



Greening Your Own Office

Systems, Procedures, good and bad Habits
 ISO 14001, FM & MOBS, BREEAM, RICS Ska, WELL
 Defre, IAQ, Sick Building Syndrome,
 Transport, IT, Food, Stationery, Paper,
 Office, Kitchen, WCs, Accessibility

This Presentation on GBE:

- Find this file on GBE website at:
 - <http://GreenBuildingEncyclopaedia.uk/?P=261>
 - To be updated after this presentation
 - With any feedback
 - Created: 2003
 - Updated: 2017
 - Revision: 264, Slides: 283
 - Created for CPD
- © GBE NGS 2003-17 Greening up Your Office



Audiences:

- This presentation is for:
 - Facilities managers to help them maintain and improve what they have
 - Practice managers to help them to improve the way they occupy and equip sustainably
 - Occupants/staff to inhabit the building adopting sustainable habits
 - Building Designers enabling others to do better with theirs
- © GBE NGS 2003-17 Greening up Your Office

Sustainable Accommodation?

- Occupy a building which has all the right environmental credentials
 - Commission your own building with all the right environmental credentials
 - All the right Environmental Credentials for buildings and their services are the subject of separate presentations
 - Green up what you have
- © GBE NGS 2003-17 Greening up Your Office



- BREEAM
 - Building Research Establishment
 - Environmental Assessment Method
 - BREEAM for New Offices
 - Building Fabric
 - BREEAM for Existing Offices
 - For Fit-outs and Refits
 - BREEAM in Use
- © GBE NGS 2003-17 Greening up Your Office

	Non-domestic	Domestic	Non-domestic	Domestic	Non-domestic	Domestic	Non-domestic	Domestic	Non-domestic	Domestic	Non-domestic	Domestic	Non-domestic	Domestic
Energy Performance

Legend:
 ✓: BRE consider it relevant
 ??? : BRE do not consider it relevant;
 GreenSpec consider it relevant, why not?
 Why BRE do not consider it relevant, GreenSpec agree
 BRE consider it relevant but not the way?
 GreenSpec do not consider it relevant, why not?

© GBE NGS 2003-17 Greening up Your Office



- American alternative to BREEAM
 - Some say easier to use
- © GBE NGS 2003-17 Greening up Your Office



Another one of GBE's 1000 CPD/Lecture files to download for 88p at <http://GreenBuildingEncyclopaedia.uk>



Office, Retail and now Higher Education schemes Good Practice Measures

Another one of GBE's 1000 CPD/Lecture files to download for 88p at <http://GreenBuildingEncyclopaedia.uk>



Ambitions v Recession

- Letting agents
- Major fit-outs ripped out many times
- Fitout waste
- 1980s boom
- BCO considered standards
- CAT A & B fit outs
- Late 1980s & Early 1990s recession
- Forgotten about

Making changes

- There will always be excuses:
 - for status quo prevails
 - from those that dislike change
 - from them that cannot be asked
- We need to look for solutions and overcome the barriers
- There is an increasing urgency
- Government was investing £m s through agencies providing free advice
 - Envirowise, WRAP, NISP, London Remade, LSx



Another one of GBE's 1000 CPD/Lecture files to download for 88p at <http://www.greenbuildingdevelopmentopaedia.uk>



Another one of GBE's 1000 CPD/Lecture files to download for 88p at <http://www.greenbuildingdevelopmentopaedia.uk>

Greening the Office

- This presentation:
- First created for a design office
- Interior and Exhibition Designer
- Now added to for an Architect with ID and Graphics
- But most is applicable to most offices and most businesses

© GBE NGS 2003-17 Greening up Your Office

Making changes: false barriers

- Example: Recycling paper
- Excuse: Security & Confidentiality?
- If you are not Gov, MI5, MoD or BoE
- How good is putting it in the bin with other rubbish?
- When the black bag is on the pavement
 - Fox and Pigeons scavenge black bags
 - it can burst and drawings spill all over the street
 - I have seen it happen
- Who is looking in your bin anyway?

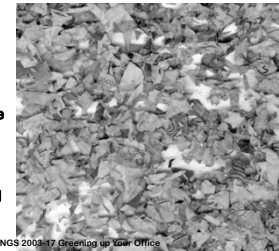
If its confidential shred it



© GBE NGS 2003-17 Greening up Your Office

Confidential?

- Avoid electric shredder, use manual shredder for the exercise
- US Army Gulf war experience
- Shred it two directions
- Compost it?
- BoE notes and Smile Plastics
- BEN building board



© GBE NGS 2003-17 Greening up Your Office



Greening your own Office

What can be done?



[Http://www.mobs.org.uk](http://www.mobs.org.uk)

no longer managing and occupying buildings sustainably
Limited content on Google Archive
Another one of GBE's 1000 CPD/Lecture files to download for 88p at <http://www.greenbuildingcentre.co.uk>

Running of the Building Operations

- Transport
- Electric Supply
- Energy Use
- Waste Segregation
- Refuse Collection
- Health & Wellbeing
- Office Activity
- Water and soap
- Kitchen and Toilet



Transport



Another one of GBE's 1000 CPD/Lecture files to download for 88p at <http://www.greenbuildingcentre.co.uk>



Transport

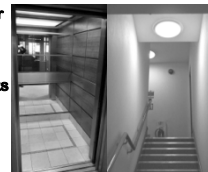
- London's streets are heavily polluted
 - Despite Clean and low pollution zones
- Commuting: by Public Transport Electric trains, Hydrogen bus, or green fuel or green power,
- Taxis for one-person rides do not make environmental gains,
 - idling taxis are bad news, diesel taxis bad,
 - low emissions taxis might not be all that good
- Local commuting: by bicycle avoiding car congestion, parking space demand
- Face masks with air filter technology
 - Some of the best technological developments coming out of this arena
 - Better than being a pedestrian

Conference Calls

- Avoid travelling: train or plane
- if you have broadband open lines:
 - at no extra cost
- Use Skype on Broadband no extra cost
- Skype in and Skype out
 - landlines to internet, &vv, Skype handsets
- Multi person/multi location meetings on the phone/computer
 - Video conference calls
- But beware not everybody engages well

Moving about in office

- Don't use lifts between adjacent and close floors, consider other tenants
- Walk up and down between floors
- Discourage use of lifts in all but taller buildings
- Lift up many floors, Walk down gravity assisted
- Avoid single person lift rides



Energy Supply

Grid supply, Dispersed Generation and Renewables



Another one of GBE's 1000 CPD/Lecture files to download for 88p at <http://www.greenbuildingenergydevelopment.co.uk>



Energy Use

Fuel

- Avoid Electricity, unless green, use gas
- Use Gas appliances in preference to electricity
- Including Gas Fridge (not easy to find)
- unless using Green Tariff Electric
- If stuck with electric use Class A++ appliances
- Use Class A++ appliances in all cases

Cut Your Carbon Board Game
<http://www.ech2o.co.uk/cut-your-carbon-the-boardgame>



© GBE NGS 2003-17 Greening up Your Office



Electrical Energy Efficiency

Smart metering & Controls
 Power, Lighting, Appliances,
 Heating, Batteries, Computers,
 Reduction in use, Limiting waste
 Voltage Optimisation



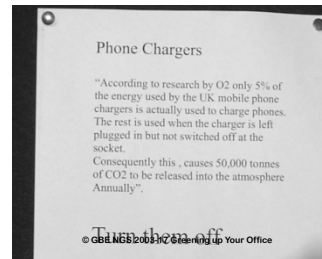
Chargers, Transformers Low voltage circuits

Heat emitters

SSO Switched Socket Outlets Transformers and Chargers

- Turn off transformers and chargers if nothing being charged to avoid :
 - Energy use & bigger bills
 - Carbon dioxide added to atmosphere
 - Heat gains in summer
- Always switch them off if not in use

