

Sustainability Criteria		Minimum Standard	Best Practice	Innovative	Pioneering	Notes
Building and Operational Targets	Proposed Building Regulations	2010 Part L Regulation	2013 Part L Regulation	2016 Part L Regulation	2019 Part L - 'Zero Carbon'	'Zero Carbon' not yet fully defined
	1 CO ₂ Emission design target	30 kg CO ₂ /m ² /yr	21 kg CO ₂ /m ² /yr	8 kg CO ₂ /m ² /yr	0 kg CO ₂ /m ² /yr "Carbon Neutral"	Typical design stage modelled target
	2 DEC rating	C rating	B rating	A rating	A+ rating	Target DEC used rather than EPC - highly user dependent
	3 Energy consumption					
	Heating & hot water load	61 kWh/m ² /yr	46 kWh/m ² /yr	30 kWh/m ² /yr	15 kWh/m ² /yr	Approximate values. Defined by A) The design Strategy; which is the base installed load and controls strategy defined by the design team, and B) The operation; which is under user control
	Electrical base load	16 kWh/m ² /yr	15 kWh/m ² /yr	13 kWh/m ² /yr	12 kWh/m ² /yr	
	IT and small power	48 kWh/m ² /yr	41 kWh/m ² /yr	33 kWh/m ² /yr	26 kWh/m ² /yr	
	4 On site energy generation	Up to 20% based on local planning	>20% on site renewables	>50%	> 100% on site generation or agreed off-site generation	Highly site specific.
	5 U-values (W/m ² K)					
	Wall	0.35 (Part L 2010)	0.2	0.15	0.1	
	Average window	2.2 (Part L 2010)	1.4	1.1	0.8	Difficult to pass 2010 Building Regs using minimum regulation values: 20%-30% improvement in U-values and airtightness typical.
	Roof	0.25 (Part L 2010)	0.15	0.12	0.1	
	Ground floor	0.25 (Part L 2010)	0.15	0.12	0.1	
6 Airtightness at 50 Pa	10 m ³ /h.m ² (Part L 2010)	3.5 m ³ /h.m ² (BCO guide)	2 m ³ /h.m ²	1 m ³ /h.m ²		
User and Operational Interaction	7 Building occupancy	50-80% Desks occupied at any time of working day.	hot desking/desk sharing for peripatetic staff. Cleaners/night-security aware of energy use	Hot desking, remote working, 24hour use restricted to small areas.		Energy use and Carbon emissions could also be considered per person day worked.
	8 Controls, metering and monitoring	Seasonal Commissioning. Produce DEC, report to senior management	Commissioning company retained to monitor over first year. Post occupancy evaluation. Action plan to respond to annual DEC	Responsibilities for reading, reviewing, actioning changes defined. Anonymised external reporting. Departmental energy targets	Continual monitoring, fine-tuning and feeding back. Formal external review. Results published to industry. Energy use reward/penalty system	Evaluations show actual performance KPI's (eg in energy and water), are usually much greater than those predicted during the design stage.
