaton & Vassal - Paris 17, Tour Bois le Petre - Druot



**‘Buffer Zones’ & Additional  
Accommodation**

# Working with Existing Places

*Lacaton & Vassal - Paris 17, Tour Bois le Petre - Druot*



**Step 1 - Remove Old Façade & Apply  
Replacement Façade + flap-down decks**

# Working with Existing Places

Lacaton & Vassal - *Paris 17, Tour Bois le Petre - Druot*





# Working with Existing Places

Lacaton & Vassal - *Paris 17, Tour Bois le Petre - Druot*



# Working with Existing Places

Lacaton & Vassal - *Paris 17, Tour Bois le Petre - Druot*



# Working with Existing Places

Lacaton & Vassal - Paris 17, Tour Bois le Petre - Druot



## Step 2 - New Bolt-on Terraces/ Rooms



# Working with Existing Places

Lacaton & Vassal - *Paris 17, Tour Bois le Petre - Druot*



## Step 2 - New Bolt-on Terraces/ Rooms

# Working with Existing Places

Lacaton & Vassal - *Paris 17, Tour Bois le Petre - Druot*



**Complete Overhaul**

# Working with Existing Places

Lacaton & Vassal - Paris 17, Tour Bois le Petre - Druot



- Existing fabric protected & greatly improved
- Accommodation enlarged
- Insulation levels greatly improved
- Ability to cool as well because of environmental 'buffer' zones
- Reduced utility bills
- Greatly improved environment
- No tenants displaced



# Working with Existing Places

Lacaton & Vassal - *Paris 17, Tour Bois le Petre - Druot*



# Working with Existing Places

*Lacaton & Vassal - Paris 17, Tour Bois le Petre - Druot*



# Working with Existing Places

Lacaton & Vassal - *Paris 17, Tour Bois le Petre - Druot*





# Working with Existing Places

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# Working with Existing Places

Lacaton & Vassal - *Paris 17, Tour Bois le Petre - Druot*



# Working with Existing Places

Green Retrofit - BRIGHTON



**BEFORE**



**AFTER -  
80% CO<sub>2</sub> reduction**

# Case Study

## New House + Studio Hove





**Some buildings perform better than you might think...**





# Retrofit an Edwardian Fire Station

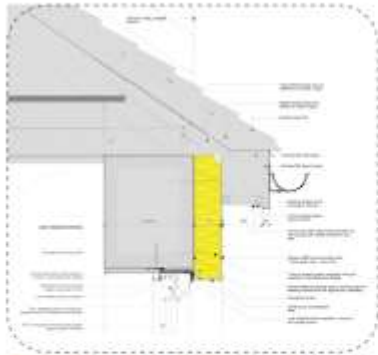


**and even these - Theaklan Drive Hastings**



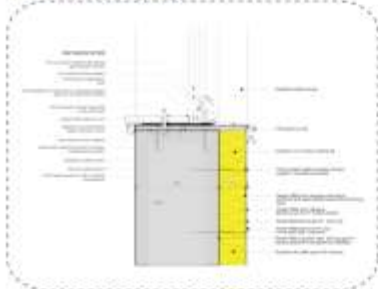


## Southampton Street Retrofit Project - Project Details



### Section Detail - Eaves and Window head:

Deep eaves will help to protect the render and insulation. The head of the bay windows will be considerably more difficult to insulate as this has limited eaves overhang.



### Section Detail - Window sill:

The existing sill will have to be replaced with a large one to cover the top edge of the new insulated render system.



### Section Detail - Basement window head:

The external insulation is fixed in panels and may be made up of several layers depending on the u-value required and the associated thickness.



### PROPOSED - Street Section:

The section cuts through wall abutments, window sills and heads, baywindows, basement and eaves. An external insulated render system will be fixed to the existing structure from the outside creating an increased thermal efficiency for the building. A proposed thickness of 100mm of insulation will achieve a u-value of 0.16, which is the equivalent to new build requirements.



### EXISTING - Street Section:



### External Insulation - Eaves and window reveals:

The external insulation is fixed back to the structure by way of plastic headed fixings.