© GBE NGS 2003-17 Greening up Your Office



Low Voltage Curcuits

- Add 9-12 volt circuit to avoid all the transformers that generate heat adding extra load to cooling & ventilation systems in summer



© GBE NGS 2003-17 Greening up Your Office



Electrical Energy Efficiency

Appliances

Energy Efficiency

- Appliances
- Kitchen equipment
- Domestic Appliances
- White goods
- PriceXtra
- Electric Supply Modulation
- Voltage optimisation

© GBE NGS 2003-17 Greening up Your Office

Energy Efficiency

- Microwave very Energy efficient compared with Cookers
- Short time for staff lunches
- Faster turn round
- Questionable nutritional value



© GBE NGS 2003-17 Greening up Your Office

Energy Efficient Appliances

- Choose A+ rated energy, water and noise efficiency appliances,
 - Dishwasher,
 - Microwave,
 - Cooker,
 - Coffee making,
- Significant reduction in energy use over life of appliance and office
 - Fridge, (via Voltage Optimisation)
 - Freezer, (via VO)
 - Water-cooler/chiller, (via VO)
- PriceXtra



© GBE NGS 2003-17 Greening up Your Office

Domestic Appliances

- Overall Efficiency
- Energy Consumption
- Independent
- Best in range



© GBE NGS 2003-17

White Goods Domestic Appliances

- A+, A, B C, D, E, F & G label
- Overall Efficiency
- Energy Consumption
- Capacity
- Water consumption
- Wash performance
- Spin performance
- Noise levels

Energy		Washing machine
Manufacturer Model		
More efficient	A	A
	B	
	C	
	D	
	E	
	F	
	G	
Less efficient		
Energy consumption kWh/cycle	1.85	
Capacity (nominal) kg	9.0	
Water consumption l/cycle	9.0	
Washing performance	A	A
Spin-drying performance	B	B
Capacity (nominal) kg	9.0	
Water consumption	9.0	
Noise (dB(A) re 1 pW)	52	
Washing	52	
Spinning	52	

White Goods Domestic Appliances

- FRIDGE/FREEZER:
 - Energy Efficiency to EN 153: Class A+
 - CFC and HCFC-free insulation and coolant.
- DISHWASHER:
 - Energy Efficiency to EN 50242: Class A+
- WASHING MACHINE
 - Energy Efficiency to BS EN 60456: Class A+ A+
- DRYER:
 - Energy Efficiency to BS EN 61121: Class A+

Energy		Washing machine
Manufacturer Model		
More efficient	A	A
	B	
	C	
	D	
	E	
	F	
	G	
Less efficient		
Energy consumption kWh/cycle	1.85	
Capacity (nominal) kg	9.0	
Water consumption	9.0	
Washing performance	A	A
Spin-drying performance	B	B
Capacity (nominal) kg	9.0	
Water consumption	9.0	
Noise (dB(A) re 1 pW)	52	
Washing	52	
Spinning	52	

© GBE NGS 2003-17 Greening up Your Office



© GBE NGS 2003-17 Greening up Your Office



Electrical Energy Efficiency

Heating



Heating Efficiency

- Users and bad habits
 - Electric heating is wrong
 - Renewable Electric heating is okay
 - 24/7/365 heating is a disaster
- Access to Controls
 - Accessible hierarchical controls
- Appropriate Heating and Controls
 - Internet of things
 - Smart phone remote control
 - Energy Savings to be had with joined up thinking

Energy: Heating

- Make sure heaters are on a separate circuit and switch it off in summer
- Avoid cable switches below table
- Too much trouble!
- I am not paid enough to do that too!



© GBE NGS 2003-17 Greening up Your Office

Appropriate Heating & Controls

- To suit building fabric mass or lack of it
- Automatic Controls and human override with return to default after set time
- Accessible TRV at top of Radiators
- Not set too high
- Not set to individual requirements
 - Unless ownership of space
- Not Electric heating

© GBE NGS 2003-17 Greening up Your Office



Electrical Energy Efficiency

Lighting

Artificial Lighting

- Natural Light
- Lighting Adds Heat
- Energy Saving
- Lighting Controls
- Light bulbs and Lighting products
- Light bulbs off
- FM Cleaning Contracts
- External lighting & Design & Controls
- Light Pollution

© GBE NGS 2003-17 Greening up Your Office

Energy Saving

- If Legislation does not require it
- why keep it on?
- Turn it on in the event of a fire
- PIR could turn it on if people present
- 1 m lobby does not need a light on



© GBE NGS 2003-17 Greening up Your Office

Use of Natural light

- If naturally lit
- Why artificially too?
- Light level detectors can turn lights on
- Lights left on 24 hours every day and night
- Indoors and out



© GBE NGS 2003-17 Greening up Your Office

Lighting

- Don't use Tungsten light bulbs
- Illegal to sell after 2011 UK, 2010 Aus
- Use fluorescent lamps
- Use Low-energy long-life bulbs
- Use LED spot lights (intelligently)
- Don't need to compromise on light quality to save energy
- Choose efficient fittings and lamps

Lighting Automatic Controls

- Control lights so not on if not required
- Zone lights so those closest to windows are off in day and on after dark
- Room, space or place ownership suggests type of controls
- PIR detectors turn lights on if people present
- External lights should be off by default and on only when people present
- External lights not 24 hours

© GBE NGS 2003-17 Greening up Your Office

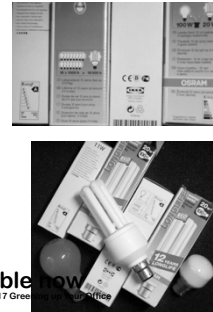
15 times life expectancy of tungsten bulb
 5 times more energy efficient
 A rating
 Don't use on dimmer switches



But some compatible

© GBE NGS 2003-17 Greening up Your Office

15 times life expectancy of tungsten bulb
 5 times more energy efficient
 A rating
 Don't use on dimmer switches



But some compatible

© GBE NGS 2003-17 Greening up Your Office



Another one of GBE's 1000 CPD/Lecture files to download for 88p at <http://greenbuildingdevelopmentpaedia.uk>



Another one of GBE's 1000 CPD/Lecture files to download for 88p at <http://greenbuildingdevelopmentpaedia.uk>

Energy: Lighting

- Don't leave lights and other equipment on if not needed
- Agile working may help here
- Partners out looking for work
- No need for lights on all day
- Stage set rooms near reception



© GBE NGS 2003-17 Greening up Your Office

Energy: Lighting adds heat

- Experiment with turning lights off in summer to see if over-heating can be avoided
- Turn off when you leave
- Require the cleaners to turn off the lights as they leave the floor



© GBE NGS 2003-17 Greening up Your Office

FM Cleaning contracts

- Staff are sometimes trained to turn lights off if last out of building
- Cleaners turn them back on
- But are they required to turn them off?
- Lights left on all night?
- Check the FM specification

© GBE NGS 2003-17 Greening up Your Office

Railway Offices
 Help people to do the right thing

TRAFFIC LIGHT SYSTEM FOR ENERGY CONSERVATION

- Means Never Turn off
- Means Turn Off At The End of A Shift
- Means Always Turn Off After Use

© GBE NGS 2003-17 Greening up Your Office



© GBE NGS 2003-17 Greening up Your Office



Light bulbs



- 10-20% of electricity bill is lighting
- Traditional light bulbs: 75% of energy as heat
- Switch to energy saving alternatives
- energy-saving bulbs cost more to buy
- last 15 times longer than traditional bulb
- saving around £70 over longer life

