

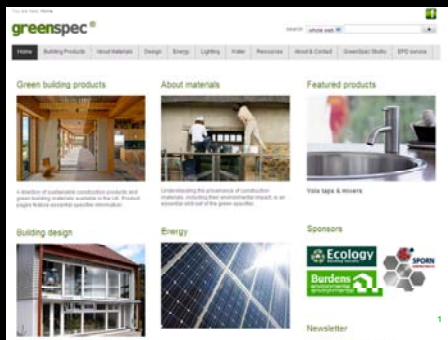
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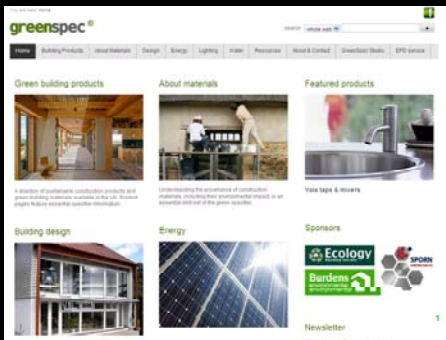
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# The challenges of eco-retrofitting interiors



# Environmentally Sustainable Design.

## What can I do?



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# What can I do?

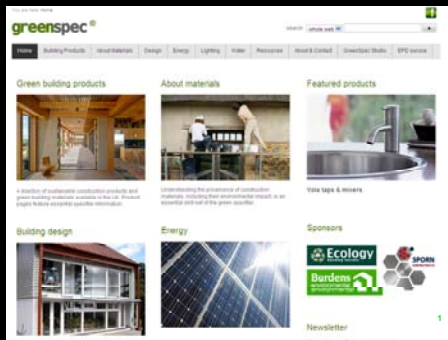
- The dilemma is that IDs will fit out and refit many interiors.
- will relegate most of the existing interiors to landfill.
- How and where can IDs engage with the Sustainability Agenda
- What materials choices can be made to reduce carbon impacts.
- Impacts in materials, methods and over the life of the fit-out.

# This presentation

- [www.scribd.com/brianspecman](http://www.scribd.com/brianspecman)
- <http://www.scribd.com/doc/79060958>
- **Interiors**
- <http://www.scribd.com/doc/2523099>
- <http://www.scribd.com/doc/78130374/The-Challenges-of-Eco-Interior-Refit-A03-130112-BRM>
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# See also

- **Domestic Commercial Government estate and Historic**
  - <http://www.scribd.com/collections/2401889/SusCon-Retrofitting>
- **Office Refit**
  - <http://www.scribd.com/collections/2472550/Ska-Potential-Supporting-Information>
  - <http://www.scribd.com/collections/2472552/Ska-Potential-Educational-Information>
  - <http://www.scribd.com/collections/2523099/Interior-Design>
  - <http://www.scribd.com/collections/2455441/FFE-Furniture-Fittings-Equipment>
  - <http://www.scribd.com/collections/2453690/Facilities-Management>
- **GreenDeal**
  - <http://www.scribd.com/collections/3311795/SMARTLife-Hive-Low-Carbon-Centre>



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# The challenges

- ID profession is awakening
  - Fit out and refit projects need to address their environmental impact
- The Green Register
  - One day conference/SBS Day 3 workshop
  - to address some of the more pressing issues interior designers have to face.
- But what are these issues?

# 3 important issues

- **Damage Categories**
  - Resource Depletion
  - Ecosystem Damage
  - Human health
- **The issues overlap**
- **The choice we make influence all three**

# Resource Depletion

- interior finishes are removed and replaced frequently,
  - Retail interiors are designed, built, stripped and rebuilt every 5 to 7 years
  - Office interiors can be stripped after every tenant and letting agent
  - CAT A to CAT B to CAT A to CAT B



# The building-fabric-only

- needs to be competent
  - Or every refit would require building regulations applications,
  - Associated design and application fees
- Increasing energy performance requirements
  - Welcome, but who wants to have to pay
  - Would make refit progressively more expensive.

# Design to reduce waste

- Knowing the size of stuff
- Designing to avoid cutting anything
- No more setting out from centre and cutting at edges
- No off-cuts
  - (33% of waste stream)
- No waste
  - (100m tonnes/annum)

# Design to enable reuse

- Avoiding adhesives
- Using easy reverse fasteners
- Using whole modules that are easily reused
- Careful removal
- Set aside to reuse on same job
- Facilitate reclaimers

# Designing to use reclaimed

- Re-educate your customers
- Visit salvage yards
- Choose to use salvaged
- Design to use salvaged

# The RICS 'Ska rating'

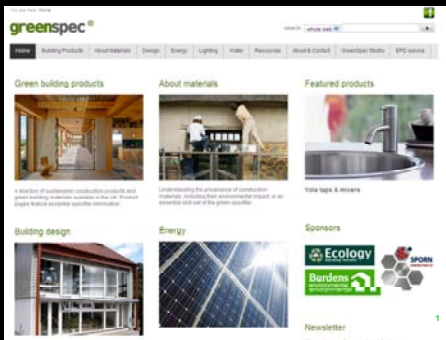
- Environmental assessment method
- addresses refit better than any of the BREEAM tools
- it focuses on building fabric and the materials that both IDs and Architects specify.
- follows the conventional approach
  - competent building, complimentary interiors
- More importantly it addresses reuse of existing interior materials
  - reuse of reclaimed
  - rather than sending perfectly sound materials to landfill.