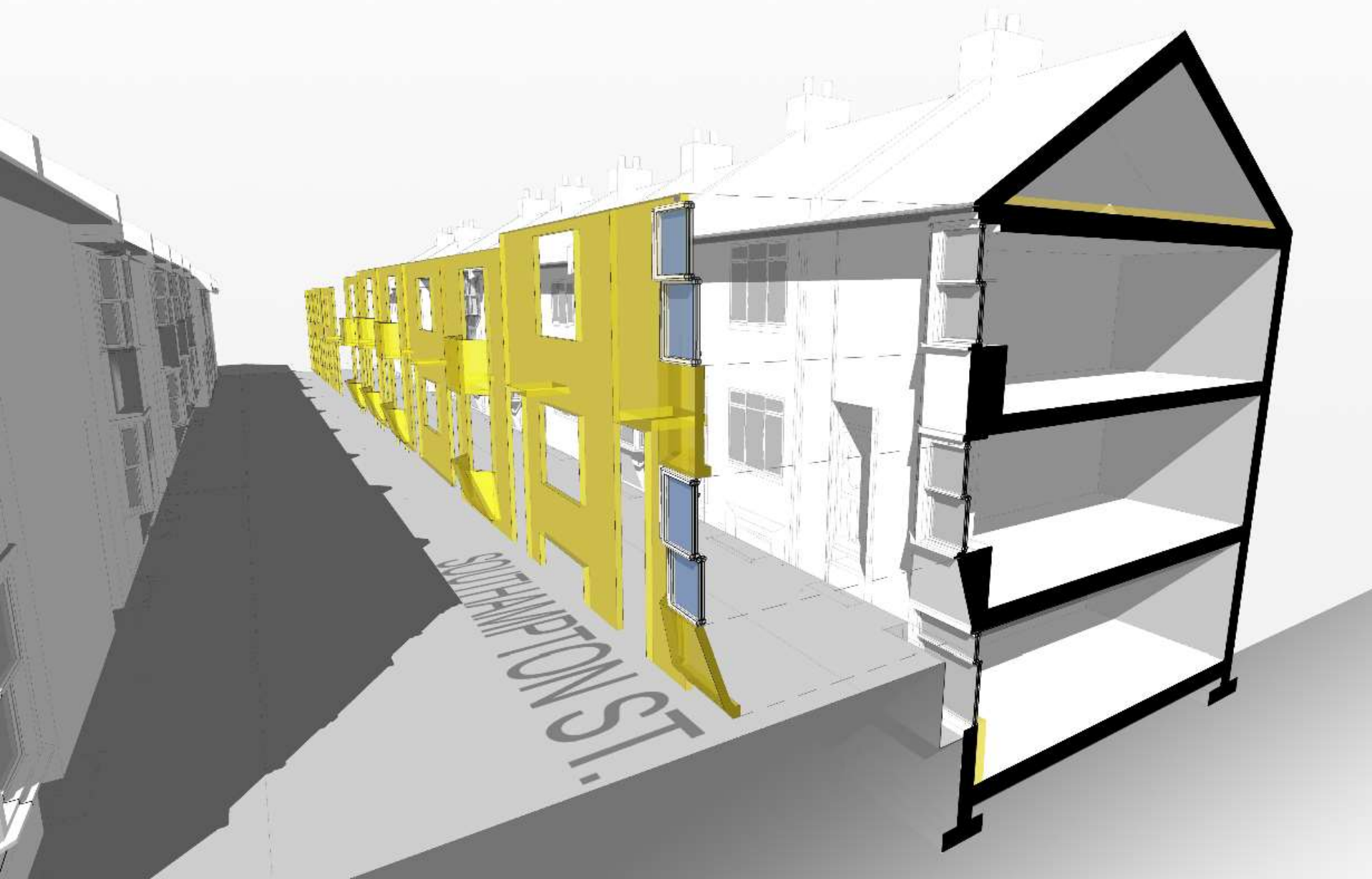
### External Insulation - Ground connections:

The most robust detail would be to carry on the external insulation below ground level. This would be subject to planning and highways consent.