© GBE NGS 2003-17 Greening up Your Office

Light bulbs off

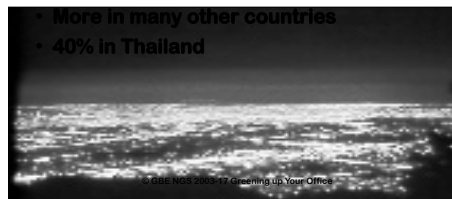
- If UK households replaced 1 100 W bulb with an energy-saving alternative
- equivalent to Sizewell B nuclear power station turned off
- government agonises over future power supply
- Fails to address energy efficiency

© GBE NGS 2003-17 Greening up Your Office

Lighting



- UK lighting consumes 20% of electricity demand



Light Pollution



© GBE NGS 2003-17 Greening up Your Office

Light Pollution

- Clean Neighbourhoods and Environment Act
- Can be used to control light pollution
- To protect wild life and neighbours
- Avoid interrupting wild life sleep patterns
- Avoid glare and orange skies for astronomers
- <http://www.darksky.org/>
- International Dark-Sky Association



Electrical Energy Efficiency

IT

IT energy Efficiency

- Turn them all off when not in use
- Excuses:
 - Overnight back up or rendering
 - Fast start next day
- Servers never off for remote access
- Energy demand when not in use
 - 90% consumption in sleep mode
 - Always ready for quick start
- Red and green lights give them away

IT



- Don't leave computers, copiers, printers or monitors on overnight
- unless scheduled backups or updates are due to occur
 - on the night in question,
- or overnight processing is to occur
 - e.g. rendering or 3D printing
- Ownership is an issue
- Last man out take responsibility

IT



- Don't leave computers, monitors on overnight
- Don't turn monitors off leaving the computers running, turn both off
- Turn Monitors off too
- Energy saving mode uses 90% of the normal energy demand when on

Clues things are on

- Light on Keyboards
- Light on Monitor



© GBE NGS 2003-17 Greening up Your Office

Clues things are still on

- Infra-red mouse
 - Or red light mouse
- Wireless routers
- Leave them visible as a reminder, hide the wires
- Switch them off
- Extension leads in switching hierarchy



© GBE NGS 2003-17

IT



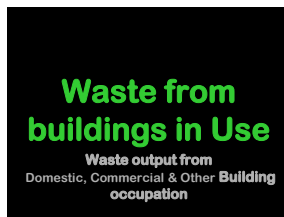
- Consider if Servers need to be left on 24 hours a day
- In summer turning computers off when not used helps to avoid over-heating
- Turn off at Christmas break?

© GBE NGS 2003-17 Greening up Your Office



Office Waste

Stationery, Kitchens and Washrooms



Another one of GBE's 1000 CPD/Lecture files to download for 88p at <http://GreenBuildingEncyclopedia.uk>

Waste

- Paper towels
- Kitchen waste
- Printing and Plotting waste
- WEEE Regulations and electrical waste
- Batteries
- Computers when upgrading

© GBE NGS 2003-17 Greening up Your Office

Paper Towels

- Hand towels and toilet paper
- Use FSC (Forest Stewardship Council) accredited paper
- Use recycled paper sponsoring WWF etc.
- Use recycled paper



© GBE NGS 2003-17 Greening up Your Office

Recycled/Recyclable Paper towels

- Recycled content is good
- Recycled content which is recyclable is better
- All paper is recyclable but its about who is doing it.
- Its also about segregation (or keeping it segregated and not adding to a single bin of mixed waste)
- And its about finding a service that is taking back its own paper.

© GBE NGS 2003-17 Greening up Your Office

Take back for recycling?

- paper towel manufacturers
- who if any are taking back and recycling?
- My suspicion is there wont be any.
- White paper recyclers may have contacts with non white paper recycling.

© GBE NGS 2003-17 Greening up Your Office

London Office Paper Recycling

- http://www.bioregional.com/news%20page/news_stories/laundry/laundry_251104.htm
- <http://www.ethicalmedia.com/stories/laundrypressrelease/>
- <http://www.london-recycling.co.uk/about/initiatives/laundry.php>
- <http://www.wasteonline.org.uk/resources/information sheets/officerecyclinginlondon.htm>
- http://www.londonremade.com/download_files/Recycling%20services.pdf

Compostable?

- The Green/Blue paper towels may be compostable
- Do planted internal planter suppliers offer composting opportunities?

© GBE NGS 2003-17 Greening up Your Office

Reusable Cloth is even better

- Cloth towel dispenser and washing service
- Resource efficiency: paper cloth electricity
- but an environmental profile may be called for
- landfill is no longer an acceptable option

© GBE NGS 2003-17 Greening up Your Office

Waste Segregation

- Segregate waste at point of generation:
- Multiple bins or multiple compartment
- Segregate:
 - Food waste and polluted packaging
 - Clean packaging to add to recyclables
 - reusable and recyclables
 - Coffee Aluminium capsules
 - compostable if you have a garden
 - Coffee grounds for fuel
- General waste gets burned in Southwark
- What happened in Islington



© GBE NGS 2003-17 Greening up Your Office

Segregation: Recycleables

- Plastics: plastic bottles, yoghurt tubs
- Cans: food and drink (remove labels)
- Cardboard: Boxes
- Paper:
- Glass: Bottles and Jars



© GBE NGS 2003-17 Greening up Your Office

Segregation: Compostables

- Vegetable and Fruit, skin and core
- Teabags, Eggshell, nut husks
- Flowers and Plants
- Not Plate scrapings
- Not animal produce or meat or fish
- Compost: in composters or wormaries,
- To feed planters and roof gardens

© GBE NGS 2003-17 Greening up Your Office

Segregation: Waste

- Plate scrapings
- Animal produce
- Poultry, meat or fish
- Composites difficult to separate

© GBE NGS 2003-17 Greening up Your Office

Plotter Waste

- How often does a plot sit there all day and the owner not turn up to collect it
- Probably sent it to a plotter on the wrong floor then another on the right floor



© GBE NGS 2003-17 Greening up Your Office

Waste

- Segregate recyclable paper
- Segregate waste at point of generation
- Provide dedicated bins labelled
- don't misuse them,
- Manage paper: don't misuse
- Reuse waste photocopy scraps for drafts and notes



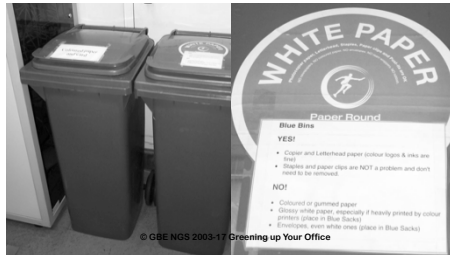
© GBE NGS 2003-17 Greening up Your Office

Segregating Waste At Source



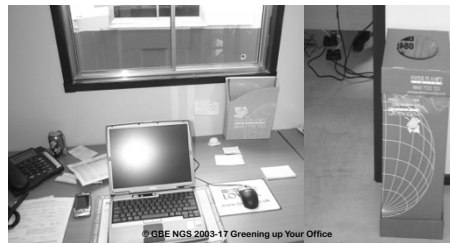
© GBE NGS 2003-17 Greening up Your Office

Two bins, one to segregate



© GBE NGS 2003-17 Greening up Your Office

A4 Scraps stored for reuse



© GBE NGS 2003-17 Greening up Your Office



WEEE & Hazardous Waste

IT



Another one of GBE's 1000 CPD/Lecture files to download for 88p at <http://www.buildingemployers.co.uk>

WEEE Regulations

- Waste Electronic and Electrical Equipment
- Not permitted to Landfill 1st July 2007
- Toxic parts
- Requires recycling of valuable component and materials
- Reuse is often possible
- Charities set up recycling companies

