

RETAIL DELIVERY

Tenants Sustainability Guide and Requirements

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1 INTRODUCTION

The impact of the built environment – in terms of its demand for resources and the level of energy it uses, is currently at the top of the political/business agenda. Regulatory and economic drivers are forcing the retail industry to reconsider many of its business practices as the demand for the environmental accountability rises.

Many industries, including retail and property development, are beginning to come to terms with the challenges of sustainability and climate change. To address these issues, and to recognise emerging market demands. The Landlord has taken a leading role in working with tenants to incorporate principles of sustainable development within shopping centres owned and operated by them.

The Landlord has a strong commitment to making their mixed use, retail-led developments as sustainable as possible. Part of this responsibility lies with retail tenants who occupy the majority of floor area. The Landlord is taking steps to do what it can to address environmental issues at the tenancy level. Incorporating sustainable design and building principles in tenant fit-out works is one important way that this commitment can be realised.

2 WHY SUSTAINABLE PRACTICES?

The aim of this guide is to provide tenants with realistic measures that will make a difference to profit margins as well as the environment.

Successfully sustainability programmes are effective in:

- Increasing the efficient use of resources;
- Reducing energy consumption and waste production;
- Minimising environmental impacts;
- Creating profits through reduced energy, water, material consumption and compliance with environmental legislation.

Sustainability is fast becoming synonymous with good business. Brand and reputation management are key drivers of sustainability. With the global trend moving towards high performance in environmental and social criteria, a company's future success lies with their ensuring that they are seen to be good operators.

Financial performance is no longer the sole driver for the business. Companies are becoming aware that business sustainability (and, ultimately, financial performance) is determined by a combination of economic growth, environmental balance and social progress. Employees, communities, activist groups, government, and increasingly financial institutions are putting pressure on companies to actively demonstrate they control their environmental and social risks and are improving their performance in these areas.

Environmental and social factors therefore present a risk to business and need to be quantified and managed just as much as more familiar financial and business risks. To meet these demands for greater accountability companies are increasingly required to communicate their environmental, social, and economic performance to internal and external stakeholders.

This guide is intended to present tenants with tools to meet sustainability challenges in ways that enhance business environmentally and financially. It provides tenants with the ability to save money, achieve investor and customer satisfaction, boost reputation, and be best prepared to adapt to future regulatory or legislative action.

3 GUIDE AND TENANT REQUIREMENTS

This document explains how the retail unit tenants can benefit from initiatives, including cost savings and improving quality. It sets out the actions tenants are expected to take and provides guidance and useful references to help draw up action plans that contribute towards a healthy and sustainable environment.

The result of following this strategy will be to help the retailer's deliver a cost effective and efficient, sustainable retail shop unit. It should also be appreciated that the tenant will benefit through the money saved by using resources more efficiently and by reducing harmful environmental impacts, will contribute to health benefits in the community.

The following Guide details the recommendations and objectives in respect of key areas and provides advice to assist retail fit-out designers.

The coloured box provides key information points:

Specific commitments expected of the tenant

Key facts relating to the particular subject heading

Best practice recommendations and advice

Additionally, tenant fit-out and operational responses to the topics contained in this guide are to be submitted to the Retail Delivery Manager using the pro-formas located in the attached Appendices.

Two pro-formas require completion:

- Tenants Sustainability Appraisal (TSA);
- Part L compliance checklist.

Tenants are advised that to complete the TSA a number of disciplines will be required. As such a single point of reference within the tenants fit-out team should be identified for compilation of the information required.

Tenants are required to return the pro-formas at the appropriate stage of design development as detailed in the fit-out guidance document.

Upon submission to the Retail Delivery Manager (RDM) the responses to the questionnaire will be audited by the Landlords Retail Delivery Sustainability Consultant.

Where tenants have demonstrated that they have responded as positively as possible to the TSA the tenant will be awarded a green star for display in their shop window. These tenants will also be listed by the Landlord as supporting the broader sustainability agenda for the development.

All tenants must submit a completed TSA and Part L pro-forma to the Retail Delivery Manager
Tenants will be expected to respond positively in the appraisals in order to be granted consent to proceed with fit-out works
The TSA and Part L compliance pro-formas are provided in Appendix I and II of this document

4 POWER AND ENERGY

4.1 Power Supplies

The electrical supplies to tenancies are to be restricted to ensure that tenants embrace the initiatives detailed within this guidance document.

Operational Power Loading Design Target Commitments	
Major Shop Units	100W/m ²
Shop Units	120W/m ²
Restaurant Units	190W/m ²
Department Store	70W/m ²

In order to demonstrate that the design operational loads have been met the tenants will be expected to provide to Centre Management utility bills for gas and electrical services.

4.2 Energy Efficiency Statutory Requirement

The new EU directive on the Energy Performance of Buildings is intended to substantially improve energy efficiency in buildings. This is implemented in UK law through measures including a revision of Part L (Conservative of fuel and power) of the Building Regulations (April 2006), and the development of a National Calculation Methodology (SBEM) on the energy performance of non-residential buildings.

In normal circumstances, each tenant would be responsible for performing a complete SBEM model for their tenancy, modelling losses and establishing a carbon footprint for the tenancy. To simplify this process a schedule of particular targets is provided in Appendix II. The tenant will be required to clearly demonstrate compliance with these targets to ensure Building Control approvals. Should any tenant deviate from these targets a full SBEM model and report will be required for submission to Building Control.

Tenants are individually responsible for demonstrating that their fit-out proposals meet the required emissions targets associated with their particular tenancy

This is a local Building Control requirement

It is very important that energy efficiency is considered from the earliest stages of the design process.

Key Facts

- **Energywatch** estimate that the average gas bill has increased by 38% and the average electricity bill by 30% since October;
- Buildings account for 45% of primary energy use in the UK and approximately 30% of that energy is thought to be wasted;
- Retail fit-out can be particularly inefficient with the needs for effective sales lighting and state of the art appearance taking precedence over energy efficiency considerations;
- Light emitting diodes (LEDs) are very energy efficient and have an extremely long life (up to 100,000 hours). These are particularly effective for niche applications such as signs and signalling;
- Using metal halide lamps for floodlighting, shop lighting, and industrial lighting is effective and energy efficient. It is best practice to employ fluorescent lamps where lighting will be on for long periods;

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- Installing automatic lighting controls will avoid the use of electricity at times when spaces are unoccupied or lighting is not needed. Key tag switches (which require an electronic key to be turned on), time switches (which turn off and on at certain times) and photo sensor switches (which detect motion and activate lighting) are all effective ways to control light where constant use is not needed (such as corridors and toilets);
 - Make maximum use of day lighting. Use of natural daylight can reduce lighting energy costs by up to 50%; moreover, indirect daylight emits less heat and thereby reduces internal heat gain and cooling costs;
 - Avoid using lots of lighting near refrigeration systems. Lighting generates heat that adds to the cooling requirements of the refrigeration system;
 - Incandescent, halogen and standard fluorescent lamps, consume much more energy than efficient varieties.

5 ENERGY EFFICIENCY

While lighting and HVAC systems present the greatest challenges and opportunities for energy efficiency, other components of the retail unit need to be considered. A computer left switched off at the end of the day will save 725kWh of energy and £42 each year in operating costs. Activating the energy saving features of computers and other appliances can result in even greater savings through operation and reduced heat gain and consequent cooling load.

Switching general equipment off during periods of non-use will result in considerable savings and eliminate the need for mechanical cooling. Vending machines and other devices should be placed on a time clock such that they automatically turn on and off at the appropriate times.