### Section Detail - Pavement to wall abutment:

The wall will need to be insulated ideally below pavement level, this may also be achievable by insulating internally.



**PAUSE TO CONSIDER**

**VAT**







# WASTE HOUSE (THTKB) @ Faculty of Art University of BRIGHTON



# THTKB Mk1 Prefabricated & Compostable



**MODCELL's off-site Flying Factory**



# THTKB Mk1 Prefabricated & Compostable



**MODCELL's off-site Flying Factory**

# THTKB Mk1 Prefabricated & Compostable



# THTKB Mk1 Prefabricated & Compostable



## THATCH



# UPSTAIRS WITH FACIT



The collage consists of three photographs. The top photograph shows a large, dark, rectangular panel being lifted by a crane at a construction site. The panel has some markings on it, including "3'S" and "3'S". The bottom-left photograph shows a worker in a yellow safety vest and white hard hat standing on a wooden platform, possibly a roof or floor joist, with a crane arm visible in the foreground. The bottom-right photograph shows a worker in a yellow safety vest and white hard hat standing on a wooden platform, with a crane arm visible in the foreground.



# UPSTAIRS WITH FACIT



# UPSTAIRS WITH FACIT





# THTKB Mk1 Prefabricated & Compostable



# THTKB Mk1 Prefabricated & Compostable



## DAY 3: RAMMED EARTH

# DAY 3: TOPPING OUT





# DAY 5: COMPLETE



# DAY 5: COMPLETE

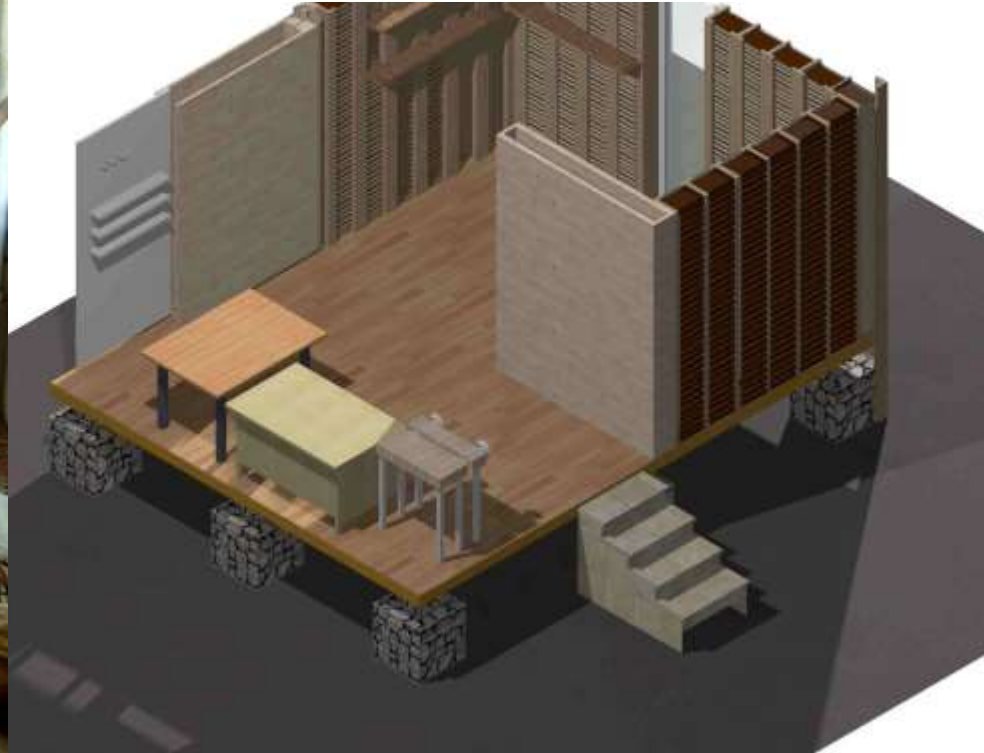


# Why Rebuild THTKB Again?

*building with waste .....*



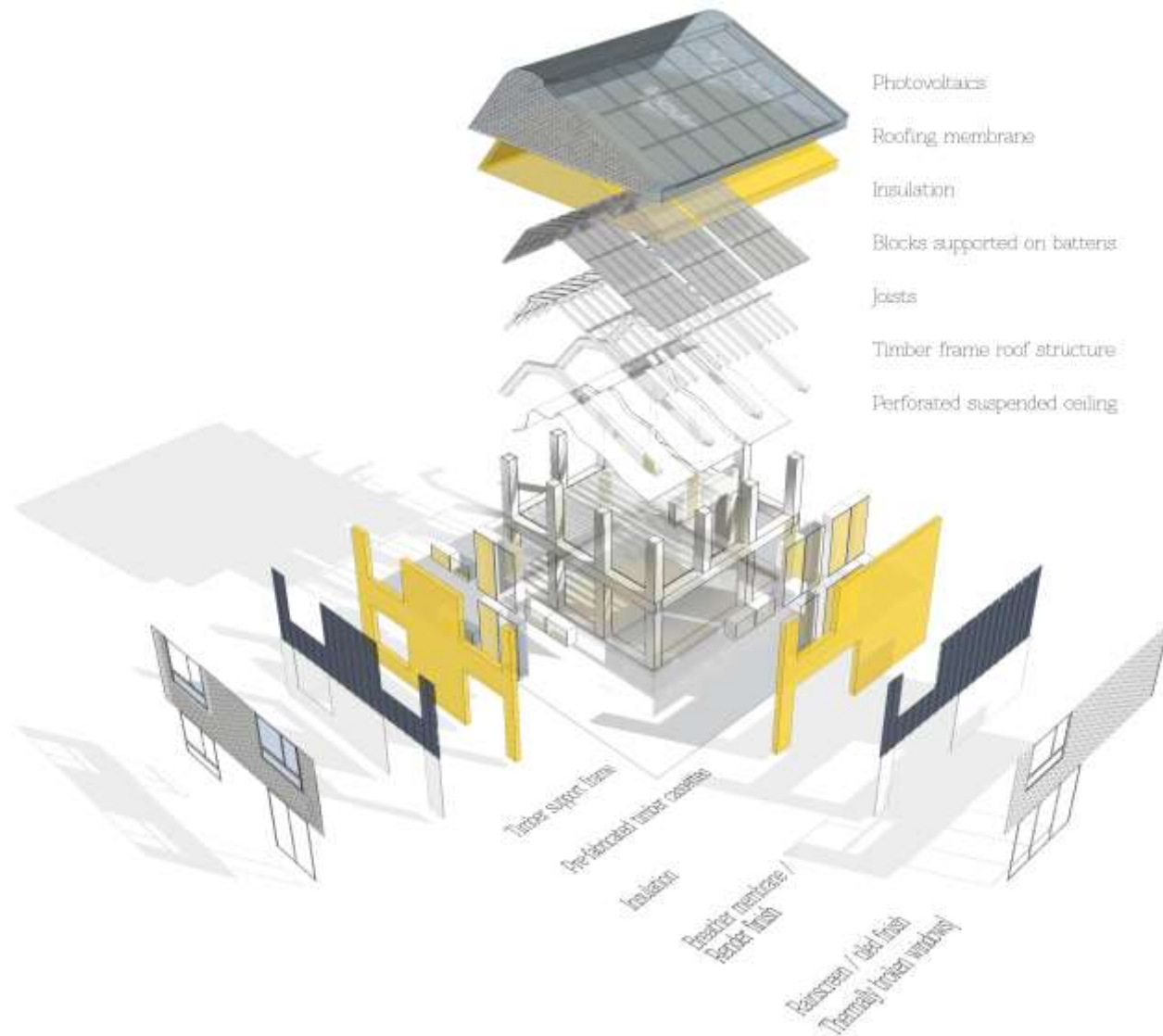
*inventing new systems .....*



*allowing THTKB to accommodate innovation and change and to be a research project and test bed .....*