Hazardous Waste: fluorescent



© GBE NGS 2003-17 Greening up Your Office



Battery Recycling

- 30,000 tonnes of portable batteries enter the UK market each year.
- New EU rules have come into force that require some stores selling batteries to provide in-store recycling bins.
- Anyone selling more than 32 kg a year
 - equivalent to one pack of four AA batteries a day
 - must comply as part of targets on cutting landfill

© GBE NGS 2003-17 Greening up Your Office

Batteries

- Should be avoided if at all possible
- Use more energy to create than they provide
- Toxic in landfill
- Not being segregated
- Most often a small proportion of the charge is used and then discarded



© GBE NGS 2003-17 Greening up Your Office

Batteries

- Dead Camera batteries will still turn Walkman
- Dead Walkman batteries will still turn clocks for years
- Dead walkman batteries will run an old radio (not DAB radios) for months
- Dead batteries will light LED bike lamps
- DAB radios & batteries are an environmental disaster



© GBE NGS 2003-17 Greening up Your Office

Rechargeable Batteries

- If you have to use batteries
- Use rechargeable
- New types
- 15 minute charge possible
- Office bike and survey torches
- Site walky-talky



© GBE NGS 2003-17 Greening up Your Office

LED lamps

- Red and green indicator lamps on computers
- Now full colour range available
- LED use very little energy
- LED bike lamp batteries last for a very long time
- Use LED in lighting display advertising & emergency signage
- Remember they are spotlights



© GBE NGS 2003-17 Greening up Your Office

Hazardous Waste: Batteries



© GBE NGS 2003-17 Greening up Your Office

Batteries

- Use rechargeable batteries
- Use solar charged lights
- Use solar recharged batteries



© GBE NGS 2003-17 Greening up Your Office

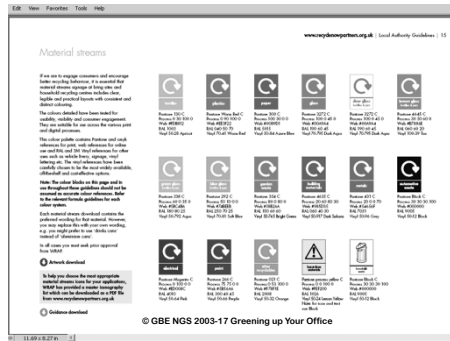
Refuse Room

- Segregate Waste, bag and label
- Use Recycled plastic 2 and 4 wheel bins with lockable lids, shaped holes
- Colour code, graphic, words and notice
- Educational opportunity
- Store waste for LA kerbside collection
- Improve on LA waste strategy in readiness for improvement

© GBE NGS 2003-17 Greening up Your Office



Another one of GBE's 1000 CPD/Lecture files to download for 88p at <http://www.greenbuildingcentre.co.uk>



Recycle Now

- http://www.wrap.org.uk/downloads/Recycle_guidelines_v4-2_25040404.pdf

© GBE NGS 2003-17 Greening up Your Office

Westminster Website

- Waste Guide
- the definitive guide
- <http://www.westminster.gov.uk/environment/rubbishwasteandrecycling/rubbishandwaste/>

© GBE NGS 2003-17 Greening up Your Office

When you upgrade don't dump

- WEEE regulations apply to IT and White goods
- GreenWorks and GreenStandards and others will take your stuff, refurbish and resell or give to charity, schools and hospitals
- School in a box
- NGS GBE website
 - Furniture Fittings Equipment & IT: APP FFEI
 - Material Exchange Websites: APP MEW
- Freecycle: www.freecycle.org

© GBE NGS 2003-17 Greening up Your Office



© GBE NGS 2003-17 Greening up Your Office



Kitchens & Toilets



- **Never boil the same water twice**
 - Healthy water is cold or boiled once
- EcoKettle helps to boil just enough water once
- Any kettle and person can do that
- Also helps older generation who think kettle must be full and water must thunder before using
- Traditionalists think tea must use boiled

Kitchen and Toilets

- Hot water drinks
- Cleaning Fluids
- Paper
- Drinking Water
- Food & Drink
- Utensils, Cutlery and Crockery
- Fairtrade
- Waste segregation
- Equipment

© GBE NGS 2003-17 Greening up Your Office

Hot water

- if sufficient staff numbers
- Use boiling water dispenser rather than kettle
- Kettle in preference to saucepan
 - Yes it happens
 - Especially with non-indigenous staff



© GBE NGS 2003-17 Greening up Your Office

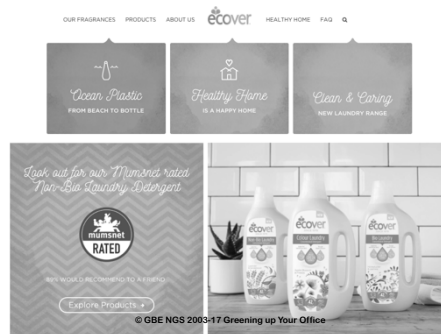
Zip Taps

- Not dissimilar to umbilical multi-supply taps behind bar in wine bars and pubs
- These will dispense boiling water, cold water and filtered chilled water
- E sales@zipheaters.co.uk
- T 03456 005 005
- Zip Heaters UK Ltd.
- W <https://www.zipwater.co.uk>
- W <http://www.zipwater.com> Office



Cleaning Fluids

- Use bio-based biodegradable cleaning fluids, at kitchen sink, basins and toilet



- Plant and Mineral based
- Health and Wellbeing at heart
 - Long ingredient checklist
 - Skin irritation, eye irritation, aquatic toxicity
- Clean Green Factory
- 25% Recycled plastic and
- 75% bio plastic
- Refillable (in France EcoShops at least)
- No Animal testing
- Founder of B Corporation = Fair Trade
- Partner with WaterAid



- Domestic:
 - Ecover
 - <https://www.ecover.com/about-us/>
- Commercial:
 - GreenSpeed range
 - <http://www.ecover-professional.com/>

© GBE NGS 2003-17 Greening up Your Office



Drinking Water



Another one of GBE's 1000 CPD/Lecture files to download for 88p at <http://www.greenbuildingencyclopedia.co.uk>

Drinking Water

- Bottled water is not sustainable
- Food miles
 - Transport Fuel
 - Transport emissions
 - Transport congestions
- Embodied water
- is not uncommon
- It is desired by staff



© GBE NGS 2003-17 Greening up Your Office



Corporate Greed

- Nestle are suing a city hall in USA
- for trying to ensure its own people get enough water
- to drink and for agriculture
- Nestle extracts millions of gallons
- Pays next to nothing for water supply
- Exports globally (Embodied water)
- Probably pays no tax

Drinking Water

- Chilled bottled water is desired by staff but is not sustainable
- Ambient filtered water is better and can be on tap
- Chilled filtered water is desired by staff and can be on tap



© GBE NGS 2003-17 Greening up Your Office



Zip Taps

- Not dissimilar to umbilical multi-supply taps behind bar in wine bars and pubs
- These will dispense boiling water, cold water and filtered chilled water
- E sales@zipheaters.co.uk
- T 03456 005 005
- Zip Heaters UK Ltd.
- W <https://www.zipwater.co.uk>
- W <http://www.zipwater.com>

Bottled Water 'Could Be Toxic'

- **Toxic threat: Bottled water may contain potentially toxic substances, research warns**
- Potentially toxic substances found in plastic could be seeping into bottled water, new research shows.
- Scientists in Germany discovered heavy metal traces in 15 brands of bottled water from Canada and 48 from Europe
- They found "unambiguous" evidence of the potentially toxic heavy metal Antimony (known as Sb) leaching into water from their containers
- The researchers, led by Professor William Shotyk of the University of Heidelberg, also looked at Sb levels in three German brands of water available in both glass and plastic bottles

Corn starch bioplastics

- Belu
- Commercially Biodegradable bottle (closed vessel)
- Social Sustainability:
- Profits go to clean water projects world wide via wateraid
- www.belu.org
- Seen in glass bottles recently