An energy metering system should be installed that is not reliant upon the provision of a single utility authority meter. The energy monitoring system should collectively enable energy consumption to be monitored and controlled. All distribution boards and mechanical plant panels should be interfaced to a BMS to allow a collective record of energy usage.

www.defra.gov.uk



Recommendations

- Minimising air conditioning run times – have the operating times set to match occupancy and usage hours;
- Only use after hours heating or cooling when it is essential;
- Use the energy rating labels when selecting window/wall or split system air conditioners. Selecting a high efficiency system will save 20% or more compared to a low efficiency system;
- Keep windows closed in air conditioned rooms (except when evaporative cooling is used). Turn off air conditioning in unoccupied rooms or seal them off from the controlled areas by shutting doors;
- Work area temperatures should be seasonally controlled between 20–20°C;
- Consider temperature set points – Defining the most appropriate operational space temperature and influence the amount of energy used meeting the desired condition. Reducing these heat gains and losses and carefully selecting space set points will reduce the corresponding heating and cooling needs;
- Select equipment with high efficiency or energy saving mode – Building occupants, lighting, refrigeration equipment, cooking and office equipment and even some parts of a cooling system can add to a buildings heat gain in summer. Whilst heat gain from a building's use is not such an issue during winter, reducing energy use will lead to reduced operating costs;
- Low energy (A-Rated) refrigeration equipment should be specified, together with energy saving computer and office equipment;
- Photocopiers should be set to automatically default to energy saving standby mode after ten minutes idling and no usage;
- All building services equipment, including cooling units, heating systems, ventilation fans and artificial lighting should be controlled by a central programmable time clock or local building management system.

5.1 Lighting

A majority of the energy used by retail goes into lighting that comprises up to 50% of a store's energy bill. Using correct lighting and improving access to natural light can make the retail environment more pleasant as well as save money.

Energy efficient lamps use a fifth of the electricity of ordinary lighting and last up to ten times longer. Compact fluorescent lamps are five times more efficient and last eight times longer than an incandescent lamp. Triphosphor lamps provide 30% more energy savings than conventional fluorescent lamps, give a higher colour rendering, and last 50% longer than basic tubes.

In line with the Part L targets required by Local Building Control lighting design load targets are restricted.

Lighting Design Load Target Commitments	
Major Shop Units	40W/m ²
Shop Units	50W/m ²
Restaurant Units	50W/m ²
Department Store	35W/m ²

Key Facts

- Retail fit-out can be particularly inefficient with the needs for effective sales lighting and state of the art appearance taking precedence over energy efficiency considerations;
- Light emitting diodes (LEDs) are very energy efficient and have an extremely long life (up to 100,000 hours). These are particularly effective for niche applications such as signs and signalling;
- Using metal halide lamps for floodlighting, shop lighting, and industrial lighting is effective and energy efficient. It is best practice to employ fluorescent lamps where lighting will be on for long periods;
- Installing automatic lighting controls will avoid the use of electricity at times when spaces are unoccupied or lighting is not needed. Key tag switches (which require an electronic key to be turned on), time switches (which turn off and on at certain times) and photo sensor switches (which detect motion and activate lighting) are all effective ways to control light where constant use is not needed (such as corridors and toilets);
- Make maximum use of day lighting. Use of natural daylight can reduce lighting energy costs by up to 50%; moreover, indirect daylight emits less heat and thereby reduces internal heat gain and cooling costs;
- Avoid using lots of lighting near refrigeration systems. Lighting generates heat that adds to the cooling requirements of the refrigeration system;
- Incandescent, halogen and standard fluorescent lamps, consume much more energy than efficient varieties.

Refer to the Lighting Best Practice Guide in Appendix III for further design advice and information.

5.2 Heating, Ventilation and Cooling (HVAC)

Efficient and effective heating, ventilation, and cooling are very important to ensure a pleasant and comfortable environment for employees and consumers. In a typical retail building, HVAC accounts for about 40 to 50% of the tenant's energy bill. Simple operational practices require minimal capital investment and can often reduce energy costs by 20% or more.

There are some easy practices that can reduce energy needed for heating, cooling, and ventilation. Locating refrigeration in the appropriate spaces for instance, can reduce energy use significantly.

5.2.1 Ventilation

There are a number of methods for providing ventilation, although these are generally grouped into two categories:

- Natural ventilation;
- Mechanical ventilation.

Selection of the appropriate system is dependent upon:

- Predicted heat gains;
- Occupant/customer usage patterns.

Reducing energy demand by designing energy efficient ventilating systems natural ventilation should always be considered as principle means of providing ventilation. Where this is not possible the following provisions should be developed to form part of the mechanical system, where appropriate:

- Include outdoor air economisers with air-handling units, so outdoor air can be used for free cooling during mid-seasons or on cool summer evenings;
- Consider these units whenever air is continuously exhausted and make-up or ventilation air is required;
- Variable-Speed Drives (VSDs) can be used with variable air-volume (VAV) systems to adjust fan speeds according to operating requirements at different time of the day. In kitchens, for example, fans can be linked to burners to reduce energy consumption during off-peak cooking periods;
- Zone isolation and demand control ventilation (DCV) reduce airflow when low carbon-dioxide levels indicate a room is not in use. Energy is saved not only because air distribution is reduced, but also because less air must be heated or cooled.

Key Facts

- High-efficiency condensing boilers will save a great deal of energy. These units can achieve seasonal efficiencies as high as 96 percent (compared with 75 percent for conventional). Incremental paybacks of two to six years are common compared with purchasing midrange replacement boilers, but initial costs can be slightly higher;
- Boiler flue gas economizers are heat exchangers that preheat water using boiler-stack and exhaust gases. With installed costs of about £10,000, economizers deliver a 5 to 10 percent increase in efficiency and, in large facilities, paybacks from four years are possible;
- Boiler Air pre-heaters use hot stack gas to preheat fuel and air before combustion. These units cost about £5,000 and have payback periods from 2.5 to 3.5 years;
- Variable-Speed Drives can save between 25% and 40% of energy consumed by traditional fans and air blowers (as part of dry air coolers);;
- Heat recovery ventilators have balanced exhaust and supply fans that meet all ventilation needs without creating drafts. HRV's can feature efficiencies as high as 85 to 95 percent, with payback in roughly 3.5 years.

5.2.2 Cooling

Energy-efficient chillers have better controls, condensers and compressors than regular units. Their costs, however, may not always yield reasonable paybacks and may not make up for inefficiencies in other parts of air-conditioning systems, such as pumps, cooling towers and controls.

Smart thermostats provide preset limits for heating and cooling – overriding unnecessarily high or low settings by staff. These thermostats also feature digital controls and readouts that ensure greater accuracy.

Night temperature setbacks involve the installation of an automatic thermostat that controls the temperature when the retail unit is closed.

- Reduce energy demand by specifying energy efficient cooling systems;

Three-pipe Variable Refrigerant Volume (VRV) - sometime referred to as variable refrigerant flow (VRF) small to medium sized refrigerant based air conditioners which:

- Are relatively low in cost;
- Can be used to create a simple zoning system via installation of multiple units;
- Can work as reverse cycle heaters providing both heating and cooling in one unit.

Ventilation and Air Distribution System Design Target Commitments	
Specific Fan Power	≤ 2.Watts/litre/sec
Ductwork Leakage	≤ CEN Class B
Air Handling Unit Leakage	≤ CEN Class L2
Supply and Extract systems are to utilise cross plate heat exchangers	
Cooling System Design Target Commitments	
Seasonal Efficiency Heating	4.5 (VRF, VRV & Heat Pumps)
Seasonal Efficiency Cooling	4.0 (VRF, VRV & Heat Pumps)

Recommendations
<ul style="list-style-type: none">▪ Locate cooling units away from warm places such as cooking areas, heated displays, and areas of direct sunlight;▪ For self-contained refrigeration equipment, provide good ventilation around the condenser coils and fans;▪ Where possible, employ natural ventilation rather than mechanical ventilation;▪ Select equipment with high-energy efficiency or energy saving mode (i.e., A-rated refrigeration equipment);▪ Minimise air condition run times – set operating times to match occupancy and usage hours;▪ Use only after hours heating and cooling only where and when essential;▪ Keep windows and doors shut in air-conditioned rooms, except where evaporative cooling is used;▪ Turn off air-conditioning in unoccupied rooms;▪ Larger heat exchangers are more efficient than multiple, smaller units therefore group air and cabinet systems together to facilitate heat removal or recovery;▪ Set work area temperatures between 19-24 degrees C; reducing the thermostat 1 degree C can save up to 10% of heating costs;▪ Control heating, cooling, and ventilation by a central programmable time clock or local building management system, allowing individual rooms or space areas to operate independently.