	9 User involvement	Facilities Staff trained at building handover. Building Log Book provided with O&M Manual	Facilities staff involved in commissioning. Non-technical user guide produced and all staff inducted. Energy use fed back to users	Soft landing framework followed (see note) Interactive online user guide. Energy use on interactive display screen and online	Departmental energy use feeds into personal carbon trading (eg. WSP's PACT scheme)	Often a result of poor commissioning, training & management. www.softlandings.org.uk
Design considerations and strategies	10 Summer thermal targets for energy reduction	CIBSE / BCO design targets: Air conditioned Spaces: 24° C +/- 2°C Naturally ventilated: 25°C for <5% and 28°C for <1% working hours. External temperature to suit geographic location	BCO Design Targets used, test the design to UKCIP2020. Dress code partly relaxed in warm weather as ISO7730	Maximise adaptive comfort: internal temperature 2°C < external temperature when external temperature> 27°C, Dress code entirely relaxed. Eg allow shorts and short sleeves in summer. Building design tested to UKCIP 2050	Building design tested to UKCIP 2080	Highly dependent on how staff use the building
	11 Thermal mass, ventilation and cooling	Natural ventilation where possible, otherwise mechanical ventilation and comfort cooling. VRV/VRF system used in Server room. Server room set point no less than 24°C	Thermal mass in roof. Natural ventilation plus low grade cooling or mixed-mode with heat recovery. Server room uses free cooling when possible	Natural ventilation with comfort cooling served by GSHP or mech vent with heat recovery. Free cooling and heat recovery to server room		Free cooling = directly coupled cooling
	12 Solar control	Provide fixed external shading. Manual Internal blinds	Orient and size windows for capturing useful daylight only. Provide some level of external shading with upgrade strategy to deal with future hotter summers Solar control glass, mid-pane blinds etc	Automatic adjustable external shading. Consider use of deciduous planting	As innovative plus insulated shutters/blinds with reflective outer coating	
	13 Daylighting	Average 2% daylight factor where possible. Views to outside. Glare control blinds	Narrow plan floorplate or rooflights to provide daylight. Views to sky. 80% floor area >2% average daylight and uniformity 0.4	Building form heavily influenced by daylight design. 80% floor area >3% average daylight factor	At least 80% of the floor area has an average daylight factor of 5%. Reflection onto vertical surfaces to reduce perceived gloominess. Building form led by daylight design	Design to CIBSE Lighting Guide 10, BS8206 Part 2 and the BRE Site Layout Guide 10
	14 Artificial lighting and controls	300-500 lux to BCO and CIBSE guidelines. PIR detectors in WCs etc. Fluorescent fittings throughout	300 lux background lighting plus task lighting. Daylight dimming and presence detection throughout building	150-200 lux background & wall-washing plus task lighting. Daylight dimming & presence detection.	As innovative with new lighting technologies eg. LED's	Design to SLL Lighting Guide LG7
	15 IT strategy	Users encouraged to switch off PCs overnight.	Kill switch for non essential peripherals. Servers ramp down under part load. Consider laptops throughout	Thin client system – lower power terminals with centralised computing. Servers running virtualisation software	Off-site internet-based cloud-computing systems	cloud-computing = software and resources provided by Internet on demand, like the electricity grid

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Construction Materials	1 Embodied carbon in fabric	Embodied carbon not assessed. Preference stated for locally sourced materials	Structure engineered to minimise material mass. Cement replacements used, e.g. GGBFS in concrete heavy materials. Materials specified to be from local sources and provenance rigorously checked during construction	Detailed life cycle analysis of embodied carbon in structure including assessment sourcing and transportation energy. Results used for material selection. Structure engineered to work at 90% capacity [Wise]	Structure made from entirely low embodied energy materials, with known and mainly local provenance. Building serviceability regulations challenged [Wise]. Carbon Profiling technique utilised and used to inform building design and material selection [Sturgis]	Highly building specific and metrics not sufficiently standardised to allow benchmarks to be used as meaningful targets. Wise, June 2010, Building.co.uk, "What if everything we did is wrong" 2010, Sturgis Associates, "Redefining Zero".
	2 Building and materials re-use	Preference for standard sizes of elements such as steel beams/columns or precast units	Future flexibility of building considered. High grade materials designed for recyclability. e.g. Using lime mortar. Different material layers made identifiable or visible	Flexibility of future use demonstrated by typical conversion example designs. Avoid composite materials. Consider fastenings for easy dismantling	Flexibility and future use drives design. Label & log or e-tag main elements	
	3 Recycled and reclaimed Content	15% recycled content likely as standard.	30% recycled content	45% recycled content	60% recycled content	Only applies to relevant materials
	4 Material Toxicity	Avoidance of high VOC content paints, sealants etc and all ozone depleting materials including insulation	PVC cabling exchanged for LSF. Non petro-chemical based insulation materials. All 'C' rated materials avoided	'B' and 'C' grade materials avoided. VOC-free paints and timber. Natural materials where possible. Eliminate PVC	Use only natural materials where products exist. 80% of materials 'A' or 'A+' rated	Ratings refer to BRE Green Guide
Climate Change Adaptation	5 Climate change adaptation	No considerations beyond those embodied in regulatory compliance	Potential impacts reviewed with client, strategic principles discussed and reported concerning key risks	Design is influenced by climate change adaptation implications	Design approach driven by climate change adaptation implications	See TSB report 'Design For Future Climate', 2010, & UKCIP for further guidance
Landscape & Biodiversity	6 Landscape and biodiversity	Local planning requirements met. Mitigate against negative biodiversity impacts where feasible	Consult an ecologist on biodiversity enhancement, giving preference to local species. Integrated landscape and water strategy with landscape management plan provided	Attach equal weighting to biodiversity as for water, M & E and people, in overarching Green Infrastructure strategy. Landscape works in harmony with design and climate including deciduous planting to reduce summer urban heat island and internal solar gain where appropriate	Biodiversity enhancement key driver in Green Infrastructure Strategy. Landscape significantly influences building design.	Biodiversity is the variety of species within an ecosystem, used as a measure of the health of biological systems.