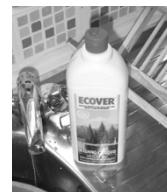
© GBE NGS 2003-17 Greening up Your Office



Cup & Utensil Cleaning

Utensils, Cutlery and Crockery

- Small offices:
 - use china/ceramic mugs and cups
 - clean them manually
- Medium offices:
 - clean them overnight with dishwasher,
 - using biodegradable cleaning fluids



© GBE NGS 2003-17 Greening up Your Office

Utensils, Cutlery and Crockery

- Intermediate offices:
 - use paper cups and segregate waste
- Big offices:
 - use plastic cups with special bins and a plastic cup recycling service



© GBE NGS 2003-17 Greening up Your Office

Plastic cup recycling

- There are nationwide drinks dispenser plastic Beca collection services that comes with a special Beca bin
- They produce recycled plastic stationery items



© GBE NGS 2003-17 Greening up Your Office

Food

- Seasonal, Local, Fresh & Organic is best
- Not imported, frozen & chemical
- Support local farms & farmers markets
- Receive local food boxes
- Exotic fruit and vegetables are not sustainable (food miles)
- Imported foodstuffs are not sustainable (food miles)
- Sainsbury/Tesco is easy and cheap
- Co-op is good again
- Fairtrade (independent) is best of imported
- Sainsbury opted out, now "Fairly Traded"
- Choose Fairtrade not Fairly Traded
- Meat is a bad environmental choice

Food & Drink



Another one of GBE's 1000 CPD/Lecture files to download for 88p at <http://greenbuildingdevelopapedia.uk>

Tea, Coffee & Chocolate



- Home grown tea and coffee, hot chocolate is not available
- Fairtrade goods are more sustainable but still there are food miles
- Fair-trade coffee is good
- Shade-Grown Fair-trade coffee is best

Fairtrade Foundation Fairtrade Fortnight 6-19 March 2006

- Fairtrade Fortnight
- "Increase consumer awareness of the Fairtrade Mark and encourage people up and down the country to purchase Fairtrade products".
- 2006 Theme 'Make Fairtrade your habit'
- hundreds of new Fairtrade products available, including clothing made from Fairtrade certified cotton.
- huge range of products including bananas, chocolate, t-shirts and even footballs
- www.fairtrade.org.uk www.fairtradefestival.co.uk
- E mail@fairtrade.org.uk

© GBE NGS 2003-17 Greening up Your Office

Fairtrade

- 1000 products
- Coffee, Tea, Chocolate, Cocoa, Sugar, bananas, fresh and dried fruit, juices, honey, cakes and snacks, preserves, nuts, oils, herbs & spices, rice, beer, rum, wine, muesli

© GBE NGS 2003-17 Greening up Your Office



Sanitaryware & Sinks

Sanitaryware

- Water saving Taps and Appliances
- Sanitaryware
- Female Issues & Services
- Office crèche
- Hand Cleaning soap
- Cleaning Appliances
- Hot water supply & Insulation
- Showers
- Hand drying
- Toilet paper

© GBE NGS 2003-17 Greening up Your Office



Another one of GBE's 1000 CPD/Lecture files to download for 88p at <http://www.greenbuildingdevelopment.co.uk>

All Appliances

- All appliances and fittings on isolation/flow regulating valves
- set low by default.
- All water using appliances to be A+ rated for water use.
- All new as set out below below,
- Existing to be modified towards these.

© GBE NGS 2003-17 Greening up Your Office

Urinals

- In past:
 - Automatic flush
 - 24 hours a day
 - Fitted night time miser
- Now:
 - Fit proximity detectors to flush after you leave
 - Waterless Urinals
 - Still need waste pipes for urine!
 - Vent systems to take smells away



Female Facilities

- Sanitary Towels, Tampons, Liners
- Avoid using the Sewers as a waste disposal route
- Collection services with dedicated bins
- WEN Women's Environment Network
 - Offer no-waste alternatives
 - <https://www.wen.org.uk>
- <https://www.wen.org.uk/environmental/>



Office Crèche

- Avoid silica gel absorbent in core
- Avoid landfill
- Avoid Pampers, etc.
- Use Natural cloth washable nappies
- Local authorities are developing wash services
- Inner lining to remove solids to WC
- Use compostable nappies

© GBE NGS 2003-17 Greening up Your Office

WC Flush

- Was:
 - 9 litre flush
- Now:
 - < or = 6 litres
- Could be:
 - dual flush 6/4 litre
- Better: (should be normal)
 - 4/2.5 litre
- Best:
 - 1 litre vacuum flush
 - Recycled rainwater flush water not potable



WC Ideal

- All appliances and fittings on isolation/flow regulating valves
- Dual and low flush cistern/toilet 4/2.5 litres flush.
- Low capacity cistern means quicker refill
 - Faster turn around
 - Shorter queues?
 - Depends upon other activity time
 - Tissues on toilet seat?
 - With children?

© GBE NGS 2003-17 Greening up Your Office

Existing Buildings: WC

- Introduce isolating valve to pipework
- Retrofit low water demand flushes to existing WC cistern
- Retrofit water saving devices in existing cisterns
 - Save-a-flush
 - Hippo

© GBE NGS 2003-17 Greening up Your Office

Save Money, Water & Environment

- UK water use increased by 70% since 1970
- Toilets: 90% of water use for an office
- A device can be fitted to a siphon toilet (with handle on front),
- saving average UK household 500 litres/week
- If on a water meter, over £100/year
- Interflush from Varyflush
- www.interflush.co.uk.



WC Cleaning

- Use a brush in preference to chemicals
- Use natural cleaning liquids if you must
 - Ecover
- Non-stick coatings
- Use biological anti-bacteria coated
 - Lives on the bowl surface
 - Eats skid marks
 - ~~not washed away~~

© GBE NGS 2003-17 Greening up Your Office

Basins and Taps

- Fast wasteful taps aim into bowl
- Slow flowing tap drips onto surfaces
- Stop designing them so 25% of water ends up on work surface or floor
- Sanitaryware by manufacturers work
- Architect designed sanitaryware usually fails
- FMs hate them

© GBE NGS 2003-17 Greening up Your Office

Tap cleaning

- Dripping on surfaces,
- Soap residues require cleaning
- Cleaning requires chemicals or detergents
- Avoid touching with soapy hands
- Proximity taps avoid it all

© GBE NGS 2003-17 Greening up Your Office

Percussion taps

- Shut too fast to get to the water
- Or too slow turning off
- No control over the flow rate
- Jam on, Jam part way
- Chrome damaged by soap, rings and keys in hands
- Can be sprinkler
- Put on isolation/flow regulator and set low by default

© GBE NGS 2003-17 Greening up Your Office

Taps

- Slow flow to save water
- Proximity taps stop & start on their own
- Spray taps reduce water demand
- Aerators feel like lots of water
- Sinks and Baths want to be filled quickly
- avoid water cooling by aerators/sprinkler
- Two stage taps, slow flow and fast fill

© GBE NGS 2003-17 Greening up Your Office

Taps

- Hot and cold water taps on isolator/flow regulator valve
- 4 litres/minute maximum
- proximity actuated taps
- aerators or spray heads
- safe temperature blending
- not pressurized, not percussion taps
- Pumped on circulating pipe if remote storage
- Solar Thermal heating
- Anti-bacterial coatings

© GBE NGS 2003-17 Greening up Your Office

Sinks

- Hot and cold water taps
- Need quick sink fill to avoid heat loss
- And sprinkler/aerator low flow to wash hands and some teeth brushing and face washing
- Isolation valve but regulator less important
- Elbow/level taps, easy on/off
- Sinks fitted with two stage taps: sprinkler and full flow
- Some wash dishes with running tap
- 6 litre/minute maximum