5.3 Hot Water

Tenants can employ alternative methods to heat water (solar water heating) or modify usage in ways that meet hot water needs while reducing energy consumption. For instance, hot water system temperatures are often set higher than necessary.

Recommendations

- Provide controls that shut off heating when the required temperature is achieved;
- Shut off the supply of heat during periods when hot water is not required;
- In larger units, employ solar water heating – payback is less than 5 years;
- Insulation should be provided to reduce heat losses between water draw-offs;
- Eliminate, where possible, hot water storage systems;
- Avoid low load operation of heat raising plan;
- Eliminate the need for grid-supplied electric water heating except where demand is low;
- Minimise the length of circulation loops;
- Minimise the length and diameter of dead legs.

Key Facts

- Water heating can account for up to 20% of energy used in many small businesses, such as restaurants;
- Boiler flue gas economizers are heat exchangers that preheat water using boiler-stack and Hot water system temperatures are often set higher than necessary. For each 5°C reduction in water temperature, energy consumption can be reduced by between 3% and 5%.

Hot Water System Design Target Commitments

Seasonal Efficiency	0.85
Storage Systems	
Provide controls that shut off heating when the required water temperature is achieved. The supply of heat should also be shut off during those periods when hot water is not required.	
Solar Thermal	
Provide solar water heating in retail units requiring larger volumes of hot water use e.g. Major Shop Units, Department Stores and Restaurants, solar hot water heating must be provided.	
Insulation	
In all cases, HWS systems insulation should be provided to all pipework to reduce heat losses between hot water draw-offs.	

5.3.1 Water Usage

The water to the premises is metered – the more used, the higher the bills. Note that the water coming in is also paid for as effluent and sewerage charges when disposed of as wastewater. Minimising water use can be achieved using low-cost components that do not affect the quality of service.

Key Facts

- A tap dripping just two drops per second will lose you nearly 10,000 litres (more than 2,200 gallons) a year;
- Water can cost business over 1% of its turnover – money saved on the sustainable design of water can be substantial. Savings of up to 40% in water use can be achieved throughout the tenancy life by the installation of simple water minimising methods during the fit-out phase.

Recommendations

- Use low-flush toilets. The average toilet uses 9 litres of water per flush. Low-flush toilets are available with either single (4.5l) or dual (6l / 3l or 4l / 2l) flush, saving up to 70 percent of water use every single flush;
- Employ passive infrared (PIR) detectors in urinals – optimises the flushing frequency and limits it to when the building is occupied by using activity detectors. PIRs can also be installed to other facilities such as lighting and extractor fans;
- Install aerated taps. These taps incorporate a stream of air into the water flow resulting in a considerable reduction in water use without appearing to do so. Specifying these taps can more than halve the water flow at a very low cost;
- Use percussion (push top) taps. Pressure starts the flow of waters but the tap turns off automatically when not in use. The taps reduce the flow of water resulting in less water being used during each wash. Water usage with these taps can be reduced by over 50%;
- Consider waterless urinals. The absence of water flushing saves substantial volumes of water while the easy-clean design and lack of mechanical components significantly cuts maintenance costs. The systems consist of a modified S-bend that accommodates a chemical pad that can be retrofitted into most existing urinals. Note that waterless urinals do require a different, but not necessarily more onerous, maintenance schedule to ensure they do not smell.

6 MATERIALS AND WASTE

When selecting the materials for a scheme it is important to consider the environmental impact of those choices over time, including their manufacture, construction, finishing, operation (cleaning and maintenance), demolition and disposal. Specification of materials should consider their longevity, maintenance requirements and the levels of material processing undertaken, together with where they were sourced.

6.1 BRE Green Guide

A full life-cycle assessment is a complex, time-consuming and expensive process; the environmental ratings summarised in the BRE Guide provide a quick and easy way for designers and specifiers to assess their options.

- The relative environmental performance of over 250 materials and components have been assessed in this Guide, using carefully researched, quantitative data derived from the BRE Environmental Database. A wide range of alternative specifications are provided for:
 - Walls;
 - Floor systems;
 - Floor finishes;
 - Roofs;
 - Windows;
 - Doors;
 - Ceilings;
 - Paints;
 - Insulation;
 - Landscaping.

The performance of each specification is measured against a range of environmental impacts including:

- Climate change;
- Toxicity;
- Fossil fuel and ozone depletion;
- Levels of emissions and pollutants;
- Mineral and water extraction.

Environmental performance is indicated by a simple to use A-B-C rating system. To further aid specifiers, guidance on capital costs, typical replacement intervals and information on recycling is also provided for each material and component.

<http://www.bre.co.uk/index.jsp>



6.2 Embodied Energy

Energy is used in the extraction, production and transportation of materials, and as such an energy-efficient fit-out should make efforts to minimise the levels of embodied energy in the materials selected. The total amount of embodied energy can be high, particularly when recognising the sometimes short churn rate of retail fit-outs.

The use of low-embodied-energy materials should be considered when specifying materials and equipment.

6.3 Low Environment Impact

Re-used and recycled materials should usually have preference; materials from a renewable source should always be chosen above those from a non-renewable source. Care should be taken to source materials from suppliers and manufacturers that have a proven environmental management record (some manufacturers have ISO 14001 environmental management systems in place) or those that publish environmental data.

Insulation and refrigerants. Where these are installed directly in the building fit-out or as part of equipment specified for the fit-out, they should be specified with zero "Ozone Depleting Potential" and low "Greenhouse Warming Potential".

6.4 Locally Sourced Materials

Sourcing materials from near a site has several benefits. The main environmental benefit is the reduced distance for transportation. Reducing the distance that materials have to travel, in particular heavy construction materials, has a significant impact on the demand for road transport and the energy that that requires. Other benefits include the enhancing the link between the new building and the area, preserving local character and supporting the local economy.

6.5 Good Internal Air Quality

Sick building syndrome is officially recognised as an illness by the World Health Organisation and includes a wide range of symptoms triggered by the presence of chemical, allergens, micro-organisms, etc. in buildings, as part of the artificial nature of many internal environments (including artificial lighting and the lack of connection with the diurnal cycle that can be offered by natural light and outside views). The careful specification of materials and internal finishes and decorating materials can help to minimise the incidence of sick building syndrome and contribute to the creation of good internal air quality. For example, paints and varnishes should have a natural finish or have a low solvent content and avoid the toxic volatile organic compounds (VOCs) that are found in many high-gloss paints and varnishes. Alternatives include natural resin emulsions that are solvent-free and biodegradable.

Information about paints and finishes from natural resources can be obtained from www.constructionresources.com.

6.6 Responsible Use of Timber

The use of timber is significant in the building industry and the consumption of timber is increasing. While timber has many environmental benefits as a building material (being natural and renewable with low embodied energy) it is important that it is specified and used responsibly. Less than 15% of the total wood and wood products consumed in Britain come from British woodlands; most construction timber is sourced from temperate forests in North America, Scandinavia and Russia, with tropical hardwood imported mainly from the Far East. The management of forestry is key to the sustainability of using timber. The Forest Stewardship Council (FSC) is an independent body that has an international labelling scheme for timber and timber products. This scheme certifies forestry that is managed in an environmentally appropriate way, respects the interests of local people and is economically viable. Engineered boards such as plywood should also be FSC certified. Threatened imported species, especially hardwoods, should be avoided at all times. As far as possible, the use of timber preservative treatments should be avoided as the chemical formulations of many preservatives mean that treated timber is classed as toxic waste. Careful detailing and specification of durable timber can avoid much use of preservatives.



<http://www.fsc.org/en/>

The choice of raw materials within the retail fit-out is a significant component of sustainability. The types of materials chosen can have an impact at both source level and disposal level. For example, using timber frames in contrast to brick or concrete ensures a renewable and sustainable source is utilized. Recycled or sustainable materials also result in less hazardous waste being produced. Waste can be prevented through accurate ordering of raw materials and ensuring that exact specifications and quantities are requested.