# THTKB Mk II will be Made of Waste



# THTKB Mk II will be Made of Waste



city college

brighton and hove



# ... thank you to our partners



# THE BRIGHTON WASTE HOUSE



*With the help of Apprentices and resources from The Mears Group we completed the below ground works*



# Starting Work on Site



# Starting Work on Site



# THTKB = The Brighton Waste House

theguardian

Your search terms... Environment Search

News Sport Comment Culture Business Money Life & style Travel Environment Tech TV Video Dating Offers Jobs

Environment Green building

## UK's first building to be made entirely from waste – video animation



Construction and industrial waste will be used to build ecohouse in Brighton city centre. The project is named 'the house that Kevin built' and will have latest eco technologies including integrated solar panel and heat recycling system

Source: Courtesy of BBM Sustainable Design Ltd. All Rights Reserved, Length: 1min 51sec, Wednesday 3 October 2012

Share Tweet +1 Share Email Share Autoplay settings Embed

### Related video



Guardian Charity Awards  
2008 Winner: Action for  
Sustainable Living  
04 Dec 2008



Sue Perkins's food waste  
tips for the fridge and  
freezer  
04 Dec 2009



No Impact Man trailer  
03 Sep 2010




Ask Lucy: Your fashion  
footprint  
27 Oct 2009



[www.guardian.co.uk/environment/video/2012/oct/03/uk-waste-building-animation-video](http://www.guardian.co.uk/environment/video/2012/oct/03/uk-waste-building-animation-video)



# THTKB: Made of Waste Website



**The House that Kevin Built**  
2013

**The Brighton 'Waste House'**

University of Brighton  
Faculty of Arts

**Business / community**


[< Back to Business / community](#)

**Brighton 'Waste House': The House That Kevin Built**

- Duncan Baker Brown's THTKB blog
- The THTKB 'Waste House' videos
- Images
- Education and research
- THTKB London 2008
- THTKB: partners and supporters
- THTKB: archive of landmark news and events
- Press coverage
- Degree Show Build Under Way
- images
- Duncan Baker Brown's THTKB blog
- THTKB: FAQ
- Funding for Brighton's THTKB
- Sponsors
- Old logos etc


[Home](#) » [Business / community](#) » Brighton 'Waste House': The House That Kevin Built

## Brighton 'Waste House': The House That Kevin Built




**Latest news: there is no such thing as waste, just stuff in the wrong place!**

Film maker Mick Hawksworth's latest Bulletin from the development: February 2013





The Waste House Bulletin 7



**The House that Kevin Built**


A new eco-building project at the University of Brighton, offering new opportunities for students, research, the city of Brighton and the environment

[Donate](#)  **JustGiving**



**blog**

Follow the build with architect Duncan Baker-Brown



Making People *Smile*

[arts.brighton.ac.uk/business-and-community/the-house-that-kevin-built](http://arts.brighton.ac.uk/business-and-community/the-house-that-kevin-built)

# THTKB Foundations with The Mears Group



*With the help of Apprentices The Mears Group compacted existing ground to act as ground slab to reduce concrete and avoid spoil leaving site*



# Foundations Complete



*..... And The Mears Group poured Low Carbon Concrete foundations & connected all services*



# Coming out of the ground



# Coming out of the ground



# Slab, DPM, Insulation, DONE





# Waste & Surplus Ply - the problem



# Waste & Surplus Ply - the problem



# THE BRIGHTON WASTE HOUSE



... prefabricated at City College Workshops



# Columns Installed



# Capturing The Waste House Build





# Capturing The Waste House Build





# Capturing The Waste House Build



# Capturing The Waste House Build



**Now It's Time to Think.....**











# The Swiss Sound Box







**“If your design team are telling you that their green design will cost more than the norm ask them to try harder. If they can’t get a team who can”**

**..... Neil B. Chambers Urban Green**



# THE STORY OF



WITH ANNIE LEONARD

