

Ska rating



**Good practice measures
for offices**

Version 1.1



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Acknowledgments

The review and update of the Ska rating good practice measures for this 2011 version 1.1 release was undertaken by the members of the Ska rating technical committee prior to industry consultation and feedback. The members of the committee were:

Amy Bettison, BG2 Global

Daniel Bond, DTZ

Sarah Edwards, Sheppard Robson

Elina Grigoriou, Grigoriou Interiors

Kirsten Henson, KLH Sustainability

Emma Hickling, AECOM

The committee and RICS would also like to thank those who made other specialist contributions to the review: Cath Hassell, ech2o consultants; Brian Murphy and Sandy Patience, GreenSpec; and Joe Cilia, Association of Interior Specialists.

RICS is committed to the continuous development and improvement of the Ska rating system and would like to hear further feedback on these measures at any stage. Please email ska@rics.org

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Reduce lighting energy in use



Criteria

Annual lighting electricity use is less than or equal to:

	Naturally vented cellular office	Naturally vented open plan	Air-conditioned standard	Air-conditioned prestige
kWh/m ² /year	14	22	27	29

Scoping

This measure applies to occupancy stage assessments if any of the lighting energy measures (D01, D02 and E01–E04) were in scope at the handover stage assessment and regardless of whether sub-metering arrangements allow lighting energy use to be measures (see guidance).

Assessment

This measure can only be assessed after a minimum of one year's occupation as the electricity usage has to be measured over a full calendar year (365 days). This is to take account of seasonal variations, including external variables such as amount of daylight and occupant behaviour, such as holidays.

At handover stage: record electricity meter readings for the lighting circuits(s).

At occupancy stage: take meter readings for the lighting circuit(s) and use the meter readings taken at the handover stage to calculate the annual lighting electricity consumption in kWh (the difference between the readings). Calculate the lighting electricity use based on the net floor area of the office (in m²).

The calculation is as follows:

$$\begin{matrix} \text{Lighting} \\ \text{electricity} \\ \text{consumption} \\ \text{(kWh/m}^2\text{)} \end{matrix} = \frac{\text{Annual electricity usage related to lighting (kWh)}}{\text{floor area (m}^2\text{)}}$$

Rationale

The aim is to encourage the occupant to reduce energy consumption. The targets set here are based on good practice benchmarks. If the fit-out process has introduced energy efficiency measures, then the impact of these measures should be reflected in reduced annual energy consumption.

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Guidance

Definitions for the different office types are:

Naturally vented cellular office

- A simple building, often (but not always) relatively small and sometimes in converted residential accommodation.
- Typical size ranges from 100 m² to 3,000 m².

The domestic approach, with individual windows, lower illuminance levels, local light switches and heating controls helps to match the operation with the needs of occupants and tends to reduce electricity consumption in particular. There also tend to be few common facilities. Catering often consists of the odd sink, refrigerator and kettle.

Naturally vented open plan

- Largely open-plan but with some cellular offices and special areas.
- Typical size ranges from 500 m² to 4,000 m².

This type is often purpose built, sometimes in converted industrial space. Illuminance levels, lighting power densities and hours of use are often higher than in cellular offices. There is more office equipment, vending machines, etc., and more routine use of this equipment. Lights and shared equipment tend to be switched in larger groups, and to stay on for longer because it is more difficult to match supply to demand.

Air-conditioned standard

- Largely purpose-built and often speculatively developed.
- Typical size ranges from 2,000 m² to 8,000 m².

This type is similar in occupancy and planning to building type 'Naturally vented open plan', but usually with a deeper floor plan, and tinted or shaded windows that reduce daylight still further. These buildings can often be more intensively used. The benchmarks are based on variable air volume (VAV) air-conditioning with air-cooled water chillers; other systems often have similar overall consumption but a different composition of end use.

Air-conditioned prestige

- A national or regional head office, or technical or administrative centre.
- Typical size ranges from 4,000 m² to 20,000 m².

This type is purpose-built or refurbished to high standards. Plant running hours are often longer to suit the diverse occupancy. These buildings include catering kitchens (serving hot lunches for about half the staff); air-conditioned rooms for mainframe computers and communications equipment; and sometimes extensive storage, parking and leisure facilities.

Ideally the electricity consumption should be measured during the first year of occupation. However, the assessment period can start at any time within the first year of occupation, but it must finish within the first two years of occupation.

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The measure remains in scope even if there are no lighting sub-meters to provide consumption figures. This is because the client has chosen to implement resource-saving measures but has no way of measuring the benefit of them. As the assessment can be completed during the first two years of occupation, the client has time to install the meters required.

It is not possible to use the energy performance certificate or display energy certificate to measure energy in use for this measure. This is because these certificates cover the performance of the whole building. The purpose of this measure is to assess only those elements that were changed due to the fit-out process, and to determine whether they have had an impact on the tenant's energy usage.

Benchmarks have been taken from the following documents:

- *Energy use in offices*, Energy consumption guide 19 (EGC 19), CIBSE, 2000.
- *Energy Benchmarks*, TM46, CIBSE, 2008.
- *Energy efficiency in buildings*, Guide F, [CIBSE](#), 2004.

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Reduce small power in use



Criteria

Annual small power energy use is less than or equal to the tailored benchmark for this office type.

Scoping

This measure applies to all occupancy stage assessments.

Assessment

This measure can only be assessed after a minimum of one year's occupation. The electricity use has to be measured over a full calendar year (365 days). This is to take account of seasonal variations, including external variables such as temperature, amount of daylight and occupant behaviour, such as holidays.

At handover stage: record electricity meter readings for small power.

At occupancy stage: take meter readings enabling the quantification of the energy use for small power and use the meter readings taken at the handover stage to calculate the annual lighting electricity consumption in kWh (the difference between the readings). Calculate the electricity use based on the net floor area of the office (in m²).

The calculation is as follows:

$$\text{Small power electricity consumption (kWh/m}^2\text{)} = \frac{\text{Annual electricity usage related to small power (kWh)}}{\text{floor area (m}^2\text{)}}$$

The tailored benchmark against which the annual consumption must be checked is calculated using the P11 calculator.

Rationale

The aim is to encourage the occupant to reduce energy consumption. The targets set here are based on good practice benchmarks. If the fit-out process has introduced energy efficiency measures, then the impact of these measures should be reflected in reduced annual energy consumption.

Guidance

Ideally the electricity consumption should be measured during the first year of occupation. However the assessment period can start at any time within the first year of occupation, but it must finish within the first two years of occupation.

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The measure remains in scope even if there are no electricity meters to provide consumption figures. This is because the client has chosen to implement resource-saving measures but has no way of measuring the benefit of them. As the assessment can be completed during the first two years of occupation, the client has time to install the meters required.

It is not possible to use the energy performance certificate or display energy certificate to measure energy in use for this measure. This is because these certificates cover the performance of the whole building. The purpose of this measure is to assess only those elements that were changed due to the fit-out process, and to determine whether they have had an impact on the tenant's energy usage.

Benchmarks have been taken from the following documents:

- *BCO Guide to Specification*, [British Council for Offices](#), 2009.
- *Energy use in offices*, Energy consumption guide 19 (EGC 19), CIBSE, 2000.
- *Energy Benchmarks*, TM46, CIBSE, 2008.
- *Energy efficiency in buildings*, Guide F, [CIBSE](#), 2004.

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Energy efficient lighting



Criteria

Installed lighting load in the general office area is less than 11W/m².

Scoping

This measure applies if a general office lighting system serving at least one area of more than 20m² is being installed or upgraded.

The criteria apply only to workspaces (either open plan or cellular offices) and meeting spaces. Other areas within the office environment, such as toilet blocks, lift lobbies, stairs, tea points and kitchen areas are excluded.

Assessment

At design stage: check specifications and drawings.

At handover stage: check as-built drawings, and/or carry out a site visit to check the fittings that have been installed and their locations.

At occupancy stage: if the general office lighting layout has been changed then carry out the handover stage assessment. If this measure was achieved at handover stage and the layout has not been changed or added to, this measure will be achieved by default.

Rationale

The aim is to encourage the design of energy efficient lighting installations.

If the lighting design provides suitable lux levels for the occupants then it is unlikely it will have changed at the occupancy stage assessment. If light fittings have been repositioned or replaced it is likely the design did not deliver the required lux levels: the new lighting design needs to be checked to ensure that the load still meets the criteria set by this good practice measure.

Guidance

BCO Guide to Specification, [British Council for Offices](#), 2009.

Energy efficiency in buildings, Guide F, [CIBSE](#), 2004. (An update is being prepared for publication in 2010)

Lighting Guide 7: Office Lighting, [CIBSE](#), 2005.

Lighting: non-domestic, Good Building Guide 61, Part 3, BRE, 2004.

[Lighting technology overview](#), CTV021, Carbon Trust, 2007.

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D01

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Lighting controllability



Criteria

- Lights are automatically controlled for the presence of daylight or occupancy where appropriate.
- Cellular offices are provided with manual on/off switches and absence detectors to switch the lights off.
- Separate controls/sensors are provided to lighting areas of up to four workstations.

Scoping

This measure applies if new lighting is being installed or existing controls are being replaced.

The criteria apply to lighting in office spaces, corridors, and non-occupied spaces such as toilets and store rooms.

Assessment

At design stage: check specifications and drawings.

At handover stage: check as-built drawings, and/or carry out a site visit to check the controls that have been installed and their locations.

At occupancy stage: if controls have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and controls have not been changed or added, this measure will be achieved by default.

Rationale

Good practice, as outlined in the CIBSE guidelines for office lighting, dictates that office lighting should be simply and easily controlled. When new lighting is being installed, the design should incorporate controls that minimise energy usage: lighting should switch off when daylight provides a sufficient level of illuminance and also when spaces are unoccupied.

Guidance

See E01 Lighting controls.

When installing controls consider the following:

- use of zoning – so that lights closest to windows have separate controls; and
- use of timing – so lights default to off during daylight hours and end of office hours.

Lighting Guide 7: Office Lighting, [CIBSE](#), 2005.

[Lighting technology overview](#), CTV021, Carbon Trust, 2007.

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Lighting controls



Criteria

Lighting controls comply with the Energy Technology List criteria (ETL criteria).

Scoping

This measure applies if new lighting controls are being installed.

Assessment

At design stage: check written specifications/contracts state this equipment must comply with the ETL criteria. If the model and manufacturer have already been specified then carry out the handover stage assessment.

At handover stage: obtain the name of the equipment manufacturer, the model number and the specifications; check the specifications match the ETL criteria.

At occupancy stage: if lighting controls have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and lighting controls have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to encourage the use of energy efficient lighting controls. Lights are often left on when not needed. Equally, people will often turn on all the lights in a room or building when they are only occupying a small section of it.

Good lighting control ensures that lights are only on when needed. It is easy to fit products to existing buildings or lighting systems, and they can help significantly reduce the amount of energy being used.

Guidance

Individual products and manufacturers of lighting controls are not listed on the ETL website. Individual products qualify for an Enhanced Capital Allowance (ECA) if they meet the criteria set out in the Energy Technology List. The criteria can be found by searching the [ETL catalogue](#).

[Lighting technology overview](#), CTV021, Carbon Trust, 2007.

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E01

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Energy efficient lamps



Criteria

All lamps comply with the Energy Technology List criteria (ETL criteria).

Scoping

This measure applies if new lamps are being installed.

There may be occasional instances where existing light fittings cannot take energy efficient lamps. This measure must still remain in scope even though it cannot be achieved. This is because the aim of the assessment is to encourage more sustainable behaviour. In this instance the most sustainable behaviour would be to upgrade the light fittings.

Assessment

At design stage: check written specifications/contracts state this equipment must comply with the ETL criteria. If the model and manufacturer have already been specified then carry out the handover stage assessment.

At handover stage: obtain the name of the equipment manufacturer, the model number and the specifications; check the specifications match the ETL criteria.

At occupancy stage: if lamps have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and lamps have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to encourage the use of energy efficient lamps.

Guidance

Individual products and manufacturers of lamps are not listed on the ETL website, Individual products can qualify for an Enhanced Capital Allowance (ECA) if they meet the criteria set out in the Energy Technology List. The criteria can be found by searching the [ETL catalogue](#).