When considering materials for the fit out it is important to assess the environmental impact of those choices over time, including their manufacture, construction, finishing, maintenance, demolition, and disposal.

Recommendations

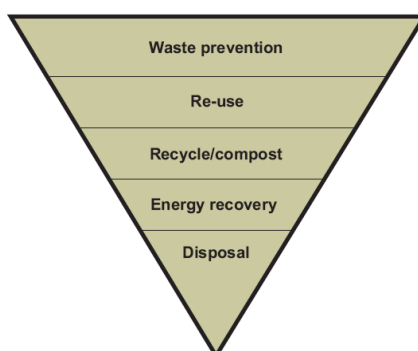
- Choose recycled or sustainable materials, such as Forestry Stewardship Council (FSC) certified timber;
- Avoid composite materials such as melamine on chipboard that makes recycling difficult;
- Use locally sourced materials where possible to reduce transportation miles;
- Choose paints and varnishes that do not contain volatile organic compounds (VOCs);
- Avoid threatened or imported materials, especially hardwoods;
- Consider carpet tiles that can be individually replaced, or use recyclable carpet;
- Choose a design such as frame and panel displays that minimize the requirement to redecorate the store and enable easy changes;
- Work with a supply chain partnership to integrate sustainability into tenders, manufacturing of materials, construction, and post-completion.

7 WASTE MINIMISATION

The generation of large volumes of “waste”, used materials that have been managed in such a way that they can only be buried in a landfill site, is not sustainable long term. Landfill sites are a finite resource, and UK sites only have space for a few years.

Waste also drives climate change, because materials that are left to decompose in a landfill site produce Methane, a greenhouse gas 23 times as strong as carbon dioxide. Treatment of materials like food wastes and paper by composting or recycling reduces those methane emissions.

Waste is a financial issue: direct costs of waste (disposal) are typically 4-5% of turnover, and are rising due to pressures on landfill resources and legislation. Because savings from waste reduction add directly to profit, not turnover, reducing waste is a very cost effective way to increase profits.



The “Waste Hierarchy” helps decide which waste reduction measures are the most cost effective, starting with preventing waste arisings. Energy Recovery and Disposal are beyond the scope of tenants, and are the responsibility of the local authority.

Recommendations

Waste Prevention

- Reducing the amount of packaging given to customers;
- Working with suppliers to reduce the amount of packaging supplied with products;
- Working with suppliers to redesign packaging to be more easy to recycle, e.g. avoiding inseparable plastic/card laminates;
- Reducing the use of single-trip carrier bags;
- Ordering the quantity of materials accurately through the supplier and reusing excess materials.

Reuse

- Selection of packaging or products that can be re-used as they are: e.g. re-usable and re-fillable packaging, durable instead of disposable packaging, e.g. china cups for drinks instead of plastic;
- Old IT equipment can be wiped, repaired and re-used.

Recycling / Composting

- Choosing products that are themselves recycled, e.g. office paper, paper bags;
- Recycling/reuse of packaging or the replacement of disposable packaging with reusable alternatives;
- Food wastes generated in-store (e.g. staff catering) can be separated from general waste and sent to a central composting facility;
- Recycling of packaging: Between 70 and 90 percent of all packaging is recyclable; it is usually cheaper to recycle than to landfill, and some materials, properly segregated and clean, can be sold;
- Small tenants can work together in partnership to organise cost-effective site-wide recycling solutions.

The following materials can be recycled:

- Metals;
- Wood (unpainted or untreated timber and non MDF);
- Card and paper;
- Polythene and other plastic wrappings, plastic bottles;
- Glass;
- Magazines and brochures;
- Laser and inkjet printer cartridges;
- Computer equipment and mobile phones;
- Textiles;
- Fluorescent tubes;
- Batteries;
- Furniture.

Waste Minimisation Target Commitments

- Site waste management plans exist as discretionary regulations at present with a mandatory ruling imminent in 2008;
- Maximise recycling – minimise transport and landfill;
- The Landlord will provide a waste collection service to the retail units during the fit out. Waste segregation will be undertaken on site and the waste stream weighed before being removed off site;
- A cost for the Landlords removal service will be levied
- **80%** of waste stream must be recycled;
- Retailers should have a long term waste minimisation strategy, and demonstrate its effectiveness;
- Reduce use of single-trip packaging, including carrier bags;
- Replace packaging materials with reusable/recyclable /compostable alternatives.

REDUCING WASTE

Key Facts

- The Government intends for a 50% reduction in landfill by 2012. Further reductions are the expectation. On site waste segregation and recycling will become the norm. The direct cost of waste to a commercial business is typically 4-5 percent of turnover. Resource efficiency and waste minimization measures can reduce these costs by up to a quarter with little or no investment costs, and these savings go straight onto your profits;
- The retail sector has a key role in influencing domestic waste minimisation because it influences the amount and the types of materials that must be managed by households;
- The Waste resource Action programme (WRAP) can provide support with this: <http://www.wrap.org.uk/retail/index.html>;
- More support, information and resources are available from the DEFRA waste site: <http://www.defra.gov.uk/environment/waste/topics/index.htm>;
- **Envirowise** offers UK businesses free, independent, confidential advice and support on practical ways to increase profits, minimise waste and reduce environmental impact <http://www.envirowise.gov.uk/>.



8 RENEWABLES

It is appreciated that opportunities for tenants to utilise renewable energy sources are limited, however the Landlord expect best efforts to be made to use renewable energy sources wherever possible.

8.1 'Green' Electricity

Since 1998, the UK power market has been opened to competition, enabling you, the consumer to select between energy suppliers. This is an opportunity to move away from the old-fashioned, ecologically destructive methods of fuel production towards greener power solutions.

A number of service providers offer 'green' electricity from renewable sources and the Landlord will expect all tenants to purchase electricity from service providers utilising renewable sources.

To check which suppliers' tariffs are generated from the highest percentage of renewable sources, visit <http://www.electricityinfo.org/suppliers.php>.

Target Commitment
Retailers are purchase energy generated from renewable sources, from an accredited utility services provider.

8.2 Solar Thermal

Solar water-heating systems are very reliable and have no moving parts. Where tenants have a reasonable hot water demand, a solar thermal installation should be installed.

8.3 Photovoltaic Cells

Solar energy can be turned into electricity via the use of photovoltaic (PV) cells. These cells convert solar energy into electrical energy using a cell consisting of one or two layers of a semi-conducting material, usually silicon. When light shines on the cell it creates an electric field across the layers, causing electricity to flow. Linked cells are encapsulated into modular panels, interconnected to provide electrical power, which can be harmonised with grid electricity and fed back into the network. The panels are very durable, as they have no moving parts. This is one of the easiest renewable energy systems to install in the urban environment as PV panels can be fixed to or form an integral part of the roof covering or the façade of appropriate buildings. It is important to recognise that a PV system does not have to be designed to meet all the electricity requirements of a development but would prove very valuable in off-setting a proportion of those requirements.

8.4 Small Scale Wind

The generation of energy from wind power is generally associated with large-scale wind farms in remote and exposed areas of the countryside. There is potential, however, for wind energy to be captured at a local level on a small scale. Smaller turbines of the 1-1.5kW size are now being marketed for attachment to buildings. The characteristics of the wind around the building proposed for the installation need to be considered, as conditions can affect the suggested output of the turbine. Structural impacts of installing turbines also need consideration, but will be supported, where possible, by The Landlord.

For a description of these technologies and their uses, contact The National Energy Foundation.



<http://www.nef.org.uk/>.

9 TRANSPORTATION

The transport problems presently facing UK businesses are continuing to grow, costing companies £15 billion per year. It is estimated that by 2025 the number of cars on the road will increase by 50 percent from 1997 levels resulting in a greater impact on the environment, more congestion and reduced efficiency. As the cost of travel for businesses is increasing many companies are implementing plans to reduce these costs and the associated environmental impact.

The Landlord advocates a number of initiatives to minimise the need to travel and these are detailed in the site wide travel plan which the tenant is encourage to review.

Climate impacts of transport.