© GBE NGS 2003-17 Greening up Your Office

Catering kitchen sinks:

- Catering sinks want fast flow to fill
- Avoid aerators on fast fill tap
- Hand washing should be in separate bowl with two stage tap with aerator/sprinkler
- All taps on isolation/flow regulator valve

© GBE NGS 2003-17 Greening up Your Office

Existing Buildings: Appliances and Sanitaryware

- Retrofit isolation/flow regulating valves on all taps and supply pipes
- Set low by default

© GBE NGS 2003-17 Greening up Your Office

Cyclist Showers

- 8 litre/minute maximum low flow shower
- Narrow spouts give pressure jet effect
- Good spread of water jets impression of lots of water
- good water head ideal
- not power shower
- Try to avoid retrofit power-shower
- Changing facility and lockers
- SHRU Shower Waste Heat Recovery Unit
 - Significant energy savings to be had
 - Hot waste pre-warms incoming cold water

Pipes & Insulation

- Fully insulate hot and cold pipes along whole length
- Inspect everywhere and confirm
- Avoid labour intensive wrapping, it wont happen
- Encase with split tube or Fill whole void
- If DHW is on a circulating pipe, then well insulated everywhere
- Avoid dead legs, avoid long dead legs
- Bathrooms over/near kitchens: compact plumbing
- Domestic: Many ensuite bathrooms usually means excess plumbing and energy wasted

© GBE NGS 2003-17 Greening up Your Office

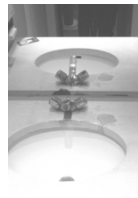
Services Repairs

- British Gas Engineer's on repairs and maintenance contracts
- They are required to insulate pipes close to insulated replacement cylinders
- But not beyond say 1 meter
- They think pipe insulation is a waste of time
- They are very wrong
- And the public trust BG Engineers
- Because BG engineers tell you every other engineer is a cowboy
- So much TV marketing to fix their bad reputation

© GBE NGS 2003-17 Greening up Your Office

Basins & Soap Recess

- Soap Recess don't drain
- Especially if Architect designed
- Soap bar dissolves
- Wasteful of soap



© GBE NGS 2003-17 Greening up Your Office

Hand cleaning soaps

- Bars of soap are messy
- drying shrinkage cracks harbour bacteria
- Use Biodegradable soaps
- Liquid soaps destroy rain forests for plantations
- avoid excess soap
 - 1 squirt is enough
- Use foaming dispenser



© GBE NGS 2003-17 Greening up Your Office

Hand Drying

- Fabric towels
- No waste
- Do need cleaning but carried out on a commercial scale
- Don't locate hot air blowers over radiators because they will rust away

© GBE NGS 2003-17 Greening up Your Office

Hand Drying Towel

- Cleaned by service
- Reused not wasted
- unlike paper towels
- Unless segregated or recycling



© GBE NGS 2003-17 Greening up Your Office

Hand Drying

- Fabric towels use less energy than hot blown air which are not very effective
- Only use electric if no other method possible
- Don't locate hot air blowers over radiators because they will rust away

© GBE NGS 2003-17 Greening up Your Office

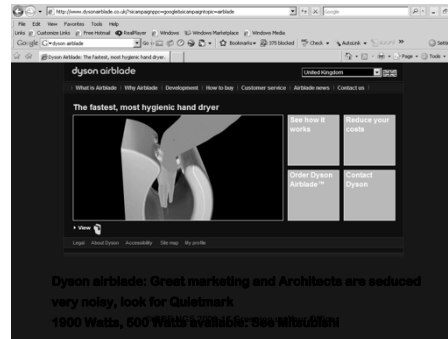
Warm Air Hand dryers

- Electrically warmed air
- Inefficiently created grid electricity
- Inefficient hand dryers 500-2500 watts
- Long wait to get dry
- Impatience means hands not dried despite expended heat
- Avoid over radiators or they rust

© GBE NGS 2003-17 Greening up Your Office

Cold Air Hand dryers

- Wet hands in, Proximity detection, withdraw hands,
- blast of air removes water
- 400 mile per hour wind
- No heat added, just air and some residual heat from motor
- 10 seconds compared with 27 to 40+
- 1900 watts is not effective^{rice}



Toilet Paper



Campaigns work

- After a very brief campaign less than 5 years ago
- Most toilet paper manufacturers now provide FSC certified paper
- Or have recycled content paper
- Or both
- Choose it if you don't already

© GBE NGS 2003-17 Greening up Your Office



Office Equipment & Expendables

Computers, Paper, Furniture, Finishes

Office Expendables

- Ink cartridges
- Printing paper
- Reducing paper use
 - Word processing and printing
- Recycled Stationery Suppliers
- Green Stationery

© GBE NGS 2003-17 Greening up Your Office

Ink Cartridges

- Recycling of ink cartridges
- Under public pressure manufacturers now offer recycling



© GBE NGS 2003-17 Greening up Your Office

Ink Cartridges

- Companies offer reuse by refilling
- Sell at lower cost
- Buy empties back



© GBE NGS 2003-17 Greening up Your Office



All paper use

- In 2006 the UK used about 12.4 million tonnes of paper
- of which only 32% was recycled
- UK Businesses use 2 million tonnes of paper each year

© GBE NGS 2003-17 Greening up Your Office

Paper

- Use FSC (Forest Stewardship Council) accredited paper
- Use recycled paper sponsoring WWF etc.
- Use recycled paper
- Post consumer recycled
- FSC now covers Recycled



© GBE NGS 2003-17 Greening up Your Office



© GBE NGS 2003-17 Greening up Your Office

Word Processing

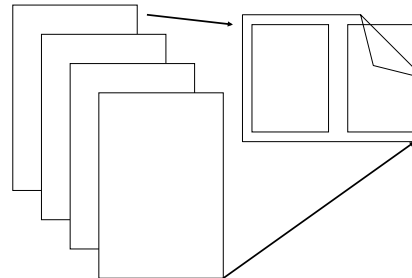
- Work hard at fitting the last paragraph onto page one
- Use Page Set up and Paragraph Settings to auto-fit in one page
- Adjust margins to use more of the page
- Specifications: too thick?
- Reduce margins, reduce font and print double sided

© GBE NGS 2003-17 Greening up Your Office

Photocopying and printing

- Set printers and copiers to default:
- double sided, 2 No. A4 reduced to A4 landscape
- i.e. 4 pages to a sheet
- Proof-read and spell-check on screen before printing,
- test print before multiple printing,

© GBE NGS 2003-17 Greening up Your Office



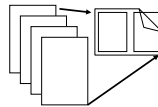
© GBE NGS 2003-17 Greening up Your Office

Saving Paper

- London-wide switch to duplex printing
- could save 17.5 billion sheets of A4 paper every year!
- That's enough paper to wrap around the earth four times!