To assess whether lamps meet the criteria download the criteria documents for 'high efficiency lighting units' and 'white light emitting diode units'. The lamps being installed must meet the criteria relating to lamps within these two documents.

If both lamps and fittings are being installed then the lighting installer should be able to provide the documentation required by the Inland Revenue that confirms the products meet the ETL criteria.

[Lighting technology overview](#), CTV021, Carbon Trust, 2007.

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E02

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Energy efficient heat pumps



Criteria

Heat pumps are on the Energy Technology List.

Scoping

This measure applies if new heat pumps (split units) are being installed.

Assessment

At design stage: check written specifications/contracts state this equipment must be sourced from the ETL. If the model and manufacturer have already been specified then carry out handover stage assessment.

At handover stage: obtain the name of the equipment manufacturer and the model number; check it is on the ETL.

At occupancy stage: if heat pumps have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and the heat pumps have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to encourage the use of energy efficient heat pumps.

Guidance

The Inland Revenue maintains an Energy Technology List of systems that are eligible for 100% capital allowances. It includes a list of manufacturers of energy efficient heat pumps. Visit www.eca.gov.uk/etl

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High frequency lighting

Criteria

All fluorescent light fittings are installed with high frequency ballasts.

Scoping

This measure applies if fluorescent light fittings are installed or upgraded.

Assessment

At design stage: check specifications and drawings.

At handover stage: obtain the make and manufacturer of the light fittings (e.g. from invoices) and check the details on the manufacturer's website.

At occupancy stage: if fluorescent light fittings have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and the fittings have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to encourage the use of energy efficient light fittings. High frequency ballasts reduce lighting energy use. In addition they have health benefits: low frequency ballasts can cause eyestrain and headaches.

Guidance

Newer fluorescent fittings usually come with high frequency ballasts as standard.

If the fluorescent lights are dimmable, then they will have high frequency ballasts.

[Lighting technology overview](#), CTV021, Carbon Trust, 2007.

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Pipework insulation



Criteria

The insulation complies with the Energy Technology List criteria (ETL criteria).

Scoping

This measure applies if pipework or pipework insulation are being installed.

Assessment

At design stage: check written specifications state the pipework insulation is based on BS 5422:2009. The specification should show the thickness of insulation required for all pipe installations based on BS 5422:2009.

At handover stage: obtain written confirmation from the installer that the pipework insulation has been fitted in compliance with BS 5422:2009 and the insulation thicknesses match those in the design specification.

At occupancy stage: if pipework insulation has been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and pipework insulation has not been changed or added, this measure will be achieved by default.

Rationale

The aim is to decrease energy loss as a result of inadequate pipework insulation.

Guidance

The Energy Technology List criteria for pipework insulation are based on compliance with BS 5422:2009 (*Method for specifying thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range -40°C to +700°C*, BSI, 2009).

This specifies the various thicknesses of insulation required for different circumstances so it is impossible to list individual products on the Energy Technology Product List. The Enhanced Capital allowance for pipework insulation can be claimed if the installer confirms that it has been fitted in compliance with BS 5422:2009.

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Heat sub-metering



Criteria

- Automatic monitoring and targeting (AMT) equipment is installed. AMT equipment comprises meters, an automatic meter reading device and analytical software.
- The meter component is installed for each floor and each tenancy area within a floor for space heating and cooling, and domestic hot water.

Scoping

This measure applies if the heating/cooling supply system is being installed or modified or if meters are being connected to the existing system.

It applies only where heating and cooling, and domestic hot water is either:

- generated from a centralised system and supplied to each floor/tenancy area as heat (hot air or hot water); or
- generated directly for the floor from a non-electric source (e.g. gas).

Assessment

At design stage: review mechanical and electrical specifications or electrical schematic to ensure that the appropriate metering and sub-metering is specified.

At handover stage: check meters have been installed and meet the specification by reviewing O&Ms, as-built schematics or invoices, or by a site inspection.

At occupancy stage: check the AMT system is operational by reviewing the output from the BMS or by a site inspection of the meters. If meters have been added during the first year of occupation, carry out the handover stage assessment.

Rationale

Monitoring energy usage allows the tenant to identify areas of high consumption. This assists in the development of a carbon management strategy that could provide environmental and economic benefits.

Although this measure only covers the meters, the measure cannot be achieved unless a full AMT system is installed, as the benefits from metering are not achieved unless the data from them can be analysed.

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Guidance

The above requirements exceed those set out in Part L2 of the Building Regulations.

Building Energy Metering: a guide to energy sub-metering in non-domestic buildings, [CIBSE](#), 2006.

Energy efficiency in buildings, Guide F, [CIBSE](#), 2004.



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Energy efficient light fittings



Criteria

All light fittings (luminaires) comply with the Energy Technology List criteria (ETL criteria).

Scoping

This measure applies if new light fittings are being installed.

Assessment

At design stage: check written specifications/contracts state this equipment must comply with the ETL criteria. If the model and manufacturer have already been specified then carry out the handover stage assessment.

At handover stage: obtain the name of the equipment manufacturer, the model number and the specifications; check the specifications match the ETL criteria.

At occupancy stage: if light fittings have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and the fittings have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to encourage the use of energy efficient light fittings.

Guidance

Individual products and manufacturers of light fittings are not listed on the ETL website. Individual products qualify for an Enhanced Capital Allowance (ECA) if they meet the criteria set out in the Energy Technology List. The criteria can be found by searching the [ETL catalogue](#).

The ETL combines lamps and light fittings into a single category. The Inland Revenue will only provide a tax allowance for the combined lamp and fitting. In a fit-out it is possible to replace lamps without replacing the entire fitting so there are two separate Ska rating measures for lamps and fittings.

To assess whether fittings meet the criteria download the criteria documents for 'high efficiency lighting units' and 'white light emitting diode units'. The fittings being installed must meet the criteria relating to fittings within these two documents.

If both lamps and fittings are being installed then the lighting installer should be able to provide the documentation required by the Inland Revenue that confirms that the products meet the ETL criteria.

[Lighting technology overview](#), CTV021, Carbon Trust, 2007.

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HVAC zone controls



Criteria

Heating, ventilation and air conditioning (HVAC) zone controls are on the Energy Technology List (ETL).

Scoping

This measure applies if these systems are being upgraded or replaced.

Assessment

At design stage: check written specifications/contracts state this equipment must be sourced from the ETL. If the model and manufacturer have already been specified then carry out the handover stage assessment.

At handover stage: obtain the name of the equipment manufacturer and the model number; check it is on the ETL.

At occupancy stage: if HVAC zone controls have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and the controls have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to encourage the use of energy efficient HVAC zone controls.

Guidance

The Inland Revenue maintains an Energy Technology List of systems that are eligible for 100% capital allowances. It includes a list of manufacturers of energy efficient HVAC zone controls.

Visit www.eca.gov.uk/etl

[Heating, ventilation and air conditioning \(HVAC\) technology overview](#), CTV003, Carbon Trust, 2006.

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Electricity sub-metering



Criteria

Automatic monitoring and targeting (AMT) equipment is installed. AMT equipment comprises meters, an automatic meter reading device and analytical software. The meter component is installed for each electricity energy use. This requires separate meters for all the following items:

- lighting – a minimum of one sub-meter per floor and per tenancy area within a floor;
- small power – a minimum of one sub-meter per floor and per tenancy area within a floor;
- humidification;
- fans (major fans only);
- lifts;
- escalators;
- cooling, space heating, domestic hot water (if they are powered by electricity) – a minimum of one sub-meter per floor and per tenancy area within a floor;
- any other major energy consuming items.

Scoping

This measure applies if the electrical supply system is being installed or modified or if meters are being connected to the existing system.

Assessment

At design stage: review mechanical and electrical specifications or electrical schematic to ensure that the appropriate metering and sub-metering is specified.

At handover stage: check meters have been installed and meet the specification by reviewing O&Ms, as-built schematics or invoices, or by a site inspection.

At occupancy stage: check the AMT system is operational by reviewing the output from the BMS or by a site inspection of the meters. If meters have been added during the first year of occupation, carry out the handover stage assessment.

Rationale

Monitoring energy usage allows the tenant to identify areas of high consumption. This assists in the development of a carbon management strategy that could provide environmental and economic benefits.

Although this measure only covers the meters, the measure cannot be achieved unless a full AMT system is installed, as the benefits from metering are not achieved unless the data from them can be analysed.

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Guidance

Building Energy Metering: a guide to energy sub-metering in non-domestic buildings, [CIBSE](#), 2006.

The Carbon Reduction Commitment – A guide for landlords and tenants, British Council for Offices, 2009.



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Component AMT



Criteria

Automatic monitoring and targeting (AMT) equipment complies with all the qualifying standards within the Energy Technology List criteria (ETL criteria).

Scoping

This measure applies if new AMT equipment is being installed or individual components in an existing system are being replaced.

Assessment

At design stage: check written specifications/contracts state this equipment must comply with the ETL criteria. If the product and manufacturer have already been specified then carry out the handover stage assessment.

At handover stage: obtain the name of the component and the product specification; check it complies with the ETL criteria.

At occupancy stage: if AMT components have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and AMT components have not been changed or added, this measure will be achieved by default.

Rationale

A complete component-based AMT system comprises a meter (or meters), a meter reading system and analytical software

The aim is to monitor the system performance as a consequence of using component-based AMT equipment. AMT equipment helps to save energy by identifying energy wastage and ensuring the long-term effectiveness of other energy saving investment measures.

Guidance

The Inland Revenue maintains an Energy Technology List of systems that are eligible for 100% capital allowances. Visit www.eca.gov.uk/etl

Component-based AMT equipment is not on the Energy Technology List (ETL).

If a business wishes to claim an ECA on an AMT system the components must meet the criteria set out in the Energy Technology List and independent certification must be obtained from the Department for Energy and Climate Change (DECC).

Independent certification from DECC is not required to achieve this measure.

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IT/Comms room energy consumption



Criteria

Dedicated IT/Comms rooms have a calculated DCiE (data centre effectiveness) of 70% or greater.

Scoping

This measure applies if IT/comms rooms and their support services are being installed, altered or upgraded.

Assessment

At design stage: check written specifications/contracts.

At handover stage: check calculations of the DCiE are based on the installed equipment.

At occupancy stage: carry out the handover stage assessment.

Rationale

The aim is to reduce energy use from IT/Comms rooms IT framework solutions and associated cooling requirements. The DCiE is an efficiency benchmark comparing data centre infrastructure to existing IT load.

The initial benchmarking of DCiE yields an efficiency score and sets a testing framework for the facility to repeat.

Guidance

[The Green Grid](#)

The DCiE is a reciprocal of the PUE (Power Usage Effectiveness) and is expressed as a percentage; the higher the percentage, the higher the efficiency.

$$\text{DCiE} = 1/\text{PUE} = \text{IT Equipment Power}/\text{Total Facility Power} \times 100\%$$

$$\text{PUE} = \text{Total Facility Power}/\text{IT Equipment Power}$$

IT Equipment Power includes the equipment that is used to manage, process, store, or route data within the data centre, such as computer, storage, and network equipment, along with supplemental equipment such as KVM switches, monitors, and workstations/laptops used to monitor or otherwise control the data centre.

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Total facility power includes everything that supports the IT equipment load, such as:

- power delivery components such as UPS, switch gear, generators, PDUs, batteries, and distribution losses external to the IT equipment;
- Cooling system components such as chillers, computer room air conditioning units (CRACs), direct expansion air handler (DX) units, pumps, and cooling towers;
- computer, network, and storage nodes; and
- other miscellaneous component loads such as data centre lighting.

Use of these metrics has become typical practice for new data centres built in the US and the UK, and increasingly elsewhere in Europe. For more information and a free PUE estimator tool, visit: www.thegreengrid.org

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Energy efficient HVAC



Criteria

Heating, ventilation and air conditioning (HVAC) system components listed below are on the Energy Technology List (ETL):

- boiler equipment;
- heat pumps;
- HVAC zone controls;
- motors and drives;
- refrigeration equipment.

Note: The criteria apply only to those components that are in scope.