Congestion impacts of transport.

Focus on reducing single-occupant private car use.

Step approach to travel plans:

- Reduce demand;
- Modal shift.

Free advice and support to help you to develop a Travel Plan covering all staff employed on site can be obtained from the “Travelsmart” programme of the sustainable transport charity **Sustrans**:



www.sustrans.org.uk

Target Commitments
Green Travel Plans
A green travel plan introduces a number of initiatives to minimise the need to travel, improve travel efficiency and reduce distance and encourage greater use of public transport. The greatest economic benefit of the travel plan would be seen through the reduction of business travel costs through effective procurement and fuel management.
Employee Travel
<p>The reduction in personal car travel presents numerous benefits both economically and environmentally. These initiatives benefit the community, the employer and employees. They can improve the image of the Company within the community, improve health and morale of the workforce and provide better access to labour pools. The majority of Green Travel Plans are formulated around two steps:</p> <p>Step 1 – Minimise the need to travel</p> <ul style="list-style-type: none">▪ Facilitate employees' temporary accommodation near to their working environment to reduce the commuting distance;▪ Locate any new premises close to public transport systems and publicise alternative transport links to visitors. <p>Step 2 – Promote the use of efficient transport modes</p> <ul style="list-style-type: none">▪ Provide incentives such as interest free loans or subsidies for the purchase of 'greener' vehicles;▪ Offer free cycle safety equipment to travel to and from home, tax free;▪ Promote car sharing;▪ Offer interest-free loans for public transport season tickets;▪ Provide staff with up-to-date information on public transport;▪ Provide workplace parking for cycles.

APPENDIX I – Tenants Sustainability Appraisal

TENANTS SUSTAINABILITY APPRAISAL					
TO BE COMPLETED AND SUBMITTED TO RETAIL DELIVERY MANAGER					
Development Name:					
Unit Reference Number:					
Tenant:					
Completed by:					
Position:					
Email :					
Phone number:		No. staff (to be) employed on this site		Date:	

Process Checklist (for use of Landlords RDM)	Date	Comments
Received by RDM		
Reviewed by Retail Delivery Sustainability Consultant		
Comments returned to tenant		
Final assessment awarded		

ELEMENT	COMPLIANCE STATEMENT	IMPLEMENTATION (TICK WHERE APPROPRIATE)		
		Achieved	Achieved - with exceptions	Not achieved
ENERGY				
The extent to which the following energy conservation methods are used within the fit-out				
Does the fit out comply with the maximum power demand densities? – MANDATORY				
At what temperatures are the thermostats set: a) maximum temperature (at which cooling switches on) ? b) minimum temperature (at which heating switches on) ?				
Has a feasibility study been carried out to assess opportunities for using renewables or low carbon energy sources as part of the servicing design the shop?				
D How much, as a percentage, of the electricity or heat demand will be / is generated from renewable energy sources?				
E Will / Do all of appliances and electronic equipment have “A” labels (including AA, A+ etc)?				
F If you have boilers, do they have seasonal energy efficiency of at least 85%? - MANDATORY. Ref: database of boiler efficiency: http://www.sedbuk.com/ .				
G If you have small air conditioning systems, are they all efficient variable-refrigerant-flow systems?				
H If you have mechanical ventilation systems, do they operate at better than 2.0 watts/litre/second? - MANDATORY.				
I Will / are automatic controls used, such as timing devices, to minimise energy use on appliances? If so, on which?				

ELEMENT	COMPLIANCE STATEMENT	IMPLEMENTATION (TICK WHERE APPROPRIATE)		
		Achieved	Achieved - with exceptions	Not achieved
J If you have vending equipment, is the power supply controlled by timers?				
K Is your electricity supply from a supplier who guarantees that it is from renewable sources?:- MANDATORY				
L Will / Are staff made aware of the need to save energy? Are there signs adjacent to light switches and electrical equipment ?				
M Do you have automatic controls in place that switch lights off when daylight levels are adequate or where back-of-house areas are unoccupied?				
N Have you located equipment away from windows, doors etc to prevent unnecessary loss of heated or cooled air?				
O Does lighting specified meet the required power lighting densities recommended?:- MANDATORY				
P What steps are to be taken to ensure that shop front installations and riser penetrations will minimise unwanted air infiltration?				
Q Will window/shop fronts will be double glazed/low emissivity?				
R Is the fresh air provided by natural ventilation or by electric fans?				

ELEMENT	COMPLIANCE STATEMENT	IMPLEMENTATION (TICK WHERE APPROPRIATE)		
		Achieved	Achieved - with exceptions	Not achieved
WATER				
The extent to which the following water conservation methods are used within the fit-out				
A	Are all taps and shower heads specified as low-flow types from this list? – MANDATORY <ul style="list-style-type: none">▪ Timed turn-off push-taps▪ Electronic sensor taps▪ Spray taps▪ Aerated taps			
B	Do all WCs have a dual flush cistern with a main flushing capacity no more than 6L, and reduced flushing capacity of no more than 3L? - MANDATORY			
C	If A water meter is to be fitted, having a pulsed output - MANDATORY .			
D	Is a proximity detection mechanism fitted to shut off the water supply to all urinals?			
E	Is there a programme of water consumption monitoring in place, with targets for reductions and evidence of a downward trend in water consumption?			
F	Are operational maintenance procedures in place covering all sanitary fittings to prevent/repair leaks? - MANDATORY			

ELEMENT	COMPLIANCE STATEMENT	IMPLEMENTATION (TICK WHERE APPROPRIATE)		
		Achieved	Achieved - with exceptions	Not achieved
MATERIALS				
How will sustainable materials be selected as part of the fit out process				
A	What percentage of materials have been selected that are “A” rated in the Green Guide to Specification, for the following elements? New internal walls. New suspended ceiling. Floor finishes. (ref: Building Research Establishment)			
B	Have all the paints and varnishes (used for internal decoration) been specified for having low environmental impacts? Ref: to comply, they must all achieve a rating of “A” in the Green Guide to Specification, or have a European Eco-Label			
C	Where possible preference should be given to materials that are sourced locally. Which materials have been sourced locally?			
D	Will timber be selected from FSC sources?			
E	Will the fit out incorporate recycled materials?			
F	Will materials selected be demountable, recyclable or adaptable?			

ELEMENT	COMPLIANCE STATEMENT	IMPLEMENTATION (TICK WHERE APPROPRIATE)		
		Achieved	Achieved - with exceptions	Not achieved
WASTE				
Indicate which of the following systems will be in place				
A	Has the Landlord's Site Waste Management Plan reviewed? - MANDATORY			
B	Is there a company-wide waste minimisation and management plan in place?			
C	Is there a shop/store waste minimisation and management plan in place? - MANDATORY			
D	Does the waste management plan include an annual waste audit?			
E	Is there dedicated facilities within the fit-out for separation and storage of all recyclable materials generated in the shop? - MANDATORY <i>Ref: Separate storage must include space for all materials generated, including glass, plastic, aluminium, organic and general wastes</i>			
F	Will regular operational waste monitoring be carried out?			

ELEMENT	COMPLIANCE STATEMENT	IMPLEMENTATION (TICK WHERE APPROPRIATE)		
		Achieved	Achieved - with exceptions	Not achieved
TRANSPORT				
The extent to which sustainable transport principles are implemented				
A	Have you completed or plan to complete a travel survey of your customers and suppliers?			
B	Will / Has a staff travel survey been completed?			
C	Is there a Travel Plan in place covering all staff?			
D	How many staff travel to work by private car?			
E	Will staff have access to a company / selected car-pooling scheme?			
F	Will / Do staff share cars for commuting?			
G	Will / is up-to-date information about location and timetables for public transport displayed in a dedicated place for staff and customers?			
H	Will staff have access to showers, lockers and space to dry wet clothes?			
I	Has offsite freight consolidation been considered for reducing frequency of deliveries and minimising packaging?			