© GBE NGS 2003-17 Greening up Your Office

Copiers



- Set default to print double sided
- 2 A4 side by side shrunk to fit A4 landscape i.e. 4 pages per A4 sheet
- Reuse waste
- Recycle waste



© GBE NGS 2003-17 Greening up Your Office

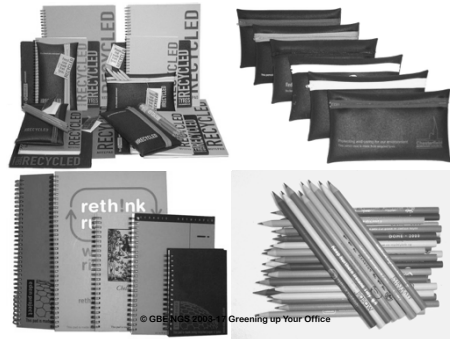
Green Office Supplies

- Government Approved suppliers and supplies list available
- "Quick wins"

© GBE NGS 2003-17 Greening up Your Office

Recycled Office Supplies

- <https://remarkable.co.uk>
- Remarkable (Pencils) Ltd. The Old Stables Hansfield, GL19 4LG
- T 01452 780 795
- E edm@remarkable.co.uk
- Recycled tyres: Mousemats, pencil cases,
- Recycled plastics: Rulers, Pencils
- Recycled paper: Books, Pads, Paper
- Recycled rubber and paper avoiding plastics



Green Stationery

- <https://www.greenstat.co.uk/>
- Studio One, 114 Walcot Street, Bath, UK, BA1 5BG
- T 01225 480 556
- F 01225 481 211
- E sales@greenstat.co.uk

© GBE NGS 2003-17 Greening up Your Office



- Carbon neutral environmentally responsibly printer cartridges and stationary
- offer very competitive prices and customer service, whilst cutting your carbon emissions and making your business as green as it can be.
- visit your business and show you how to reduce your wastage and save you money.

© GBE NGS 2003-17 Greening up Your Office



Performance

- 90% of our products are made in the UK
- Support local UK manufacturing
- 95% of the products we supply are recycled and we will help increase your recycling percentage
- Our deliveries will arrive to you via our green fleet
- in 100% recycled packaging
- Our products cost less and have a longer life span
- We won't bombard you with heavy brochures
- 12,000 customers
- saved 28 tones in waste

© GBE NGS 2003-17 Greening up Your Office



Sick Building Syndrome

Furniture Fittings IT Equipment



Another one of GBE's 1000 CPD/Lecture files to download for 88p at <http://greenbuildingdevelopmentpaedia.uk>

Sick Building Syndrome

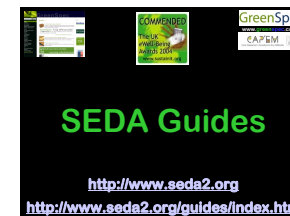
- VOCs from plastics
- Carpets and sheet flooring
- Plants and Humidity
- Paints and lacquers
- Wall papers
- Furniture off gassing
- Binders in Library and Filing
- Ergonomics
- Monitors and printers and outlets
- Wireless computing
- Graphics department

© GBE NGS 2003-17 Greening up Your Office

Sick Building Syndrome:

- Avoid use of materials which are contributing factors:
- Off-gassing from flooring, carpets, furniture, wall and ceiling decoration
- IT problems PVC cabling
- Illegal to Smoke in office 1st July 2007
- Mech Ventilation with recycling of germs

© GBE NGS 2003-17 Greening up Your Office



Another one of GBE's 1000 CPD/Lecture files to download for 88p at <http://greenbuildingdevelopmentpaedia.uk>

S E D A
SCOTTISH ECOLOGICAL DESIGN ASSOCIATION

Design and Detailing for Toxic Chemical Reduction in Buildings

home | introduction | content | issues | design construction | costs | details

Welcome

Welcome to the website for the SEDA guide on Design and Detailing for Toxic Chemical Reduction in Buildings, the third web mounted design guide commissioned by SEDA - the Scottish Ecological Design Association - and funded by a Sustainable Action Grant from the Scottish Executive.

The guide is divided into six chapters; chapters one to five examine the context and principles of designing for Toxic Chemical Reduction. Chapter six shows five typical construction details together with alternatives which optimise the potential for each detail to exploit toxic chemical reduction techniques, along with explanations and costs. These five are available in separate pdf downloads in addition to a pdf download for the entire document.

The research presented on this site was prepared by GBA Architects, GBA Research and John Gilbert Architects.

Also in this series of guides:
Design Guide 1: Design and Detailing for Deconstruction
Design Guide 2: Design and Detailing for Airtightness

Contents

Health Buildings

Unhealthy buildings
unhealthy materials
unhealthy practices

Another one of GBE's 1000 CPD/Lecture files to download for 88p at <http://greenbuildingencyclopedia.uk>

Indoor Air Quality

- We spend a lot of time indoors
 - Often the air inside is worse than outdoors
- Off-gassing from Carpets, paints and furniture
 - High VOC finishes
 - Adhesives & Treatments
- If you can smell new carpets or paint then there are problems

Defra Consultation

- GPP Government Public Procurement
 - EU driven
 - UK standards being set higher
 - But Nordic even seen as too high
 - EU eco-label standard set but certificates not required
 - Mandatory for Central Government
 - Voluntary for Local Government
 - Furniture Industry Consultation meeting
 - 16 Nov 2009
 - They want consistency across all requirements even if set high
 - Public consultation on draft standards
 - Imminent
 - Manufacturers comfortable with low ambitions in some areas
 - Some reluctance to embrace all issues
- © GBE NGS 2003-17 Greening up Your Office

High plastic content flooring

- Vinyl (PVC) flooring
- Static electricity build up
- Carpet:
 - Vinyl backed
 - Sheep's wool with nerve toxins from dipping (Woolmark included)
 - Petrol-chemical based carpet



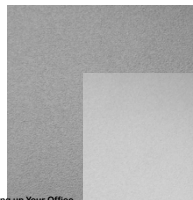
Other Issues

- Sick Building Syndrome
- Encourage the use of plants to condition air
- Encourage use of water, minimise static electricity
- Discourage smoking (indoors)
- Encourage fitness



Paints and lacquers:

- Synthetic plastics and solvent based paints with VOC (Volatile Organic content)
- Avoid all synthetic paints
- 2012 EU Directive controlled VOC in paints
- Avoid low VOC paints
- Lots more chemicals to act like previous paints
- Avoid Vinyl paints,
- Avoid Vinyl wall paper
 - Smoke hazard
- Avoid Solvent paints,
- Plastics attract dust, need cleaning



Office Furniture

- Chairs
- Tables
- Avoiding Plastics
- Reducing materials
- Avoiding Off gassing

Plastics, PVC in particular

- Plastic laminate in furniture (formaldehyde)
- Formaldehyde in adhesives in timber based boards in furniture, MDF, Chipboard and Ply



Library

- Binders many of PVC
- Off-gassing to internal air
- Phthalates (plasticiser)
- Unhealthy
- Toxins Dioxin released in fires



© GBE NGS 2003-17 Greening up Your Office

Office Filing

- Binders many of PVC
- Off-gassing to internal air
- Same issues as previous



© GBE NGS 2003-17 Greening up Your Office

Ergonomics: Sitting at Monitors

- Avoid glare in monitors
- Keep face 28" away from CRT screen (they are in landfill by now)
- Check ergonomics of table, chair and computer parts and user



© GBE NGS 2003-17 Greening up Your Office

LCD Monitor

- Minimum radiation from front and back
- Minimum heat generated
- Need less room
- Furniture down sizing



© GBE NGS 2003-17 Greening up Your Office

Copiers

- Keep photocopiers away from people, in closed rooms, with ventilation
- O₃ Ozone generated
- Take care with laser toner: Carcinogenic
- Wash hands thoroughly
- Latest laser toner ground even smaller
- New solid wax inks minimise packaging



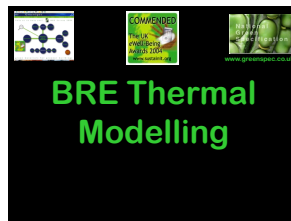
© GBE NGS 2003-17 Greening up Your Office

Rear of Computers

- Radiation from all ports that are not in use
- Lead caps are available
- Nobody uses them
- You irradiate others
- Visa versa



© GBE NGS 2003-17 Greening up Your Office



Another one of GBE's 1000 CPD/Lecture files to download for 88p at <http://www.greenbuildingencyclopedia.uk>

SSO Switched Socket Outlets

- Electromagnetic radiation
- Radiation emanates if switched on with no plug in socket
- Always switch them off if not in use