Scoping

This measure applies if any one of the components listed above is being installed, upgraded or replaced.

Note: Heat pumps, HVAC zone controls and boilers are good practice measures in their own right. For this measure it is necessary for all the listed components of the HVAC system that are being upgraded to meet the ETL criteria.

Assessment

At design stage: check written specifications/contracts state this equipment must be sourced from the ETL. If the model and manufacturer have already been specified then carry out the handover stage assessment.

At handover stage: obtain the name of the equipment manufacturer and the model number; check it is on the ETL.

At occupancy stage: if the equipment has been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and the equipment has not been changed or added, this measure will be achieved by default.

Rationale

The aim is to encourage the installation of energy efficient HVAC systems.

Guidance

See E05 Energy efficient heat pumps, E06 HVAC zone controls, E11 Efficient boilers.

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The Inland Revenue maintains an Energy Technology List (ETL) of systems that are eligible for 100% capital allowances. It includes a list of manufacturers of energy efficient HVAC systems. The following components are not on the ETL and therefore do not fall within the scope of this measure: fan coil units, VAV boxes, and air-handling units. Visit www.eca.gov.uk/etl

[Heating, ventilation and air conditioning \(HVAC\) technology overview](#), CTV003, Carbon Trust, 2006.



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Energy efficient boilers



Criteria

Boilers are on the Energy Technology List (ETL).

Scoping

This measure applies if new boilers are installed.

Assessment

At design stage: check written specifications/contracts state this equipment must be sourced from the ETL. If the model and manufacturer have already been specified then carry out the handover stage assessment.

At handover stage: obtain the name of the equipment manufacturer and the model number; check it is on the ETL.

At occupancy stage: if boilers have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and the boilers have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to provide an energy efficient boiler.

Guidance

The Inland Revenue maintains an Energy Technology List of systems that are eligible for 100% capital allowances. It includes a list of manufacturers of energy efficient boilers. Visit www.eca.gov.uk/etl

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Daylighting



Criteria

Average daylight factor is 2% or greater.

Scoping

This measure applies if alterations are made to the building façade, with the opportunity to redesign glazing.

The criteria apply only to occupied floor spaces such as office/workshop spaces. The criteria do not apply to circulation spaces or non-occupied spaces such as toilets and store rooms.

Assessment

At design stage: obtain calculations demonstrating the daylight factor achieved, supported by elevations and floor plans.

At handover stage: review the as-built drawings to ensure that the designs have been implemented. If the as-built drawings are not the same as the design, then the contractor may need to provide updated calculations to demonstrate that the installed glazing still meets the criteria.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

Effective use of available daylight reduces the need for artificial lighting and provides a more natural environment for building occupants. Although there is no maximum daylight factor it should be recognised that 'flooding' natural light into a workspace is not good practice.

Guidance

Lighting for buildings. Code of practice for daylighting, BS 8206-2:2008, BSI, 2008.

Lighting Guide 10: Daylighting and Window Design, [CIBSE](#), 1999.

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Energy efficient hand-dryers



Criteria

All electrically-operated hand-dryers either:

- meet all the following criteria:
 - energy consumption is below or equal to 8A (at 230V);
 - nominal power output is below or equal to 1600 W;
 - drying time is below 15 seconds;
 - equipment motor speed is at least 20,000 rpm;
 - standby power is below or equal to 3W; and
 - are sensor activated; or
- have been awarded a carbon reduction label by The Carbon Trust.

Scoping

This measure applies if electrical hand-dryers are being installed or replaced.

Assessment

At design stage: check written specifications/contracts state this equipment must comply with the criteria. If the model and manufacturer have already been specified then carry out the handover stage assessment.

At handover stage: check the installed equipment.

At occupancy stage: if hand-dryers have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and the hand-dryers have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to encourage the use of energy efficient hand-dryers.

Guidance

Individual products and manufacturers of hand-dryers are not listed on the ETL website.

Carbon Reduction Label www.carbon-label.com

Although there is no conclusive evidence to support electric hand-dryers over paper towels some insight on both can be found at various sources including:

- Tree hugger [hand-dryer v paper towels](#);
- [European Tissue Symposium hosted LCAs](#); and
- [a Westminster University Study](#).

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Energy efficient DHW



Criteria

Gas-fuelled domestic hot water (DHW) systems are on the Energy Technology List (ETL).

Electricity-fuelled domestic hot water (DHW) systems have a standing heat loss better than that specified in table 5 of BS EN 15450:2007:

nominal volume l	max. heat loss kWh/24h	nominal volume l	max. heat loss kWh/24h
30	0,75	600	3,8
50	0,90	700	4,1
80	1,1	800	4,3
100	1,3	900	4,5
120	1,4	1 000	4,7
150	1,6	1 100	4,8
200	2,1	1 200	4,9
300	2,6	1 300	5,0
400	3,1	1 500	5,1
500	3,5	2 000	5,2

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Scoping

This measure applies if DHW systems are being upgraded or replaced.

Note: This measure only includes dedicated DHW heaters. If DHW is supplied from the system that provides space heating, then it will be covered by the selection of space heating equipment (see E11 Efficient boilers). This measure excludes electric heaters that have a storage capacity of less than 30 litres.

Assessment

At design stage: check written specifications/contracts state that gas-fuelled equipment must be sourced for the ETL or that electricity-fuelled equipment must have a standing heat loss better than that specified in the table above. If the model and manufacturer have already been specified then carry out the handover stage assessment.

At handover stage: obtain the name of the manufacturer of the equipment and the model number. Check that gas-fuelled equipment is on the ETL or that electricity-fuelled equipment has a standing heat loss better than that specified in the table above.

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At occupancy stage: if the DHW system has been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and the DHW system has not been changed or added, this measure will be achieved by default.

Rationale

The aim is to encourage the use of energy efficient DHW systems.

Guidance

The Inland Revenue maintains an Energy Technology List of systems that are eligible for 100% capital allowances. It includes a list of manufacturers of energy efficient DHW systems. DHW systems can be found under the category 'boiler equipment' or 'solar thermal systems'. Visit www.eca.gov.uk/etl

Heating systems in buildings. Design of heat pump heating systems, BS EN 15450:2007, BSI, 2007.



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Reduce fit-out energy use



Criteria

All energy use on site is metered, records are kept and the site manager regularly reviews consumption figures.

Scoping

This measure applies to all fit-outs.

The criteria apply to both electricity and other fuels used on site, such as diesel for a generator.

Assessment

At design stage: obtain commitment from the design team that the fit-out contractor will meter and keep records of energy use.

At handover stage: review the records of energy usage.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

The aim is to encourage the monitoring of energy consumption during the construction process, so that construction staff are aware of energy usage and are encouraged to make reductions.

Collection of this data will enable benchmarking and provide targets for energy reduction in future fit-out projects.

Guidance

For a general overview of why energy management on site is required refer to the document [Achieving sustainability on construction procurement](#).

The construction industry key performance indicators are published each year by Constructing Excellence using performance data collected from across the UK construction sector by the Department for Business Enterprise and Regulatory Reform (formerly DTI). These include benchmarks for energy use. Refer to www.constructingexcellence.org.uk for more information.

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Display energy certificate (DEC)



Criteria

A DEC is issued for the portion of the building that was fitted out and an advisory report provided. The certificate is issued by an energy assessor who is accredited to produce display energy certificates for office buildings.

Scoping

This measure applies to all occupancy assessments.

Assessment

This measure can only be assessed after a minimum of one year's occupation.

At occupancy stage: check the DEC has been carried out.

Rationale

The aim is to encourage the occupant to reduce energy consumption. The display energy certificate measures the energy performance of a building (or part of a building) based on actual energy consumption as recorded annually by meters. It provides an Operational Rating (OR), a numerical indicator of the actual annual carbon dioxide emissions from the building and shows this on a scale of A to G with A being the best performing building.

At present a DEC is only legally required for public buildings with a floor area greater than 1,000m². DECs remain voluntary for all other buildings and therefore this is a valid good practice measure under the Ska rating principles. The target set for this measure is based on the 2009 analysis of DECs produced for government buildings.

An advisory report provides recommendations as to how the energy performance can be improved. A DEC is valid for one year and an advisory report is valid for seven years.

Guidance

[*Improving the energy efficiency of our buildings: A guide to Display Energy Certificates and advisory reports for public buildings*](#), Communities and Local Government, May 2008.

[DEC data](#)

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Materials specification



Criteria

At least 80% of the materials installed as part of the fit-out meet one of the following criteria:

- are reused or reclaimed;
- contain at least 80% recycled or recyclable content;
- have an A or A+ rating in BRE's *The Green Guide to Specification*;
- have an A or A+ rating in BRE's *Green Book Live* database; or
- are supplied with an Environmental Product Declaration (EPD), written in accordance with ISO 14025 standards.

Scoping

This measure applies to all new materials specified (good practice measures M1-M24) and all materials included on the finishes schedule. This measure should be in all fit-out projects, as they all require products to be installed.

Assessment

At design stage: check specifications explicitly reference one of the above criteria.

At handover stage: check installed materials and invoices.

At occupancy stage: if materials have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and materials have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the environmental impact of the production, use of, and disposal of building materials.

Guidance

See individual good practice measures for guidance (M01–M24).

Note: [BRE's The Green Guide to Specification](#) and the [Green Book Live](#) only cover partitions and flooring.

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Hardwoods



Criteria

100% of hardwood is from at least one of the following sources:

- is reclaimed; or
- where new hardwood is used, is supplied with a Chain of Custody (CoC) from one of the following forest certification schemes only:
 - Forest Stewardship Council (FSC);
 - Programme for the Endorsement of Forest Certification (PEFC);
 - Sustainable Forestry Initiative (SFI); or
 - Canadian Standards Association (CSA).

Scoping

This measure applies if hardwood is specified or installed.

Assessment

At design stage: check specifications explicitly reference at least one of the above criteria.

At handover stage: check invoices for all timber and timber products. All invoices for new timber and timber products must detail the quantity and type of product purchased and state the CoC number for the final handler of the product prior to it being installed on site.

Where a CoC number is missing for the final step in the timber handling chain, comprehensive Category B evidence will be acceptable to claim 'sustainable timber' is used on the project but not to publicly claim that a certified product has been purchased. Note that if it is intended for the project to be certified independently by FSC, Category B evidence will not be accepted.

At occupancy stage: if hardwood has been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and hardwood has not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the use of unmanaged hardwoods in construction/fit-outs, and consequently to reduce the environmental impact of forestry by ensuring timber originates from sustainable sources.

Ideally timber and timber products should be sourced from the nearest forest, as this reduces the CO₂ emissions associated with transport. For UK-sourced timber it can either be certified by one of the above schemes or by the UK Woodland Assurance Standard (UKWAS). This is the UK certification scheme that is recognised by both FSC and PEFC.

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Guidance

The extent of Category B evidence required to demonstrate sustainable timber use throughout the fit-out will need to be determined on a case by case basis. The maximum evidence required will consist of three completed checklists:

1. Supply chain information
2. Forest source information of legality
3. Forest source information on sustainability

Note that only checklist 1 needs to be completed if Chain of Custody certification is available at any given stage of the supply chain. The supply chain information needs to be completed from the point at which Chain of Custody certification is no longer available.

The checklists and additional advice and free training are available through the [Central Point of Expertise on Timber](#) (CPET)

CPET offer free advice and one-day training workshops to assist in the understanding of sustainable timber requirements. The CPET helpline can be accessed by phoning 01865 243 766 or by emailing cpet@proforest.net

[Forest Stewardship Council](#) (FSC)

[Programme for the Endorsement of Forest Certification](#) (PEFC)

[Sustainable Forestry Initiative](#) (SFI)

[Canadian Standards Association](#) (CSA)

[UK Woodland Assurance Standard](#) (UKWAS)

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Timber



Criteria

100% of timber used is from at least one of the following sources:

- is reclaimed; or
- where new timber is used, is supplied with a Chain of Custody (CoC) from one of the following forest certification schemes only:
 - Forest Stewardship Council (FSC);
 - Programme for the Endorsement of Forest Certification (PEFC);
 - Sustainable Forestry Initiative (SFI);
 - Canadian Standards Association (CSA).