Water	7 Mains water consumption	> 5.5 m ³ /person/yr	4.5 - 5.5 m ³ /person/yr	1.5 - 4.5 m ³ /person/yr	<1.5 m ³ /person/yr	
	8 Drainage systems	Carry out Flood Risk Assessment No increase in stormwater run-off.	Thorough site hydrological characterisation, design responds to environment, including SUDS where appropriate. Rainwater harvesting for WCs and irrigation.	Drainage system fully integrated into the environment. Consider reedbed treatment for irrigation.	Closed loop water system. Waste-to-Energy plant or alternatives to water base foul drainage	Highly site specific
Waste	9 Construction waste minimisation	Contractor to produce Site Waste Management Plan (SWMP) to identify waste streams and areas for segregation on site or post collection.	Establish waste streams during design, set key KPI's early on. Waste reviews on design team meeting agendas. Divert 75% by weight of non hazardous project waste from landfill.	Implement Modern Methods of Construction throughout design. Account for site conditions impacting waste. Materials logistics plan.	Achieve zero net waste for project.	see WRAP for guidance on SWMP's and waste minimisation strategies
	10 Operational waste recycling	Adequate space for storing recyclable waste.	Managed recycling processes involving space for separating and collecting recyclables. Encourage occupants to recycle.	Provide incentives for recycling. On site composting for biodegradable waste.	Waste stream feeds on or off-site anaerobic digestion for biogas production.	
Transport Issues	11 Transport	Some covered cycle storage.	Full cycling support provisions as part of travel plan. Utilise video conferencing. Access considered in site selection.	Fully site specific travel plan covering site infrastructure and awareness raising. Electric vehicle charging points. Utilise virtual video conferencing.	Accessibility drives site selection. Feed transport into personal carbon trading scheme.	Adequate provision of storage lockers for change of clothes, helmet etc, can require a significant amount of internal space
Management	12 Stakeholder involvement and design process	Use of industry Standards. Standard client briefing.	Early consultation with stakeholders with the declared intention that this may affect design proposals. Stakeholders fully understand standards and design	Open design process with published response to stakeholder proposals. Design strategy tested with stakeholders. New boundaries set	Feed back results into industry standards	
	13 Construction site management	Main contractor has CCS or alternative certification. Energy use in construction metered	Main contractor has 32 pts under CCS or an alternative certification. Main contractor operates EMS including monitoring and setting targets for energy use	Main contractor has CCS score 36 or more. Energy and water use targets are met and results published	A significant proportion of construction energy is generated on site with temporary renewables.	
	14 Sustainable procurement of consumables	Sourcing of office supplies and cleaning products considered	Sustainable procurement of office supplies and cleaning products and food and monitoring of consumption.	Mostly paperless organisation. All consumables sustainably procured. Some food grown on site	Some organic food grown on site, with the rest seasonal, local.	
Productivity & Health	15 Healthy environments	Building has no or only a slight negative impact on productivity. Meet regulation for internal comfort including air quality.	No impact on productivity. Connection to outside. Air quality monitored.	Slightly positive impact on productivity. Psychological and social impacts assessed during design.	Building has noticeable positive impact on productivity. Strive to create a 'sense of place'.	Productivity a highly subjective measurement. See http://www.cibse.org/pdfs/8aratcliffe.pdf for further guidance