© GBE NGS 2003-17 Greening up Your Office

Infrared and Wireless Networks

- Stick to wires
- Don't go wireless
- Avoid Radio or Infrared
- Don't irradiate your staff
- Infrared Mouse too



© GBE NGS 2003-17 Greening up Your Office

Graphic Department

- Solvents
- Past: CFC propellants
- Ozone Depletion Potential
- Alternatives available now
- Hazardous waste
- Some domestic waste segregated
- Not segregated yet



© GBE NGS 2003-17 Greening up Your Office



Healthy & Green Furniture

Furniture Fittings IT Equipment



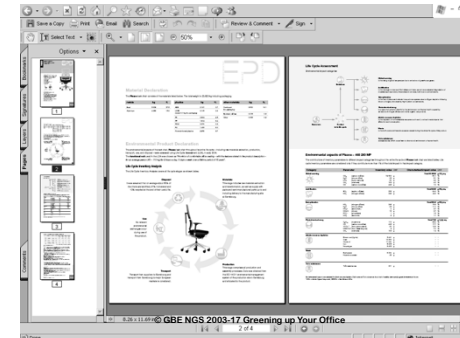
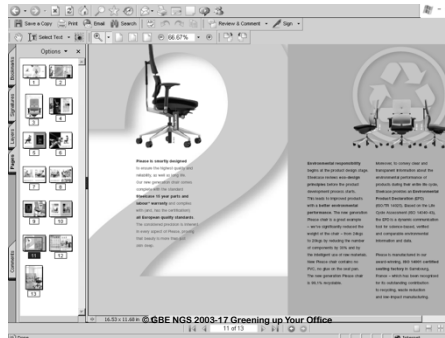
Another one of GBE's 1000 CPD/Lecture files to download for 88p at <http://greenbuildingdevelopaedia.uk>

Herman Miller Aeron Chair

- 67% recycled parts
- 100% recycled aluminium frame
- (95% better than virgin: energy, materials, water and air)
- Dematerialises conventional chair construction
- Designed for disassembly
- 10 year design life
- Repairable
- ISO labelled for recycling
- Recyclable



© GBE NGS 2003-17 Greening up Your Office



Plant Based Resin

- Phenix Biocomposite desk
- Annually renewable, sustainable and recycled resource
- Recycled paper, soy bean resin and colour additive
- Feel of hardwood
- 1.5 times strength of oak
- Worked similarly to wood
- 5 - 15% lighter than wood
- Good moisture resistance
- Formaldehyde-free
- 70% less energy



© GBE NGS 2003-17 Greening up Your Office

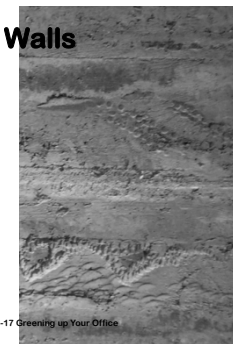
Office Reception

- Posh Show walls
- Venetian Polished Plaster
- Not local materials
- Not local Tradesmen
- Alternative: Rammed Earth?

© GBE NGS 2003-17 Greening up Your Office

Rammed Earth Walls

- Abundant and Natural
- Recipe can be determined on site
- Thermal & Acoustic mass
- Fire resistant
- Load-bearing
- Absorbs radiation, smells and moisture
- Hygroscopic
- any shape
- many ingredients, colours & textures
- Sculptural & Artistic opportunities
- Waste disposal back to earth
- Recyclable & Reusable
- Needs temporary formwork





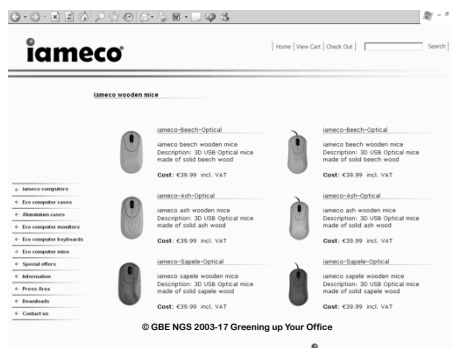
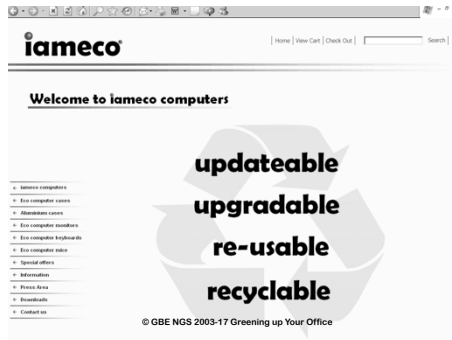
Another one of GBE's 1000 CPD/Lecture files to download for 88p at <http://www.greenbuildingdevelopment.co.uk>

PC Eco Label 2001/686/EC (AMD May 2004)

- **CPU System Unit:**
 - 4 watts sleep
 - 2 watts off
 - Energy management by default
- **Monitor:**
 - 2 watts sleep
 - 1 watt off
 - Shut down 30 minutes default setting
- **Modular design, upgradeable and dismantable**
- **Noise: 4 dB(A) and 4.5 dB(A) accessing hard disk**
- **Take back scheme** 2003-17 Greening up Your Office

IAMECO I am Eco

- MicroPro PC manufacturer Ireland
- MicroPro X-PC
- Green PC aiming for 1st EcoLabelled PC
- MicroPro IAMECO PC
- Modular design, upgradeable for life
- Disassembly: 11 minutes 1 person
- Complies with:
 - WEEE 2002/96/EC Waste Electrical and Electronic Equipment
 - RoHS 2002/95/EC Reduction of Hazardous Substances
 - Eup 2005/32/EC Energy Use in Products
- Aiming for:
 - Eco Label 2001/686/EC (AMD May 2004)
- Timber casing: beautiful object desirable to keep for ever



Information Sources



- A Greener Office (UK)
- Jane Marshall
- Features Editor
- www.agreeneroffice.co.uk

© GBE NGS 2003-17 Greening up Your Office

Information Sources

- Etheco
- <http://www.etheco.com>
- on-line green equivalent of Which? Magazine
- Ethical Consumer Magazine
- <http://www.ethiscore.org/home.aspx>
- Good Shopping Guide
- <http://www.thegoodshoppingguide.co.uk/>



- These files are created by generalists with a big dollop of green flavour
- These files are updated from time to time
- We are not experts so from time to time these file may get out of date or may be wrong.
- If you feel that we have got it wrong please let us know so we can put it right



- Brian Murphy BSc Dip Arch (Hons+Dist)
 - Architect by Training
 - Specification Writer by Choice
 - Environmentalist by Actions
- Greening up my act since 1999
- Founded National Green Specification 2001
- Launched www.greenspec.co.uk 2003
- Created GBE at <http://greenbuildingencyclopaedia.uk> 2016
- E BrianSpecMan@aol.com
- Twitter: <http://twitter.com/brianapocman>
- Twitter: [@GBEGreenBuild](https://twitter.com/GBEGreenBuild)
- Scribd: [BrianSpecMan](https://www.scribd.com/user/123456789/BrianSpecMan)
- LinkedIn: [BrianSpecMan](https://www.linkedin.com/in/brianapocman)
- Facebook: [BrianSpecMan Facebook: http://www.facebook.com/brianapocman](https://www.facebook.com/brianapocman)
- Google+: [BrianSpecMan - BrianSpecMan.CAFEM - NGS National Green Specification](https://plus.google.com/+BrianSpecMan)
- Slide Share:
- Pinterest: [Brian Murphy - GBE Green Building Encyclopaedia](https://www.pinterest.com/brianapocman/)
- CAPEM: [GreenSpec & NGS](https://www.capem.com/)
- CAPEM Compass
- LBSU London South Bank University Faculty into CO2/W/ website page Brian Murphy