Scoping

This measure applies if timber is specified or installed. This includes hardwoods, softwoods, joinery, timber panel products (e.g. MDF, plywood), composite timber, wood veneers in permanent installations and temporary site timber.

Assessment

At design stage: check specifications explicitly reference at least one of the above criteria.

At handover stage: check invoices for all timber and timber products. All invoices for new timber and timber products must detail the quantity and type of product purchased and state the CoC number for the final handler of the product prior to it being installed on site.

Where a CoC number is missing for the final step in the timber handling chain, comprehensive Category B evidence will be acceptable to claim 'sustainable timber' is used on the project but not to publicly claim that a certified product has been purchased. Note that if it is intended for the project to be certified independently by FSC, Category B evidence will not be accepted.

At occupancy stage: if timber has been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and timber has not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the use of unmanaged timber in construction/fit-outs, and consequently to reduce the environmental impact of forestry by ensuring timber originates from sustainable sources. Sourcing reclaimed timber is the most sustainable option.

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Ideally timber and timber products should be sourced from the nearest forest, as this reduces the CO₂ emissions associated with transport. For UK-sourced timber it can either be certified by one of the above schemes or by the UK Woodland Assurance Standard (UKWAS). This is the UK certification scheme that is recognised by both FSC and PEFC.

The primary uses of timber in a fit-out are likely to be: wall panelling, flooring, partitions/screens, furniture, and concealed timber framing/structure.

Guidance

The extent of Category B evidence required to demonstrate sustainable timber use throughout the fit-out will need to be determined on a case by case basis. The maximum evidence required will consist of three completed checklists:

1. Supply chain information
2. Forest source information of legality
3. Forest source information on sustainability

Note that only checklist 1 needs to be completed if Chain of Custody certification is available at any given stage of the supply chain. The supply chain information needs to be completed from the point at which Chain of Custody certification is no longer available.

The checklists and additional advice and free training are available through the [Central Point of Expertise on Timber](#) (CPET)

CPET offer free advice and one-day training workshops to assist in the understanding of sustainable timber requirements. The CPET helpline can be accessed by phoning 01865 243 766 or by emailing cpet@proforest.net

[Canadian Standards Association](#) (CSA)

[Forest Stewardship Council](#) (FSC)

[Programme for the Endorsement of Forest Certification](#) (PEFC)

[Sustainable Forestry Initiative](#) (SFI)

[UK Woodland Assurance Standard](#) (UKWAS)

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Raised flooring systems



Criteria

All raised flooring systems meet at least one of the following criteria:

- are reused;
- if new, are manufactured with at least 80% recycled content;
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards.

Scoping

This measure applies if raised flooring is specified or installed.

Assessment

At design stage: check specifications explicitly reference at least one of the above criteria.

At handover stage: check materials used based on delivery notes and/or records of materials found during site visits.

At occupancy stage: if raised flooring has been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and raised flooring has not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the embedded lifetime environmental impacts of materials that can be estimated using life cycle analysis (LCA). LCA takes account of environmental impacts over the lifetime of a product, for example the impact arising from mineral extraction, manufacturing, transport and end-of-life disposal. LCA is the basis of environmental product declarations and environmental preference methods for materials selection, for example BRE's *The Green Guide to Specification*.

Guidance

Some manufacturers produce raised flooring systems made from recycled nylon or timber.

Anderson, Shiers and Steele, *The Green Guide to Specification: An Environmental Profiling System for Building Materials and Components* (4th edition), Blackwell Science, 2009.

Calculating and declaring recycled content in construction products, 'Rules of Thumb' guide, WRAP.

[ISO 14025:2006](#)

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Blockwork



Criteria

All blocks used meet at least one of the following criteria:

- are reclaimed;
- if new, are manufactured with a recycled content based on the targets shown in the table below;
- are unfired clay blocks; or
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards.

Minimum recycled content for new blocks:

Block type	%
Dense block	93%
Lightweight block	93%
Aerated block	65%
Foamed glass block	65%

Note: If the blocks are sourced from outside the UK then regardless of whether or not they meet the above criteria they may not be considered as meeting the requirements of this measure. This is because the impact of transport needs to be considered; for example, importing reclaimed blockwork from China is not considered sustainable. The assessor has to use their judgment in applying this rule.

Scoping

This measure applies if blockwork is specified or installed.

Assessment

At design stage: check specifications explicitly reference the criteria or specify a product that meets the criteria.

At handover stage: collate manufacturers' data for installed products responding to the criteria or provide a statement of retention/reuse of existing blockwork.

At occupancy stage: if blockwork has been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and blockwork has not been changed or added, this measure will be achieved by default.

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Rationale

The aim is to reduce the embedded lifetime environmental impacts of these materials. An environmental product declaration is a measurement of the lifetime environmental impact of a product. However, at this point in time there are very few products that have one of these labels.

Guidance

The targets for the recycled content of new blockwork are based on the targets set by WRAP. See [Choosing construction products: Guide to the recycled content of mainstream construction products](#), Reference guide, GB Version 4.1, WRAP, June 2008.

[Calculating and declaring recycled content in construction products](#), 'Rules of Thumb' guide, WRAP.

[GreenSpec](#) – a directory of sustainable construction products in the UK.

[ISO 14025:2006](#)

Morton, T., [Feat of clay](#), article in *Materials World*, January 2006 – the article discusses the use of unfired clay blocks for sustainable construction.



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Suspended ceilings



Criteria

All suspended ceiling systems, including frames, tiles, and/or boards, meet at least one of the following criteria:

- are reused (note: if only tiles are replaced, the frame can be recorded as reused; the tiles must then meet one of the criteria below);
- if new, are manufactured with at least 50% recycled content;
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards.

Scoping

This measure applies if suspended ceilings are specified, replaced, refurbished or installed.

Assessment

At design stage: check specifications explicitly reference the criteria or specify a product that meets the criteria.

At handover stage: collate manufacturers' data for installed products responding to the criteria or provide a statement of retention/reuse of existing suspended ceilings.

At occupancy stage: if suspended ceilings have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and suspended ceilings have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the embedded lifetime environmental impacts of materials that can be estimated using life cycle analysis (LCA). LCA takes account of environmental impacts over the lifetime of a product, for example the impact arising from mineral extraction, manufacturing, transport and end-of-life disposal. LCA is the basis of environmental product declarations and environmental preference methods for materials selection, for example BRE's *The Green Guide to Specification*.

Guidance

The target for the recycled content of suspended ceilings is based on WRAP's stated good practice for mineral ceiling tiles, which can also be met by aluminium and gypsum based tiles. WRAP indicate that some ceiling tiles, such as steel ceiling tiles, are unlikely to meet this target. This measure has been designed to encourage the selection of products that are capable of having a high recycled content. See [Choosing construction products: Guide to the recycled content of mainstream construction products](#), Reference guide, GB Version 4.1, WRAP, June 2008.

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The term recycled content includes both post-consumer waste and secondary materials, defined as a waste by-product from a different industry. Processing waste recycled in-house should not be included in the recycled content calculations for the product.

[Calculating and declaring recycled content in construction products](#), 'Rules of Thumb' guide, WRAP.

[ISO 14025:2006](#)



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Partitions



Criteria

All partitions meet at least one of the following criteria:

- are reused;
- if new, are manufactured with at least 90% recycled content;
- have an A or A+ rating in BRE's *The Green Guide to Specification*;
- have an A or A+ rating in BRE's *Green Book Live* database; or
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards; or
- if timber or containing timber elements, the timber meets the criteria of good practice measure D20 Timber.

Scoping

This measure applies if partitions are specified or installed.

Assessment

At design stage: check specifications explicitly reference the criteria or specify a product that meets the criteria.

At handover stage: collate manufacturers' data for installed products responding to the criteria or provide a statement of retention/reuse of existing partitions.

At occupancy stage: if partitions have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and partitions have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the embedded lifetime environmental impacts of materials that can be estimated using life cycle analysis (LCA). LCA takes account of environmental impacts over the lifetime of a product, for example the impact arising from mineral extraction, manufacturing, transport and end-of-life disposal. LCA is the basis of environmental product declarations and environmental preference methods for materials selection, for example BRE's *The Green Guide to Specification*.

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Guidance

Example of how to assess a partition containing a timber as well as other materials

If a partition is 10% timber and 90% plasterboard, then all of the timber must be sourced from one of the four schemes FSC/PEFC/SFI/CSA or be reclaimed timber – as defined in good practice measure D20 Timber . The remaining 90% of the product, in this case plasterboard, will need to meet one of the criteria listed above.

The target for the recycled content of partitions is based on the target set for chipboard partitions by WRAP. See [Choosing construction products: Guide to the recycled content of mainstream construction products](#), Reference guide, GB Version 4.1, WRAP, June 2008.

[BRE's The Green Guide](#) to Specification provides a set of generic make-ups for this product. Find the makeup of the product and see if it matches any of the generic make-up's: if it does it gets a rating based on this generic make-up. If it does not match a generic make-up then check with the manufacturer to see if they have paid to have their product assessed by the BRE under this scheme. If so you can find their product listed in BRE's Green Book Live database.

On the [Green Book Live](#) website, select 'environmental profiles'. Select by section, e.g. partitions are classified as 'internal walls', or select by manufacturer. If you select 'internal walls' it will bring up a list of products. Against each product select the 'more...' text and this will bring up a screen showing the rating that the product has received from the BRE.

[Calculating and declaring recycled content in construction products](#), 'Rules of Thumb' guide, WRAP.

[ISO 14025:2006](#)



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Soft flooring



Criteria

All soft floor coverings, including underlay where applicable, meet at least one of the following criteria:

- are reused;
- if new, are manufactured with at least 50% recycled content;
- have an A or A+ rating in BRE's *The Green Guide to Specification*;
- have an A or A+ rating in BRE's *Green Book Live* database;
- are manufactured from 50% renewable and natural products, e.g. wool, natural rubber, hessian; or
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards.

Scoping

This measure applies if soft floor coverings are specified or installed.

Assessment

At design stage: check specifications explicitly reference the criteria or specify a product that meets the criteria.

At handover stage: collate manufacturers' data for installed products responding to the criteria or provide a statement of retention/reuse of existing soft flooring.

At occupancy stage: if soft floor coverings have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and soft floor coverings have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the embedded lifetime environmental impacts of materials which can be estimated using life cycle analysis (LCA). LCA takes account of environmental impacts over the lifetime of a product, for example the impact arising from mineral extraction, manufacturing, transport and end-of-life disposal. LCA is the basis of environmental product declarations and environmental preference methods for materials selection, for example BRE's *The Green Guide to Specification*.

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Guidance

The reuse of existing soft floor coverings either from the stripping out of existing floors on site or from the purchase of second hand floor coverings, is the most sustainable source.

The target for the recycled content of soft flooring is based on the target set for generic carpet tiles by WRAP. See [Choosing construction products: Guide to the recycled content of mainstream construction products](#), Reference guide, GB Version 4.1, WRAP, June 2008.

The term recycled content includes both post-consumer waste and secondary materials, defined as a waste by-product from a different industry. Processing waste recycled in-house should not be included in the recycled content calculations for the product.

[BRE's The Green Guide to Specification](#) provides a set of generic make-ups for this product. Find the makeup of the product and see if it matches any of the generic make-up's: if it does it gets a rating based on this generic make-up. If it does not match a generic make-up then check with the manufacturer to see if they have paid to have their product assessed by the BRE under this scheme. If so you can find their product listed in BRE's Green Book Live database.

On the [Green Book Live](#) website, select 'environmental profiles'. Select by section, e.g. partitions are classified as 'internal walls', or select by manufacturer. If you select 'internal walls' it will bring up a list of products. Against each product select the 'more...' text and this will bring up a screen showing the rating that the product has received from the BRE.

[Calculating and declaring recycled content in construction products](#), 'Rules of Thumb' guide, WRAP.

[GreenSpec](#) – a directory of sustainable construction products in the UK.

[ISO 14025:2006](#)

[ISO 14044:2006](#)



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Glazed partitions



Criteria

All glazed partitions meet at least one of the following criteria:

- are reused;
- if new, are manufactured with at least 10% recycled content;
- have an A or A+ rating in BRE's *The Green Guide to Specification*;
- have an A or A+ rating in BRE's *Green Book Live* database; or
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards.