ELEMENT	COMPLIANCE STATEMENT	IMPLEMENTATION (TICK WHERE APPROPRIATE)		
		Achieved	Achieved - with exceptions	Not achieved
POLLUTION				
Avoid pollution to air, water, and land? Avoid noise and light pollution?				
A	Where refrigerants are used, are they all specified with a Global Warming Potential of less than 5?			
B	Is there a dedicated refrigerant leak detection system?			
C	Is there automatic pump-down and refrigerant storage and isolation fitted to all refrigerant systems?			
D	Are all insulation materials specified with Global Warming Potential of less than 5 PLUS with Ozone Depleting Potential of zero			
E	Have you ensured that sources of noise do not give rise to the likelihood of complaints from existing noise-sensitive premises, wildlife areas or amenity areas near the site?			
F	Will / Do staff share cars for commuting?			
G	Will / is up-to-date information about location and timetables for public transport displayed in a dedicated place for staff and customers?			
H	Will staff have access to showers, lockers and space to dry wet clothes?			
I	Has offsite freight consolidation been considered for reducing frequency of deliveries and minimising packaging?			

APPENDIX II – Part L Compliance Sheet

PART L COMPLIANCE CHECKLIST					
TO BE COMPLETED AND SUBMITTED BY TENANT TO RETAIL DELIVERY MANAGER					
Development Name:					
Unit Reference Number:					
Tenant:					
Completed by:		Position:		Date:	

Process Checklist (for use of Landlords RDM)	Date	Comments
Received by RDM		
Reviewed by Retail Delivery Services Consultant		
Comments returned to tenant		
Final assessment awarded		

Group	Description	Limit Value	Value Achieved
1. Heating	VRF/VRV/Multi-Split Heat Pump: Air Source	Seasonal Efficiencies ≥ 4.5	
2. Cooling	Chiller, VRF/VRV/Multi-Split	Seasonal Efficiencies ≥ 4.0	
3. Ventilation	Cross Plate Heat Exchanger	Yes	
4. System Adjustment			
a. Ductwork Leakage	Meets CEN classification	Class B	
b. AHU Leakage	Meets CEN classification	Class L2	
c. Specific Fan Power		≤ 2.0 W/l/s	
5. DHW Generator	Instantaneous DHW only	Seasonal Efficiency 0.85	
6. Control Corrections	Metering	Yes	
7. Lighting	Total average load, including display lighting	≤ 50 W/m ²	

Limit values must be achieved

APPENDIX III – Lighting Design Guidance Document

1.0 INTRODUCTION

Lighting is one of the most important elements in the retail environment.

Initially attracting the shopper from outside the store, the lighting can also make a space enticing and encourage people into the outlet.

Once inside, the lighting can help create the right atmosphere and ambience within the outlet and light can be used to subconsciously direct shoppers within the shop.

Lighting the displays of the goods and merchandise attractively, allowing them to be clearly seen and admired, encouraging the selling process. Rendering colours correctly, highlighting texture and surfaces all make it easier for the prospective buyer to evaluate and finally purchase the goods.

The design of the lighting within retail environments has historically been concerned solely with providing bright, uniformly lit spaces often to many thousand Lux. The energy efficiency of the design was never considered to be one of the most important elements. With climate change entering the agenda this approach has had to change and retail lighting needs to become more considered in its design.

Selection of energy efficient lamps should be considered at the initial concept stage and the lighting design whilst still remaining flexible should light specific elements introducing contrast and drawing attention to focal points rather than blandly lighting everything.

The following pages demonstrate how effective lighting schemes can be delivered utilising efficient lamp sources, which is essential in reducing energy demands within tenancies, reducing carbon emissions and achieving Part L compliance.

The first model is described as 'current practice' and is a model based on most current fit-outs, showing a high density low efficacy luminaires. The second model is a 'best practice' model utilising high efficacy luminaires.

In each case, details of average illuminance levels on critical planes and surfaces are provided to afford a ready comparison.

The images provided are offered for advice only and are not definitive solutions. The best practice lighting models are provided to demonstrate that Part L compliant lighting schemes are deliverable in the modern retail market place and should not detract from the overall appearance of the fit-out.



2.0 LAMPS AND LUMINAIRES

Using energy efficient lamps does not preclude the use of all the typical luminaire types. All current fittings are designed to employ the use of the latest high efficacy lamps and where necessary ballasts, enabling far more energy efficient lighting designs to be realised.

The performance of the fitting is also critical in ensuring an energy efficient solution. The 'Light Output ratio' (LOR) and the required photometric distribution should be considered when selecting the appropriate light fitting to make sure the most appropriate combination is achieved.

Lamps are becoming much smaller in size, yet still providing a high luminous flux. The number of different wattages and styles is ever expanding, allowing far more varying design options, all providing excellent colour rendering enabling customers to view colours accurately.



2.0 LAMPS AND LUMINAIRES (CONT'D)



Adjustable Recessed Metal Halide

Often used in display, uplighting and floodlighting where a good quality white light is required. A choice of colour temperatures and an average lamp life of 6000 hours. 20w lamp emits 1650 lumens, with an efficacy of 83 lumens per watt. The lamp must be housed within a suitable enclosure.

Compact Fluorescent

Often used in office and industrial interiors, high frequency versions increase efficacy and eliminate flicker. Good colour rendering properties and a range of colour temperatures. Average life is 15-20000 hours. 14w lamp emits 1350 lumens with an efficacy of 96 lumens per watt.

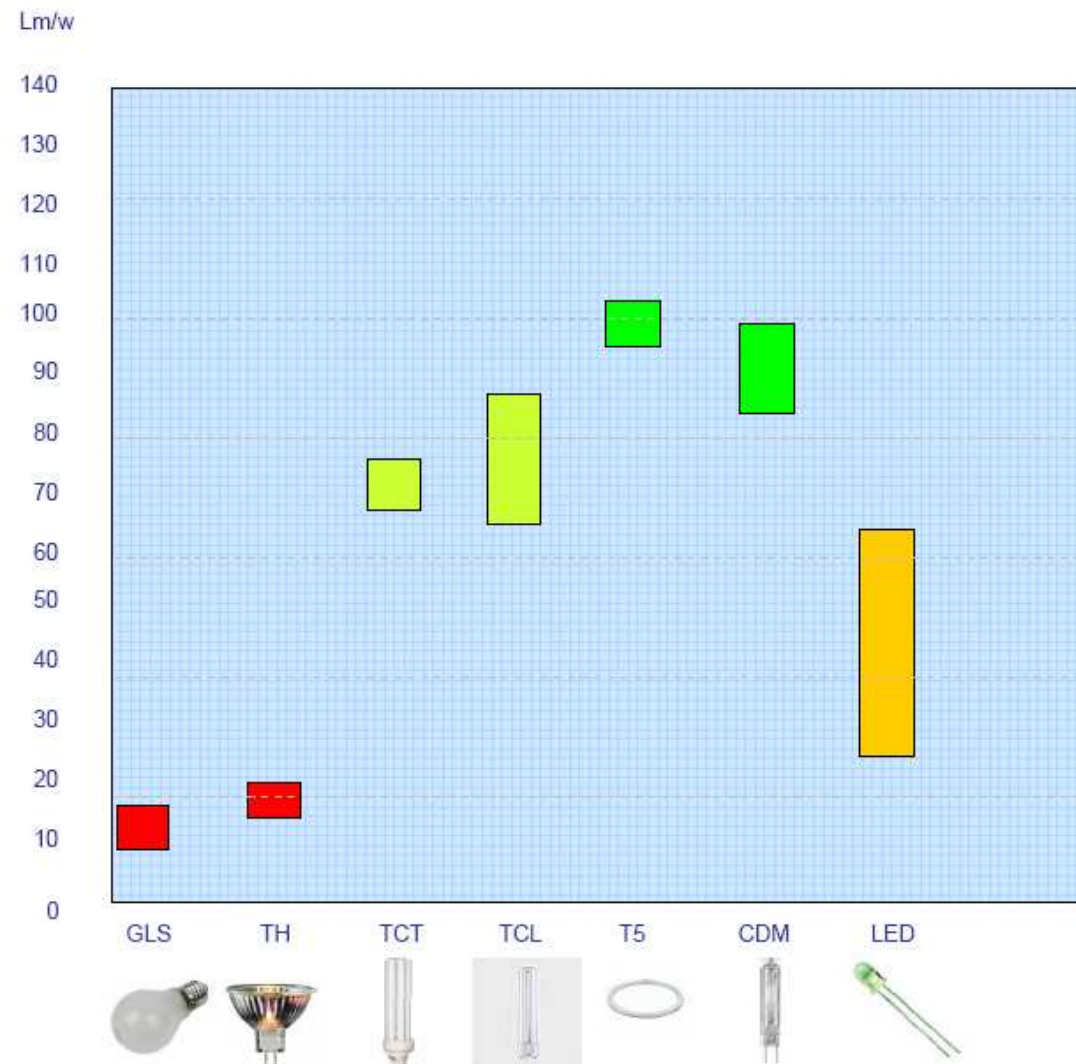
LV Dichroic Halogen

These lamps are suitable for display, museum and exhibition, commercial and domestic lighting. The dichroic coating allows for approximately 50% of the heat to be transmitted backwards. Average life is 3000 hours and a 75w lamp emits 1575 lumens, with an efficacy of 21 lumens per watt.