# Issues that need to be addressed by the building:

- G value & Solar gains
- Thermal mass
- U value, k value, R value
- Decrement delay
- Wind and airtightness
- Vapour permeability
- Thermal breaks
- Weather tightness
- Internal surface temperatures
- I doubt many IDs want to get involved

# Inadequate property?

- No tenant/purchaser wants to buy into:
  - Property that needs completion as part of fit out
    - part of tenant agreement
- Tenants would quite rightly expect a competent building



# Who pays?

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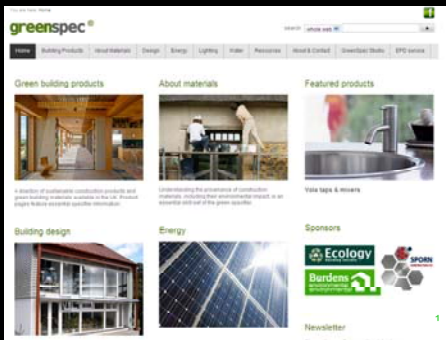
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- If building running/heating/ventilating/cooling are part of their landlord agreement
  - there is no incentive to reduce running costs
  - unless they see a financial return for a consumption reduction.





# Carpets Insulate

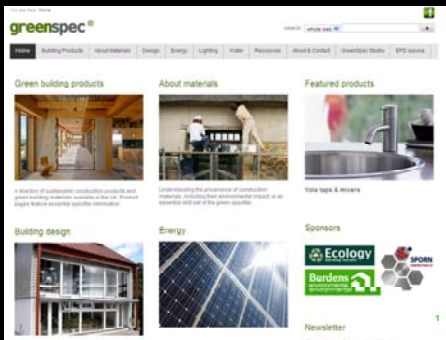
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- Carpets may be insulating
  - effect ground floor only
- they also hide thermal mass
  - that can have an effect on the overall energy demands
- Thin sheet flooring
  - will not hide thermal mass
- Ceramic and stone have thermal mass



# Ceilings Insulate

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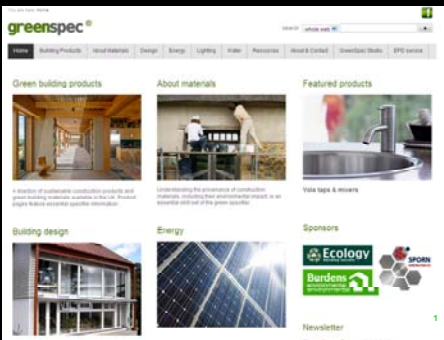
- The same two points apply to suspended ceiling,
- not at ground floor, but at roof.

# Regulating internal comfort conditions

- The interior finishes can have variable properties that help or hinder
  - Affecting heat/vent/coolth requirements
  - Potentially affecting energy demands
- The same finishes with the wrong choice of materials
  - can affect indoor air quality
  - needing ventilation which drives up energy costs

# Issues of concern include:

- Material ingredients
- Binders/adhesives/backings
- VOCs
- off-gassing
- Indoor air quality
- Moisture mass & Hygroscopicity
- Thermal mass
- Acoustic mass



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# Historic buildings

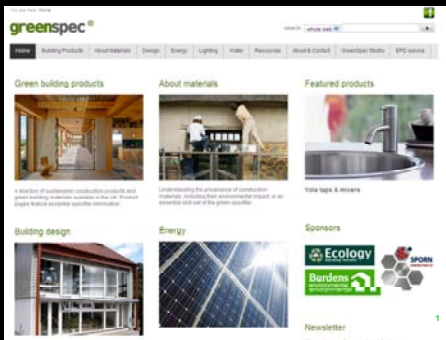
- Solid wall construction (pre 1919)
- Increasing internal insulation by wall coverings, can lead to:
  - Condensation
    - Mould
      - Asthma
    - Toxic mould
      - Death
  - Interstitial condensation
    - Rot in embedded timber
    - Frost damage of masonry
      - Structural failure

# Issues to be address in material choices include:

- Hygro-thermal moisture movement
- Wind driven rain
  - Absorption at outer face
- Capillary action through open pores
- Moisture transport through open pores
- Continuity or gap avoidance
- Vapour permeability
  - in both directions
- Internal evaporation
  - when conditions permit

# Re-education of the designers

- in all disciplines on environmental issues is paramount,
- coordinated design is essential
- Respect for each other
  - and each other's contribution would help a lot.
- Respect comes from personal knowledge, know-how, some science, years of experience and competence



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# Knowledge

- IDs often rely on manufacturers reps to tell them what they need to choose and specify
- Architects can also be inadequate in these matters,
- Many manufacturers are promoting materials and methods that will lead to failure



# Change the syllabus?

- trying to modify RIBA syllabus is difficult enough,
- who will persuade the lecturers that they need updating,
  - to enable change
- who would teach the lecturers?
- I know plenty of people who could, including myself,
- I have numerous seminar papers that I have presented to Architects, ID, Furniture and Exhibition Designers & their students

# Change the syllabus?

- I wonder if ID syllabus would be any easier?
- It turns out there is no official syllabus
- Every university or course makes its own up

# The Green Register's one day conference

- will help ID's to arm themselves with the knowledge they want and need
- to inform themselves and their clients
- about the choices they can make with fit-out, refit and refurbishment projects.
- <http://www.greenregister.org.uk/events.php?p=1&id=219#event219>
- <http://www.greenregister.org.uk/blog>

# Brian R Murphy BSc Dip Arch (Hons + Dist)

- GreenSpec Founder
- <http://www.greenspec.co.uk>
- 12/01/2012
- <http://www.Scribd.com/brianspecman>
- <http://www.scribd.com/doc/78130374/The-Challenges-of-Eco-Interior-Retrofit-A03-130112-BRM>