Scoping

This measure applies if glazed partitions are specified or installed.

Assessment

At design stage: check specifications explicitly reference the criteria or specify a product that meets the criteria.

At handover stage: collate manufacturers' data for installed products responding to the criteria or provide a statement of retention/reuse of existing glazed partitions.

At occupancy stage: if additional glazed partitions have been installed during the first year of occupation carry out the same check as for the handover stage. Otherwise, if this measure was achieved at handover stage it will be achieved by default at occupancy stage.

Rationale

The aim is to reduce the embedded lifetime environmental impacts of materials which can be estimated using life cycle analysis (LCA). LCA takes account of environmental impacts over the lifetime of a product, for example the impact arising from mineral extraction, manufacturing, transport and end-of-life disposal. LCA is the basis of environmental product declarations and environmental preference methods for materials selection, for example BRE's *The Green Guide to Specification*.

Guidance

The target for the recycled content of glazed partitions is based on the target set by WRAP. See [Choosing construction products: Guide to the recycled content of mainstream construction products](#), Reference guide, GB Version 4.1, WRAP, June 2008.

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[BRE's The Green Guide](#) to Specification provides a set of generic make-ups for this product. Find the makeup of the product and see if it matches any of the generic make-up's: if it does it gets a rating based on this generic make-up. If it does not match a generic make-up then check with the manufacturer to see if they have paid to have their product assessed by the BRE under this scheme. If so you can find their product listed in BRE's Green Book Live database.

On the [Green Book Live](#) website, select 'environmental profiles'. Select by section, e.g. partitions are classified as 'internal walls', or select by manufacturer. If you select 'internal walls' it will bring up a list of products. Against each product select the 'more...' text and this will bring up a screen showing the rating that the product has received from the BRE.

[Calculating and declaring recycled content in construction products](#), 'Rules of Thumb' guide, WRAP.

[ISO 14025:2006](#)



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Paints



Criteria

All paints meet at least one of the following criteria:

- have been awarded the EU Ecolabel;
- are manufactured with at least 90% recycled content; or
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards.

Scoping

This measure applies if paint is specified or used.

Assessment

At design stage: check specifications explicitly reference at least one of the above criteria or specify a product that meets the criteria.

At handover stage: collate manufacturers' data for installed products responding to the criteria.

At occupancy stage: if paint has been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and paint has not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the embedded lifetime environmental impacts of materials that can be estimated using life cycle analysis (LCA). LCA takes account of environmental impacts over the lifetime of a product, for example the impact arising from mineral extraction, manufacturing, transport and end-of-life disposal. LCA is the basis of environmental product declarations and environmental preference methods for materials selection, for example BRE's *The Green Guide to Specification*.

Guidance

Information on the EU Ecolabel scheme can be found on the [EUROPA portal site](#) of the European Union.

[Calculating and declaring recycled content in construction products](#), 'Rules of Thumb' guide, WRAP.

[EU legislation 2004/42/CE](#)

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Hard flooring



Criteria

All hard floor coverings meet at least one of the following criteria:

- are reused;
- if new, are manufactured with 25% recycled content;
- have an A or A+ rating in BRE's *The Green Guide to Specification*;
- have an A or A+ rating in BRE's *Green Book Live* database;
- if timber, meet the criteria of good practice measure D20 Timber; or
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards.

Scoping

This measure applies if hard flooring is specified or installed.

Assessment

At design stage: check specifications explicitly reference the criteria or specify a product that meets the criteria.

At handover stage: collate manufacturers' data for installed products responding to the criteria or provide a statement of retention/reuse of existing hard flooring.

At occupancy stage: if hard flooring has been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and hard flooring has not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the embedded lifetime environmental impacts of materials that can be estimated using life cycle analysis (LCA). LCA takes account of environmental impacts over the lifetime of a product, for example the impact arising from mineral extraction, manufacturing, transport and end-of-life disposal. LCA is the basis of environmental product declarations and environmental preference methods for materials selection, for example BRE's *The Green Guide to Specification*.

Guidance

The elimination of hard floor coverings by simply sealing concrete floors is the most sustainable option. If however floor coverings are required for aesthetic, comfort or acoustic reasons reuse of existing hard floor coverings either from the stripping out of existing floors on site or from the purchase of second-hand floor coverings is the preferred option.

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The target for the recycled content of hard flooring is based on the targets set for hard flooring by WRAP and can be met by selecting an increased recycled content version of a range of flooring products including tiles, linoleum, rubber and resin bonded tiles. See [Choosing construction products: Guide to the recycled content of mainstream construction products](#), Reference guide, GB Version 4.1, WRAP, June 2008.

The term recycled content includes both post-consumer waste and secondary materials, defined as a waste by-product from a different industry. Processing waste recycled in-house should not be included in the recycled content calculations for the product.

[Calculating and declaring recycled content in construction products](#), 'Rules of Thumb' guide, WRAP.

[The Green Guide to Specification](#), BRE.

[GreenSpec](#) – a directory of sustainable construction products in the UK.

[ISO 14025:2006](#)

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Joinery



Criteria

100% of timber used in the joinery for the fit-out is from at least one of the following sources:

- is reclaimed; or
- where new timber is used, is supplied with a Chain of Custody (CoC) from one of the following forest certification schemes only:
 - Forest Stewardship Council (FSC);
 - Programme for the Endorsement of Forest Certification (PEFC);
 - Sustainable Forestry Initiative (SFI); or
 - Canadian Standards Association (CSA).

Scoping

This measure applies if joinery is specified or installed.

Assessment

At design stage: check specifications explicitly reference at least one of the above criteria.

At handover stage: check invoices for all timber and timber products. All invoices for new timber and timber products must detail the quantity and type of product purchased and state the CoC number for the final handler of the product prior to it being installed on site.

Where a CoC number is missing for the final step in the timber handling chain, comprehensive Category B evidence will be acceptable to claim 'sustainable timber' is used on the project but not to publicly claim that a certified product has been purchased. Note that if it is intended for the project to be certified independently by FSC, Category B evidence will not be accepted.

At occupancy stage: if joinery has been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and joinery has not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the use of unmanaged joinery in construction/fit-outs, and consequently to reduce the environmental impact of forestry by ensuring timber originates from sustainable sources.

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Ideally timber and timber products should be sourced from the nearest forest, as this reduces the CO₂ emissions associated with transport. For UK-sourced timber it can either be certified by one of the above schemes or by the UK Woodland Assurance Standard (UKWAS). This is the UK certification scheme that is recognised by both FSC and PEFC.

Guidance

The extent of Category B evidence required to demonstrate sustainable timber use throughout the fit-out will need to be determined on a case by case basis. The maximum evidence required will consist of three completed checklists:

1. Supply chain information
2. Forest source information of legality
3. Forest source information on sustainability

Note that only checklist 1 needs to be completed if Chain of Custody certification is available at any given stage of the supply chain. The supply chain information needs to be completed from the point at which Chain of Custody certification is no longer available.

The checklists and additional advice and free training are available through the [Central Point of Expertise on Timber](#) (CPET)

CPET offer free advice and one-day training workshops to assist in the understanding of sustainable timber requirements. The CPET helpline can be accessed by phoning 01865 243 766 or by emailing cpet@proforest.net

[Forest Stewardship Council](#) (FSC)

[Programme for the Endorsement of Forest Certification](#) (PEFC)

[Sustainable Forestry Initiative](#) (SFI)

[Canadian Standards Association](#) (CSA)

[UK Woodland Assurance Standard](#) (UKWAS)

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Insulation



Criteria

All insulation materials (thermal and acoustic) meet at least one of the following criteria:

- if new, are manufactured with at least 50% recycled content;
- are manufactured from at least 50% renewable material, e.g. hemp, flax, newspaper, wool.
- have an A or A+ rating in BRE's *The Green Guide to Specification*;
- have an A or A+ rating in BRE's *Green Book Live* database; or
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards.

Scoping

This measure applies if insulation (thermal or acoustic) is specified or installed.

Assessment

At design stage: check specifications explicitly reference at least one of the above criteria.

At handover stage: check insulation materials used based on delivery notes and/or records of materials found during site visits.

At occupancy stage: if insulation has been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and insulation has not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the embedded lifetime environmental impacts of materials that can be estimated using life cycle analysis (LCA). LCA takes account of environmental impacts over the lifetime of a product, for example the impact arising from mineral extraction, manufacturing, transport and end-of-life disposal. LCA is the basis of environmental product declarations and environmental preference methods for materials selection, for example BRE's *The Green Guide to Specification*.

There is a separate good practice measure addressing the global warming potentials of insulation materials (see D22 Low-GWP insulation).

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Guidance

The target for the recycled content is based on the target set for mineral (rock) wool by WRAP. WRAP indicates that some insulants, such as EPS, will not be able to meet this target. This measure has been designed to encourage the selection of products that are capable of having a high recycled content. See [Choosing construction products: Guide to the recycled content of mainstream construction products](#), Reference guide, GB Version 4.1, WRAP, June 2008.

[BRE's The Green Guide](#) to Specification provides a set of generic make-ups for this product. Find the makeup of the product and see if it matches any of the generic make-up's: if it does it gets a rating based on this generic make-up. If it does not match a generic make-up then check with the manufacturer to see if they have paid to have their product assessed by the BRE under this scheme. If so you can find their product listed in BRE's Green Book Live database.

On the [Green Book Live](#) website, select 'environmental profiles'. Select by section, e.g. partitions are classified as 'internal walls', or select by manufacturer. If you select 'internal walls' it will bring up a list of products. Against each product select the 'more...' text and this will bring up a screen showing the rating that the product has received from the BRE.

[Calculating and declaring recycled content in construction products](#), 'Rules of Thumb' guide, WRAP.

[GreenSpec](#) – a directory of sustainable construction products in the UK.

[ISO 14025:2006](#)

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Kitchen fittings



Criteria

All kitchen fittings, including cupboards, worktops, and splash backs, meet at least one of the following criteria:

- if new, are manufactured with at least 80% recycled content;
- if containing timber components, the timber meets the criteria of good practice measure D20 Timber; or
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards.

Scoping

This measure applies if non-industrial kitchen fittings, such as tea points and kitchenettes, are specified or installed.

Assessment

At design stage: check specifications explicitly reference at least one of the above criteria or specify a product that meets the criteria.

At handover stage: collate manufacturers' data for installed products responding to the criteria or provide a statement of retention/reuse of existing kitchen fittings.

At occupancy stage: if kitchen fittings have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and kitchen fittings have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the embedded lifetime environmental impacts of materials that can be estimated using life cycle analysis (LCA). LCA takes account of environmental impacts over the lifetime of a product, for example the impact arising from mineral extraction, manufacturing, transport and end-of-life disposal. LCA is the basis of environmental product declarations and environmental preference methods for materials selection, for example BRE's *The Green Guide to Specification*.

Guidance

The term recycled content includes both post-consumer waste and secondary materials, defined as a waste by-product from a different industry. Processing waste recycled in-house should not be included in the recycled content calculations for the product.

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Example of how to assess a kitchen fitting containing a timber as well as other materials

If a kitchen fitting is 60% timber and 40% steel, then all of the timber must be sourced from one of the four schemes FSC/PEFC/SFI/CSA or be reclaimed timber – as defined in good practice measure D20 Timber. The remaining 40% of the product, in this case steel, will need to meet one of the criteria listed above. In this example the manufacturer could demonstrate that the steel used in the kitchen fitting contains 80% recycled steel.

[Calculating and declaring recycled content in construction products](#), 'Rules of Thumb' guide, WRAP.

[ISO 14025:2006](#)

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Workstations and tables



Criteria

All workstations and tables meet at least one of the following criteria:

- are reused;
- if new, are manufactured with at least 80% recycled content and recyclable content, designed for deconstruction with components that can be recycled, measured by mass;
- if containing timber components, the timber meets the criteria of good practice measure D20 Timber;
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards; or
- have been awarded the EU Ecolabel.

Note: Where recyclable content is identified a confirmed route for recycling into new products of a similar quality must be identified.