Tungsten Halogen

Used in display and exhibition, commercial and floodlighting. Suitable where requirement is for immediate light, or good colour rendering with warm colour appearance. Average lamp life of 4000 hours. A 100w lamp emits 1500 lumens, with an efficacy of 15 lumens per watt.

3.0 LAMP EFFICACY



4.0 CURRENT PRACTICE

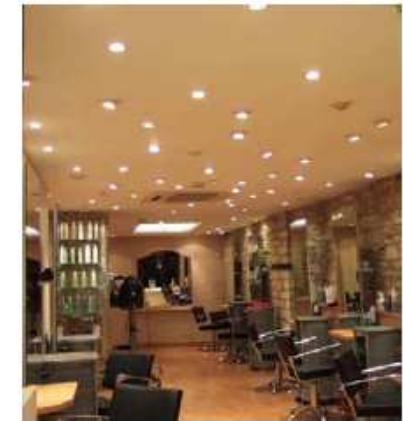
4.1 ILLUSTRATIVE EXAMPLES



Store solely lit with dichroic halogen lamps very inefficient lighting scheme, clustered lamps may produce scorch marks from heat thrown backwards. Excessive heat will also require additional air conditioning.

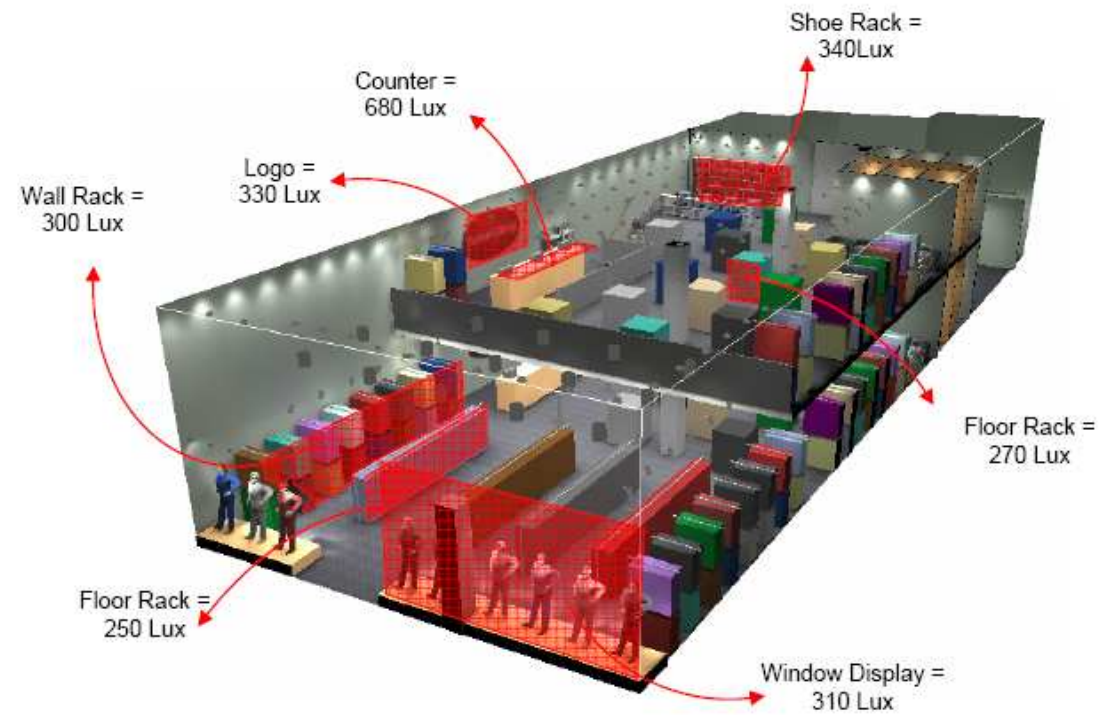


Too many lamp types. Excessive use of halogen spotlights to wash the wall. Metallic ceiling has oppressive feel and inadequate reflectivity. Scheme feels too busy.



Salon lit solely with recessed dichroic halogen fittings. Ceiling looks cluttered and unorganised. The space also is very warm due to the heat of the lamps. Solely downward distribution of light does not light vertical surfaces (people's faces) well, giving harsh shadows and being very unflattering.

4.2 CURRENT PRACTICE MODEL



5.0 BEST PRACTICE

5.1 ILLUSTRATIVE EXAMPLES



The pure white interior finishes provide an excellent reflective surface and also introduce high contrast allowing the products to stand out from the background.