Scoping

This measure applies if workstations or tables are specified or installed.

It applies for both procurement routes: ordered and supplied through the main contractor or a subcontractor of the fit-out or supplied by the occupant/tenant.

Assessment

At design stage: check specifications explicitly reference at least one of the above the criteria or specify a product that meets the criteria.

At handover stage: collate manufacturers' data for installed products responding to the criteria or provide a statement of retention/reuse of existing workstations and tables.

At occupancy stage: if workstations or tables have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and workstations or tables have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the embedded lifetime environmental impacts of materials that can be estimated using life cycle analysis (LCA). LCA takes account of environmental impacts over the lifetime of a product, for example the impact arising from mineral extraction, manufacturing, transport and end-of-life disposal. LCA is the basis of environmental product declarations and environmental preference methods for materials selection, for example BRE's *The Green Guide to Specification*.

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Guidance

Example of how to assess a workstation or table containing a timber as well as other materials

If a desk is 60% timber and 40% steel, then all of the timber must be sourced from one of the four schemes FSC/PEFC/SFI/CSA or be reclaimed timber – as defined in good practice measure D20 Timber. The remaining 40% of the product, in this case steel, will need to meet one of the criteria listed above. In this example the manufacturer could demonstrate that the steel used in the desk contains 80% recycled steel.

Many suppliers may claim their products contain recyclable components and materials. However, components may be bonded in such a manner to prevent separation and recycling into individual waste streams or local recycling facilities may simply not exist for any given material. Unless a recycling facility can be explicitly identified that is able to reprocess the components and materials at a high level in the value chain, e.g. plastic elements are reprocessed into new furniture and not simply down-cycled into plastic bags or other lower value products, it is not acceptable to claim that a product is recyclable. Some suppliers overcome this issue by offering in house take-back and recycling schemes – although not an essential requirement to achieve this measure, the commitment of a supplier to take-back and recycle their products is an excellent source of evidence to support the claim that a product is recyclable.

In the criteria, the phrase ‘at least 80% recycled content and recyclable content’ means 80% combined. For example, if 40% of the materials used to make the product are recycled materials and 50% of the product components could be recycled at the end of their life, then this adds up to 90% so it meets the requirements. In theory 100% of the product could be recycled materials and 100% of the product could be recycled at the end of life and this would add up to 200%, which would be well in excess of the target.

Information on the EU Ecolabel scheme can be found on the [EUROPA portal site](#) of the European Union.

[Calculating and declaring recycled content in construction products](#), ‘Rules of Thumb’ guide, WRAP.

[GreenSpec](#) – a directory of sustainable construction products in the UK.

[ISO 14025:2006](#)

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Total recycled materials



Criteria

Either:

- at least 80% of materials used are reclaimed;
- all new materials used are manufactured with at least 80% recycled content; or
- a proportionate combination of the two criteria above.

Scoping

This measure applies to all materials specified. This measure should be in all fit-out projects, as they all require products to be installed.

Assessment

At design stage: check specifications explicitly reference one of the above criteria.

At handover stage: check installed materials and invoices.

At occupancy stage: if any materials have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and materials have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to encourage the use of reclaimed and recycled materials in order to reduce the embedded lifetime environmental impacts of materials.

Guidance

See individual good practice measures for guidance (M01–M24).

[Calculating and declaring recycled content in construction products](#), 'Rules of Thumb' guide, WRAP.

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Other loose ancillary furniture items



Criteria

All other furniture meets at least one of the following criteria:

- is reused;
- if new, are manufactured with at least 80% recycled content and recyclable content, designed for deconstruction with components that can be recycled, measured by mass;
- if timber or containing timber components, the timber meets the criteria of good practice measure D20 Timber;
- is supplied with an environmental product declaration, written in accordance with ISO 14025 standards; or
- has been awarded the EU Ecolabel.

Note: Where recyclable content is identified a confirmed route for recycling into new products of a similar quality must be identified.

Scoping

This measure applies if furniture not covered by good practice measures M19, M20 and M21 is specified, retained, modified, replaced or installed.

It applies for both procurement routes: ordered and supplied through the main contractor or a subcontractor of the fit-out or supplied by the occupant/tenant.

Assessment

At design stage: check specifications explicitly reference at least one of the above criteria or specify a product that meets the criteria.

At handover stage: collate manufacturers' data for installed products responding to the criteria or provide a statement of retention/reuse of existing furniture.

At occupancy stage: if furniture has been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and furniture has not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the embedded lifetime environmental impacts of materials that can be estimated using life cycle analysis (LCA). LCA takes account of environmental impacts over the lifetime of a product, for example the impact arising from mineral extraction, manufacturing, transport and end-of-life disposal. LCA is the basis of environmental product declarations and environmental preference methods for materials selection, for example BRE's *The Green Guide to Specification*.

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Guidance

Example of how to assess a furniture item containing a timber as well as other materials

If an item is 60% timber and 40% steel, then all of the timber must be sourced from one of the four schemes FSC/PEFC/SFI/CSA or be reclaimed timber – as defined in good practice measure D20 Timber. The remaining 40% of the product, in this case steel, will need to meet one of the criteria listed above. In this example the manufacturer could demonstrate that the steel used in the piece of furniture contains 80% recycled steel.

Many suppliers may claim their products contain recyclable components and materials. However, components may be bonded in such a manner to prevent separation and recycling into individual waste streams or local recycling facilities may simply not exist for any given material. Unless a recycling facility can be explicitly identified that is able to reprocess the components and materials at a high level in the value chain, e.g. plastic elements are reprocessed into new furniture and not simply down-cycled into plastic bags or other lower value products, it is not acceptable to claim that a product is recyclable. Some suppliers overcome this issue by offering in house take-back and recycling schemes – although not an essential requirement to achieve this measure, the commitment of a supplier to take-back and recycle their products is an excellent source of evidence to support the claim that a product is recyclable.

In the criteria, the phrase 'at least 80% recycled content and recyclable content' means 80% combined. For example, if 40% of the materials used to make the product are recycled materials and 50% of the product components could be recycled at the end of their life, then this adds up to 90% so it meets the requirements. In theory 100% of the product could be recycled materials and 100% of the product could be recycled at the end of life and this would add up to 200%, which would be well in excess of the target.

Information on the EU Ecolabel scheme can be found on the [EUROPA portal site](#) of the European Union.

[Calculating and declaring recycled content in construction products](#), 'Rules of Thumb' guide, WRAP.

[GreenSpec](#) – a directory of sustainable construction products in the UK.

[ISO 14025:2006](#)



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Doors



Criteria

All doors, including frames, meet at least one of the following criteria:

- if new, are manufactured with (or a combination of both):
 - composite materials that have at least 80% recycled content; or
 - metal components that follow WRAP's *Choosing construction products* guide (see guidance):
 - steel section 60%
 - stainless steel 75%
 - copper sheet 60%
 - aluminium extrusion 44%
 - aluminium sheet 73%
- if containing timber components, the timber meets the criteria of good practice measure D20 Timber; or
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards.

Scoping

This measure applies if doors are specified or installed.

Assessment

At design stage: check specifications explicitly reference at least one of the above criteria or specify a product that meets the criteria.

At handover stage: collate manufacturers' data for installed products responding to the criteria or provide a statement of retention/reuse of existing doors.

At occupancy stage: if doors have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and doors have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the embedded lifetime environmental impacts of materials that can be estimated using life cycle analysis (LCA). LCA takes account of environmental impacts over the lifetime of a product, for example the impact arising from mineral extraction, manufacturing, transport, and end-of-life disposal. LCA is the basis of environmental product declarations and environmental preference methods for materials selection, for example BRE's *The Green Guide to Specification*.

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Guidance

The term recycled content includes both post-consumer waste and secondary materials, defined as a waste by-product from a different industry. Processing waste recycled in-house should not be included in the recycled content calculations for the product.

Example of how to assess a door containing a timber as well as other materials

If a door is 90% timber and 10% steel, then all of the timber must be sourced from one of the four schemes FSC/PEFC/SFI/CSA or be reclaimed timber – as defined in good practice measure D20 Timber. The remaining 10% of the product, in this case steel, will need to meet one of the criteria listed above.

[Calculating and declaring recycled content in construction products](#), 'Rules of Thumb' guide, WRAP.

[Choosing construction products: Guide to the recycled content of mainstream construction products](#), Reference guide, GB Version 4.1, WRAP, June 2008. This provides further details and types of metals and their recycled content.

[ISO 14025:2006](#)



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Chairs



Criteria

All task and visitor chairs meet at least one of the following criteria:

- are reused;
- if new, are manufactured with at least 80% recycled content and recyclable content, designed for deconstruction with components that can be recycled, measured by mass;
- if timber or containing timber elements, the timber meets the criteria of good practice measure D20 Timber;
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards; or
- have been awarded the EU Ecolabel.

Note: Where recyclable content is identified a confirmed route for recycling into new products of a similar quality must be identified.

Scoping

This measure applies if task or visitor chairs are specified or installed.

It applies for both procurement routes: ordered and supplied through the main contractor or a subcontractor of the fit-out or supplied by the occupant/tenant.

Assessment

At design stage: check specifications explicitly reference at least one of the above criteria or specify a product that meets the criteria.

At handover stage: collate manufacturers' data for installed products responding to the criteria or provide a statement of retention/reuse of existing chairs.

At occupancy stage: if chairs have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and chairs have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the embedded lifetime environmental impacts of products and materials that can be estimated using life cycle analysis (LCA). LCA takes account of environmental impacts over the lifetime of a product, for example the impact arising from mineral extraction, manufacturing, transport and end-of-life disposal. LCA is the basis of environmental product declarations and environmental preference methods for materials selection, for example BRE's *The Green Guide to Specification*.

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Guidance

Example of how to assess a chair containing a timber as well as other materials

If a chair is 80% timber and 20% fabric, then all of the timber must be sourced from one of the four schemes FSC/PEFC/SFI/CSA or be reclaimed timber – as defined in good practice measure D20 Timber. The remaining 20% of the product, in this case fabric, will need to meet one of the criteria listed above.

Many suppliers may claim their products contain recyclable components and materials. However, components may be bonded in such a manner to prevent separation and recycling into individual waste streams or local recycling facilities may simply not exist for any given material. Unless a recycling facility can be explicitly identified that is able to reprocess the components and materials at a high level in the value chain, e.g. plastic elements are reprocessed into new furniture and not simply down-cycled into plastic bags or other lower value products, it is not acceptable to claim that a product is recyclable. Some suppliers overcome this issue by offering in house take-back and recycling schemes – although not an essential requirement to achieve this measure, the commitment of a supplier to take-back and recycle their products is an excellent source of evidence to support the claim that a product is recyclable.

In the criteria, the phrase ‘at least 80% recycled content and recyclable content’ means 80% combined. For example, if 40% of the materials used to make the product are recycled materials and 50% of the product components could be recycled at the end of their life, then this adds up to 90% so it meets the requirements. In theory 100% of the product could be recycled materials and 100% of the product could be recycled at the end of life and this would add up to 200%, which would be well in excess of the target.

Information on the EU Ecolabel scheme can be found on the [EUROPA portal site](#) of the European Union.

[Calculating and declaring recycled content in construction products](#), ‘Rules of Thumb’ guide, WRAP.

[GreenSpec](#) – a directory of sustainable construction products in the UK.

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Bricks



Criteria

All bricks used meet at least one of the following criteria:

- are reclaimed;
- if new, are manufactured with at least 30% recycled content;
- are unfired; or
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards.

Note: If the bricks are sourced from outside the UK then regardless of whether or not they meet the above criteria they may not be considered as meeting the requirements of this measure. This is because the impact of transport needs to be considered; for example, importing reclaimed bricks from China is not considered sustainable. The assessor has to use their judgment in applying this rule

Scoping

This measure applies if bricks are specified or installed.

Assessment

At design stage: check specifications explicitly reference the criteria or specify a product that meets the criteria.

At handover stage: collate manufacturers' data for installed products responding to the criteria or provide a statement of retention/reuse of existing bricks.

At occupancy stage: if bricks have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and bricks have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the embedded lifetime environmental impacts of materials. An environmental product declaration is a measurement of the lifetime environmental impact of a product. However, at this point in time there are very few products that have one of these labels.

Reclaimed and unfired bricks use much less energy in manufacture than other types of bricks. However, the distance over which bricks are transported needs to be taken into account due to their weight.

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Guidance

The targets for the recycled content of new blockwork are based on the targets set by WRAP. See [Choosing construction products: Guide to the recycled content of mainstream construction products](#), Reference guide, GB Version 4.1, WRAP, June 2008.

[Calculating and declaring recycled content in construction products](#), 'Rules of Thumb' guide, WRAP.

[GreenSpec](#) – a directory of sustainable construction products in the UK.

[ISO 14025:2006](#)

Morton, T., [Feat of clay](#), article in *Materials World*, January 2006 – the article discusses the use of unfired clay bricks for sustainable construction.



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Screed



Criteria

All screeds used, e.g. for floor repairs, replacement, build-up or levelling, meet at least one of the following criteria:

- if new, are manufactured with at least 50% recycled content; or
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards.

Scoping

This measure applies if screed is specified or installed.

Assessment

At design stage: check specifications explicitly reference the criteria or specify a product that meets the criteria.

At handover stage: collate manufacturers' data for installed products responding to the criteria.

At occupancy stage: if screed has been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and screed has not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the embedded lifetime environmental impacts of these materials. An environmental product declaration is a measurement of the lifetime environmental impact of a product. However, at this point in time there are very few products that have one of these labels.

Guidance

An example of recycled screed is where the sand normally used in screed can be replaced by recycled vitrified or amorphous glass.

The target for the recycled content of new screed is based on the targets set by WRAP. See [Choosing construction products: Guide to the recycled content of mainstream construction products](#), Reference guide, GB Version 4.1, WRAP, June 2008.

[Calculating and declaring recycled content in construction products](#), 'Rules of Thumb' guide, WRAP.

[GreenSpec](#) – a directory of sustainable construction products in the UK.

[ISO 14025:2006](#)

[Ty-Mawr ecological building materials](#) – contains information about recycled aggregates for screed.

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Storage units



Criteria

All storage units meet at least one of the following criteria:

- are reused;
- if new, are manufactured with at least 80% recycled content and recyclable content, designed for deconstruction with components that can be recycled, measured by mass;
- if timber or containing timber components, the timber meets the criteria of good practice measure D20 Timber;
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards; or
- have been awarded the EU Ecolabel.

Note: Where recyclable content is identified a confirmed route for recycling into new products of a similar quality must be identified.

Scoping

This measure applies if storage units are specified or installed.

It applies for both procurement routes: ordered and supplied through the main contractor or a subcontractor of the fit-out or supplied by the occupant/tenant.

Assessment

At design stage: check specifications explicitly reference at least one of the above criteria or specify a product that meets the criteria.

At handover stage: collate manufacturers' data for installed products responding to the criteria or provide a statement of retention/reuse of existing storage units.

At occupancy stage: if storage units have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and storage units have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the embedded lifetime environmental impacts of materials that can be estimated using life cycle analysis (LCA). LCA takes account of environmental impacts over the lifetime of a product, for example the impact arising from mineral extraction, manufacturing, transport and end-of-life disposal. LCA is the basis of environmental product declarations and environmental preference methods for materials selection, for example BRE's *The Green Guide to Specification*.

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Guidance

Example of how to assess a workstation or table containing a timber as well as other materials

If a storage unit is 60% timber and 40% steel, then all of the timber must be sourced from one of the four schemes FSC/PEFC/SFI/CSA or be reclaimed timber – as defined in good practice measure D20 Timber. The remaining 40% of the product, in this case steel, will need to meet one of the criteria listed above. In this example the manufacturer could demonstrate that the steel used in the storage unit contains 80% recycled steel.

Many suppliers may claim their products contain recyclable components and materials. However, components may be bonded in such a manner to prevent separation and recycling into individual waste streams or local recycling facilities may simply not exist for any given material. Unless a recycling facility can be explicitly identified that is able to reprocess the components and materials at a high level in the value chain, e.g. plastic elements are reprocessed into new furniture and not simply down-cycled into plastic bags or other lower value products, it is not acceptable to claim that a product is recyclable. Some suppliers overcome this issue by offering in house take-back and recycling schemes – although not an essential requirement to achieve this measure, the commitment of a supplier to take-back and recycle their products is an excellent source of evidence to support the claim that a product is recyclable.

In the criteria, the phrase ‘at least 80% recycled content and recyclable content’ means 80% combined. For example, if 40% of the materials used to make the product are recycled materials and 50% of the product components could be recycled at the end of their life, then this adds up to 90% so it meets the requirements. In theory 100% of the product could be recycled materials and 100% of the product could be recycled at the end of life and this would add up to 200%, which would be well in excess of the target.

Information on the EU Ecolabel scheme can be found on the [EUROPA portal site](#) of the European Union.

[Calculating and declaring recycled content in construction products](#), ‘Rules of Thumb’ guide, WRAP.

[GreenSpec](#) – a directory of sustainable construction products in the UK.

[ISO 14025:2006](#)

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Polishes and varnishes



Criteria

All polishes and varnishes meet at least one of the following criteria:

- are water based;
- have been awarded the EU Ecolabel; or
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards.

Note: Although a selection above does not affect the assessment outcome, the criteria are presented in order of perceived highest sustainable impact.

Scoping

This measure applies if polishes or varnishes are specified or used.

Assessment

At design stage: check specifications explicitly reference at least one of the above criteria.

At handover stage: check materials used based on delivery notes and/or records of materials found during site visits.

At occupancy stage: if polishes and varnishes have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and polishes and varnishes have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the embedded lifetime environmental impacts of materials that can be estimated using life cycle analysis (LCA). LCA takes account of environmental impacts over the lifetime of a product, for example the impact arising from mineral extraction, manufacturing, transport and end-of-life disposal. LCA is the basis of environmental product declarations and environmental preference methods for materials selection, for example BRE's *The Green Guide to Specification*.

Guidance

Information on the EU Ecolabel scheme can be found on the [EUROPA portal site](#) of the European Union.

[GreenSpec](#) – a directory of sustainable construction products in the UK.

[ISO 14025:2006](#)

[National Non-Food Crop Centre](#) – the UK's national centre for renewable fuels, materials and technologies

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Hard wall covering

Criteria

All wall coverings meet at least one of the following criteria:

- are reused;
- if new, are manufactured with at least 70% recycled content and recyclable content, measured by mass;
- if timber, meet the criteria of good practice measure D20 Timber; or
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards.

Scoping

This measure applies if wall coverings are specified or installed.

Note: Wallpapers (both paper and vinyl) and paints are covered by good practice measures M16 and M14 respectively. This good practice measure covers all other products, such as tiles, wood, metal, etc.

Assessment

At design stage: check specifications explicitly reference the criteria or specify a product that meets the criteria.

At handover stage: collate manufacturers' data for installed products responding to the criteria or provide a statement of retention/reuse of existing wall coverings.

At occupancy stage: if wall coverings have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and wall coverings have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the embedded lifetime environmental impacts of materials that can be estimated using life cycle analysis (LCA). LCA takes account of environmental impacts over the lifetime of a product, for example the impact arising from mineral extraction, manufacturing, transport and end-of-life disposal. LCA is the basis of environmental product declarations and environmental preference methods for materials selection, for example BRE's *The Green Guide to Specification*.

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Guidance

The reuse of existing hard wall coverings either from the stripping out of existing walls on site or from the purchase of second hand wall coverings is the most sustainable source.

The target for the recycled content of hard wall coverings is based on the target set for products, such as composite timber products, by WRAP. See [Choosing construction products: Guide to the recycled content of mainstream construction products](#), Reference guide, GB Version 4.1, WRAP, June 2008.

The term recycled content includes both post-consumer waste and secondary materials, defined as a waste by-product from a different industry. Processing waste recycled in-house should not be included in the recycled content calculations for the product.

[Calculating and declaring recycled content in construction products](#), 'Rules of Thumb' guide, WRAP.

[ISO 14025:2006](#)



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Window treatments



Criteria

All window treatments meet at least one of the following criteria:

- are reused;
- if new, are manufactured with at least 80% recycled content and recyclable content, designed for deconstruction with components that can be recycled, measured by mass;
- if timber or containing timber components, the timber meets the criteria of good practice measure D20 Timber;
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards; or
- are supplied with environmental product declarations for the materials used.

Note: Where recyclable content is identified a confirmed route for recycling into new products of a similar quality must be identified.

Scoping

This measure applies if window treatments are specified or installed.

Assessment

At design stage: check specifications explicitly reference at least one of the above criteria or specify a product that meets the criteria.

At handover stage: collate manufacturers' data for installed products responding to the criteria or provide a statement of retention/reuse of existing window treatments.

At occupancy stage: if window treatments have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and window treatments have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the embedded lifetime environmental impacts of materials that can be estimated using life cycle analysis (LCA). LCA takes account of environmental impacts over the lifetime of a product, for example the impact arising from mineral extraction, manufacturing, transport and end-of-life disposal. LCA is the basis of environmental product declarations and environmental preference methods for materials selection, for example BRE's *The Green Guide to Specification*.

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Guidance

Example of how to assess a furniture item containing a timber as well as other materials

If an item is 60% timber and 40% steel, then all of the timber must be sourced from one of the four schemes FSC/PEFC/SFI/CSA or be reclaimed timber – as defined in good practice measure D20 Timber. The remaining 40% of the product, in this case steel, will need to meet one of the criteria listed above.

Many suppliers may claim their products contain recyclable components and materials. However, components may be bonded in such a manner to prevent separation and recycling into individual waste streams or local recycling facilities may simply not exist for any given material. Unless a recycling facility can be explicitly identified that is able to reprocess the components and materials at a high level in the value chain, e.g. plastic elements are reprocessed into new furniture and not simply down-cycled into plastic bags or other lower value products, it is not acceptable to claim that a product is recyclable. Some suppliers overcome this issue by offering in house take-back and recycling schemes – although not an essential requirement to achieve this measure, the commitment of a supplier to take-back and recycle their products is an excellent source of evidence to support the claim that a product is recyclable.

In the criteria, the phrase ‘at least 80% recycled content and recyclable content’ means 80% combined. For example, if 40% of the materials used to make the product are recycled materials and 50% of the product components could be recycled at the end of their life, then this adds up to 90% so it meets the requirements. In theory 100% of the product could be recycled materials and 100% of the product could be recycled at the end of life and this would add up to 200%, which would be well in excess of the target.

[GreenSpec](#) – a directory of sustainable construction products in the UK.

Further accreditation for textile products can be found on the [Oeko-Tex website](#).

When choosing the type of material for blinds, particularly fabric blinds, the physical and environmental performance qualities of the material, and the wellbeing of the blinds’ users should be considered.

The ability to recycle fabric blinds with applied reflective coatings may be limited by the presence of the coating (check details with the specific manufacturer – some manufacturers operate sustainable practices of production and reclamation).

Note that both traditional and high performance fabrics (such as coated fabrics) can be found manufactured from recycled and recyclable material; however the benefit of a recyclable material is only realised if it is diverted from landfill and recycled; manufacturers should therefore be vetted for their reclamation policy.

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Steel venetian blinds will be readily recyclable and may include recycled content; however the likelihood of recycling taking place will depend on the value of steel.

Timber blinds should be assessed for sustainability of timber sourcing. Timber blinds can readily be used as an energy source at the end of their useful life.

[Calculating and declaring recycled content in construction products](#), 'Rules of Thumb' guide, WRAP.



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Paper and towel dispensers



Criteria

All paper and towel dispensers meet at least one of the following criteria:

- are reused;
- if new, are manufactured with at least 80% recycled content and recyclable content, designed for deconstruction with components that can be recycled, measured by mass;
- if containing a material covered by other good practice measures, the material meets the criteria of the other measure; or
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards.

Note: Where recyclable content is identified a confirmed route for recycling into new products of a similar quality must be identified.

Scoping

This measure applies if paper/towel dispensers are specified, retained modified, replaced or installed.

Assessment

At design stage: check specifications explicitly reference at least one of the above criteria or specify a product that meets the criteria.