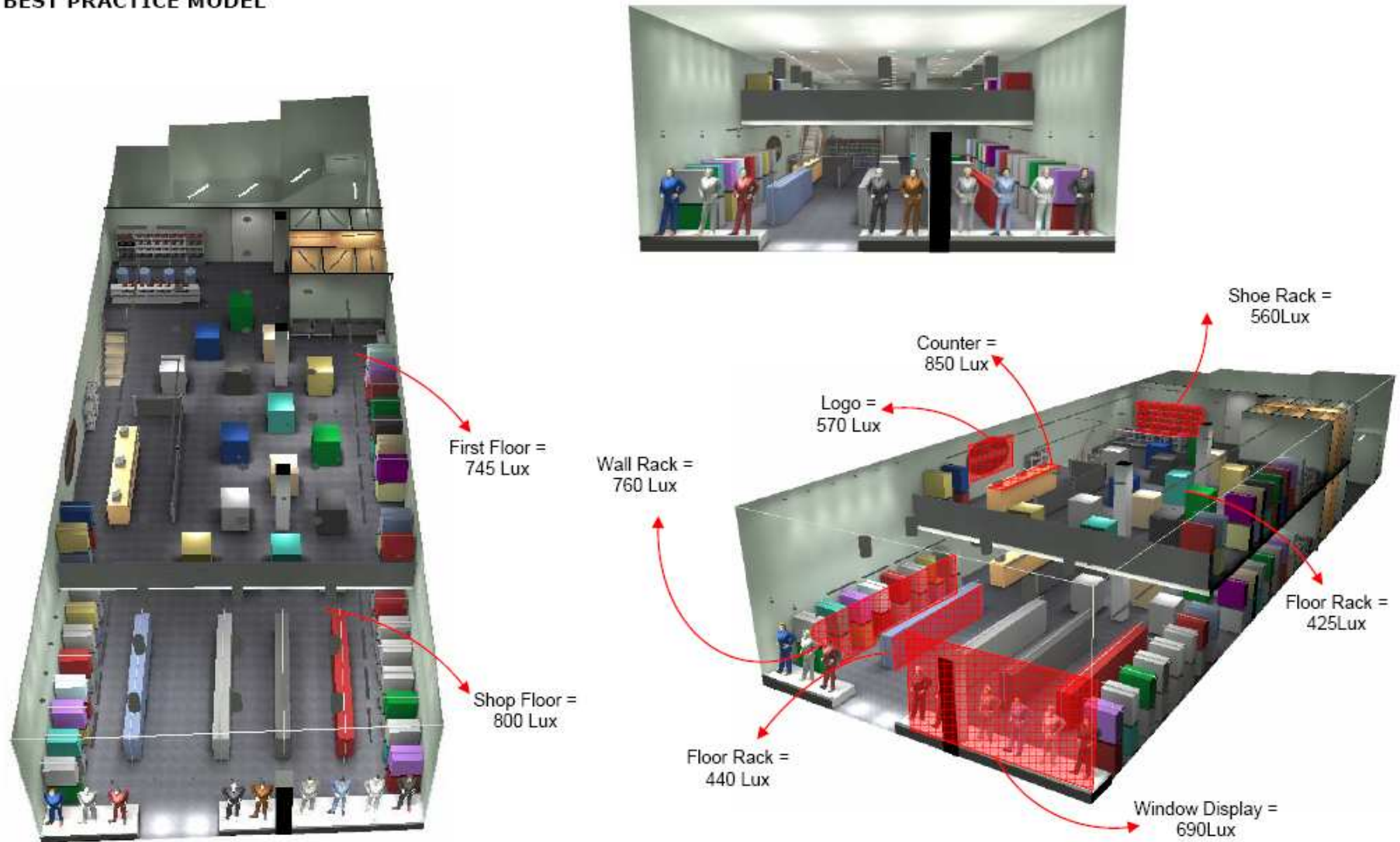


Walls are washed by angled fluorescent battens hidden in recessed pelmet detail, preventing glare from exposed battens



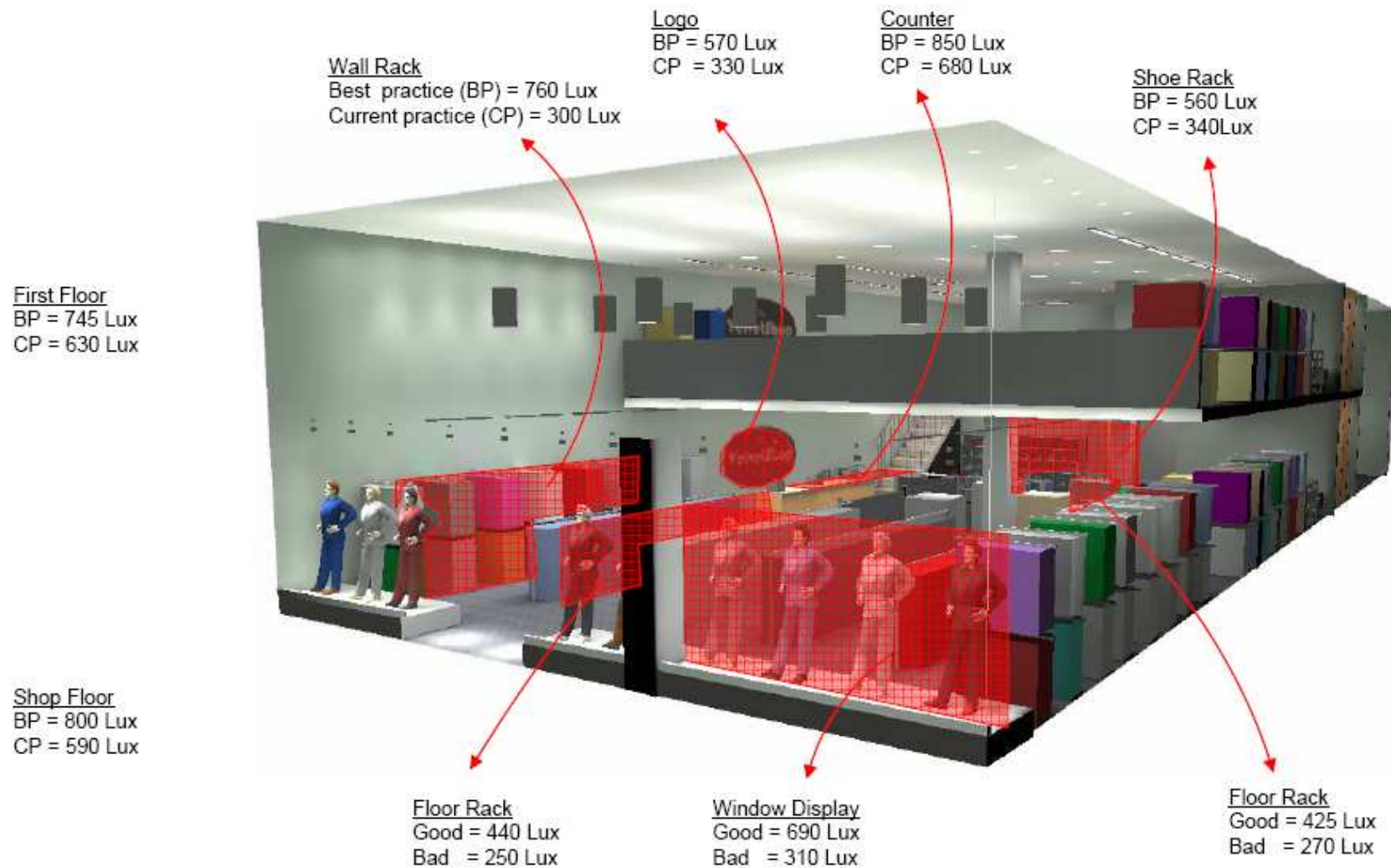
The lighting within the space is provided solely by energy efficient lamps. The simple illuminated boxes introduce a visual brightness and provide ambient lighting within the outlet, helping to light the walls, ceiling and floor. A uniform line of CDM-T spotlights accent the window displays.

5.2 BEST PRACTICE MODEL



6.0 DIRECT COMPARISON

Comparison to provide similar illuminance levels and spatial effect.



7.0 COMPARATIVE ELECTRICAL DEMANDS

Bad design uses halogen downlights to wash the whole floor area with light, then additional halogen spotlights to emphasize the store contents and highlight the walls.

Good design uses compact fluorescents for a soft background level of light on the floor and walls, making the space seem larger and more inviting. The same fittings also highlight the clothes racks, with additional metal halide creating a more localised effect.



Separate halogen downlights illuminate floor and wall, spotlights highlight the clothes, shoes and accessories.

An array of halogen pendants provide lighting on floor area, halogen spotlights accentuate the racks and halogen downlights illuminate the wall.

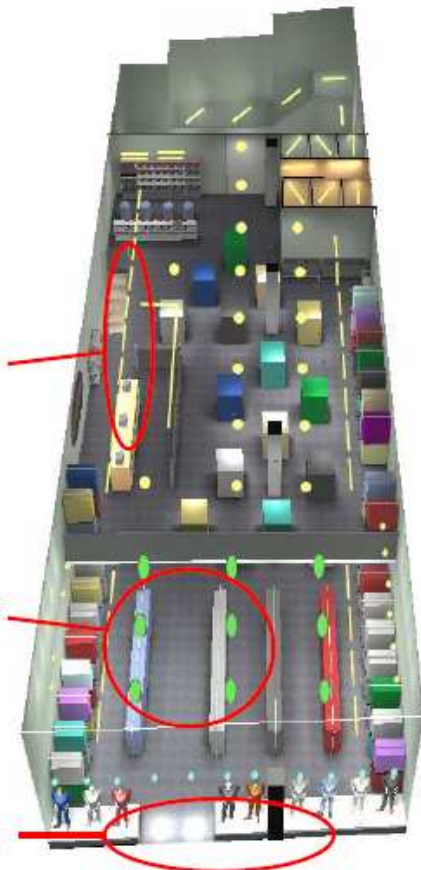
Halogen downlighters and spotlights flood the window display

CURRENT PRACTICE
Total Load 37.5 KW
70.8 W/m²

Asymmetric Projector illuminates walls, racks, floor, shoes and accessories.

CDM-T pendants wash the floor space and uplight onto the ceiling, CDM-T downlighters illuminate the walls.

Fluorescent uplighters and track mounted CDM-T spotlights illuminate and accentuate window display.



BEST PRACTICE
Total Load 12.5 KW
23.8 W/m²