At handover stage: collate manufacturers' data for installed products responding to the criteria or provide a statement of retention/reuse of existing dispensers.

At occupancy stage: if dispensers have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and dispensers have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the embedded lifetime environmental impacts of materials that can be estimated using life cycle analysis (LCA). LCA takes account of environmental impacts over the lifetime of a product, for example the impact arising from mineral extraction, manufacturing, transport and end-of-life disposal. LCA is the basis of environmental product declarations and environmental preference methods for materials selection, for example BRE's *The Green Guide to Specification*.

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Guidance

Many suppliers may claim their products contain recyclable components and materials. However, components may be bonded in such a manner to prevent separation and recycling into individual waste streams or local recycling facilities may simply not exist for any given material. Unless a recycling facility can be explicitly identified that is able to reprocess the components and materials at a high level in the value chain, e.g. plastic elements are reprocessed into new furniture and not simply down-cycled into plastic bags or other lower value products, it is not acceptable to claim that a product is recyclable. Some suppliers overcome this issue by offering in house take-back and recycling schemes – although not an essential requirement to achieve this measure, the commitment of a supplier to take-back and recycle their products is an excellent source of evidence to support the claim that a product is recyclable.

In the criteria, the phrase 'at least 80% recycled content and recyclable content' means 80% combined. For example, if 40% of the materials used to make the product are recycled materials and 50% of the product components could be recycled at the end of their life, then this adds up to 90% so it meets the requirements. In theory 100% of the product could be recycled materials and 100% of the product could be recycled at the end of life and this would add up to 200%, which would be well in excess of the target.

Durable and low embodied-energy products should be preferred, with the ability to recycle at their end of use.

The greatest environmental impact of paper dispensers is through the use of consumables, so a conscious reduction of waste by users should be encouraged. The [WWF commissioned a paper towel dispenser](#) that visually reminded users of resource depletion.

Further accreditation for textile products can be found on the [Oeko-Tex website](#).

[Calculating and declaring recycled content in construction products](#), 'Rules of Thumb' guide, WRAP.

[GreenSpec](#) – a directory of sustainable construction products in the UK.

[ISO 14025:2006](#)

Although there is no conclusive evidence to support electric hand-dryers over paper towels some insight on both can be found at various sources including:

- Tree hugger [hand-dryer v paper towels](#);
- [European Tissue Symposium hosted LCAs](#); and
- [a Westminster University Study](#).

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Wall covering



Criteria

All wall coverings meet at least one of the following criteria:

- if new, are manufactured with at least 80% recycled content;
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards; or
- where paper-based wallpaper is specified, meet the criteria of D20 Timber.

Scoping

This measure applies if wallpaper is specified or installed.

The criteria apply to both paper and vinyl wallpaper.

Assessment

At design stage: check specifications explicitly reference at least one of the above criteria or specify a product that meets the criteria.

At handover stage: collate manufacturers' data for installed products responding to the criteria or provide a statement of retention/reuse of existing wall coverings.

At occupancy stage: if wallpaper has been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and wallpaper has not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the embedded lifetime environmental impacts of materials that can be estimated using life cycle analysis (LCA). LCA takes account of environmental impacts over the lifetime of a product, for example the impact arising from mineral extraction, manufacturing, transport and end-of-life disposal. LCA is the basis of environmental product declarations and environmental preference methods for materials selection, for example BRE's *The Green Guide to Specification*.

Guidance

The term recycled content includes both post-consumer waste and secondary materials, defined as a waste by-product from a different industry. Processing waste recycled in-house should not be included in the recycled content calculations for the product.

[Calculating and declaring recycled content in construction products](#), 'Rules of Thumb' guide, WRAP.

[ISO 14025:2006](#)

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Useful information about more sustainable types of wall covering can be found in the following publications:

Anink, D. et al, *Handbook of sustainable building: An environmental preference method for selection for materials for use in construction and refurbishment*, James and James Ltd, 1996.

Woolley, T. et al, *Green Building Handbook*, Volume 1, Taylor and Francis, 1997.

Woolley, T. et al, *Green Building Handbook*, Volume 2, Taylor and Francis, 2000.



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CCS registration



Criteria

The site is registered with the Considerate Constructors Scheme (CCS) and achieves best practice with a score of 32 points or above.

Scoping

This measure applies to all fit-outs.

Assessment

At design stage: check the site is registered or there is a contractual commitment to register the scheme and achieve a score greater than 31.

At handover stage: look at the site monitoring reports to confirm the score achieved by the site.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

The aim is to promote the management of the construction site in an environmentally responsible and sustainable manner.

Guidance

[Considerate Constructors Scheme](#)

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Building user guide



Criteria

A building user guide (BUG) is provided that will inform and guide the tenants/occupants and non-technical building management staff on the operation and environmental performance of the spaces and how to ensure a high environmental operation on a day to day basis.

Scoping

This measure applies to all fit-outs.

Assessment

At design stage: there should be a written commitment that a BUG will be produced. The organisation responsible for producing the BUG should have been identified and this work should be within their contract.

At handover stage: review the BUG to ensure that it clearly contains the following:

- design thinking and criteria used on each greener practice/item of the scope;
- information on how to operate and/or maintain each item in the scope of the fit-out, following best practice and the greenest available method. Ensure an environmental life cycle analysis is possible and available to every item in the scope;
- proposals for the latest market greener maintenance services and end of life cycle solutions for disposal of products and materials; and
- a list of purely operational activities that create a positive environmental impact.

At occupancy stage: ensure that the guide is still accessible to all staff. If the occupancy assessment indicates that changes have been made to the floors being assessed, then check that the guide reflects these changes.

Rationale

The aim of the building user guide is to reflect the project scope and provide the design and principal thinking behind every Ska-rated measure and any other good intentions that are unrated but that instil greener practices in the project.

The guide should inform all users and operators of the greener practices applied to the space to enable them to be carried out in the intended and most efficient way.

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The guide can be part of the operation and maintenance (O&M) manual but must also have the ability to be separated and issued to staff for information.

Guidance

[Building Log Books – a user's guide](#), Good Practice Guide 348, Carbon Trust, 2003.

'Section 6: Providing Information' from The Building Regulations 2000, Approved Document Part L2A: [Conservation of fuel and power in new buildings other than dwellings](#) (2010 edition).

[Edocuments](#) – an accredited CIBSE building log book developer.

Guide L: Sustainability, [CIBSE](#), 2007.

[WRAP](#) – the waste and resource action programme.

A suggested list of contents:

- list of updates and annual review dates;
- purpose of the BUG and individual responsibilities;
- key contacts page;
- suppliers and services contact page;
- occupant information;
- overall building/space design and operation principles;
- summary of Ska rating scope and score;
- summary of areas, occupancy, WC provisions and fire strategy;
- summary of the DDA provisions and Access Statement for the facility;
- principles for the material selections and item specific user operational guidance such as furniture reusing, carpet tile recycling or linoleum cleaning;
- building waste, recycling and reuse monitoring records and targeting strategy;
- commissioning, handover and compliance of services design;
- summary of main building services plant;
- overview of controls/BMS;
- metering, monitoring and targeting strategy;
- building energy performance records;
- maintenance review;
- major alterations;
- results of in-use investigations;
- reference page to other relevant documents; and
- appendix, including relevant certificates and tests.

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Commissioning



Criteria

New systems are commissioned or existing systems are re-commissioned in accordance with CIBSE and BSRIA guidance (see guidance below).

Scoping

This measure applies if any mechanical, electrical or public health systems are being installed or modified.

Assessment

At design stage: check specification documents/clauses confirm that commissioning will take place.

At handover stage: review commissioning certificates to ensure commissioning has been carried out.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

The aim is to ensure that all systems are operating effectively and efficiently at the time of installation.

Guidance

CIBSE Commissioning Codes: Set of Seven Codes:

- CIBSE Commissioning Code A: Air Distribution Systems (2003)
- CIBSE Commissioning Code B: Boilers (2003)
- CIBSE Commissioning Code C: Automatic Controls (2003)
- CIBSE Commissioning Code L: Lighting (2003)
- CIBSE Commissioning Code M: Management (2003)
- CIBSE Commissioning Code R: Refrigeration (2003)
- CIBSE Commissioning Code W: Water Distribution Systems (2010)

BSRIA Commissioning Guides:

- Application Guide 1/91 – Commissioning of VAV systems in buildings
- Application Guide 20/95 – Commissioning of pipework systems
- Application Guide 3/89.3 – Commissioning of air systems in buildings

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- Application Guide 1/2001.1 – Pre-commission cleaning of pipework systems
- Application Guide 2/89.3 – Commissioning of water systems in buildings
- Application Guide 2/89.3 – Commissioning water systems application principles
- Application Guide 5/2002 – Commissioning management
- Application Guide 16/2002 – Variable flow water systems: design, installation and commissioning guidance
- BG8/2009 – Model Commissioning Plan
- BG11/2010 – Commissioning Job Book
- Technical Memoranda 1/88.1 – Commissioning HVAC systems



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Seasonal commissioning



Criteria

Seasonal commissioning for new or modified systems is carried out within 12 months of practical completion.

Scoping

This measure applies if any mechanical, electrical or public health systems are being installed or modified.

Assessment

At design stage: check specification documents/clauses confirm seasonal commissioning will take place within 12 months of practical completion.

At handover stage: repeat design stage assessment.

At occupancy stage: review documentation (e.g. commissioning reports) to ensure it demonstrates that seasonal commissioning was carried out during the first 12 months of practical completion.

Rationale

The aim is to ensure that all systems are operating effectively and efficiently during all times of the year. It is important that systems are checked for correct operation under representative operational conditions. During the commissioning period these conditions may not arise because the building is unoccupied. In addition, it is difficult to verify the performance of seasonal variations in control strategies. For these reasons control systems should be checked when the building is occupied during the first 12 months of operation.

Guidance

CIBSE Commissioning Codes: Set of Seven Codes (2003):

- CIBSE Commissioning Code A: Air Distribution Systems
- CIBSE Commissioning Code B: Boilers
- CIBSE Commissioning Code C: Automatic Controls
- CIBSE Commissioning Code L: Lighting
- CIBSE Commissioning Code M: Management
- CIBSE Commissioning Code R: Refrigeration
- CIBSE Commissioning Code W: Water Distribution Systems (new edition 2010)

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BSRIA Commissioning Guides:

- Application Guide 1/91 – Commissioning of VAV systems in buildings
- Application Guide 20/95 – Commissioning of pipework systems
- Application Guide 3/89.3 – Commissioning of air systems in buildings
- Application Guide 1/2001.1 – Pre-commission cleaning of pipework systems
- Application Guide 2/89.3 – Commissioning of water systems in buildings
- Application Guide 2/89.3 – Commissioning water systems application principles
- Application Guide 5/2002 – Commissioning management
- Application Guide 16/2002 – Variable flow water systems: design, installation and commissioning guidance
- BG8/2009 – Model Commissioning Plan
- BG11/2010 – Commissioning Job Book
- Technical Memoranda 1/88.1 – Commissioning HVAC systems

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Low-GWP insulation



Criteria

All new insulants have a Global Warming Potential (GWP) of less than five.

Scoping

This measure applies if any new insulants (either thermal or acoustic) are used in the building fabric, partitions and building services.

The criteria apply both to products the insulants are manufactured from, and any products, such as blowing agents, used in their manufacture.

Assessment

At design stage: check written specifications/contracts state all insulants must have a GWP of less than five. If the product and manufacturer have already been specified then carry out the handover stage assessment.

At handover stage: obtain the product and manufacturer from the invoice and check the manufacturer's literature.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

The aim is to reduce the use of materials that cause global warming.

Guidance

Products that comply with this measure include:

- natural products such as mineral wool; and
- products where CO₂ or pentane have been used as a blowing agent.

[GreenSpec](#) – a directory of sustainable construction products in the UK.

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Low-GWP refrigerants



Criteria

All refrigerants have a Global Warming Potential (GWP) of less than five.

Scoping

This measure applies if any new refrigerants are used in the building services.

Assessment

At design stage: check written specifications/contracts state all refrigerants must have a GWP of less than five. If the product and manufacturer have already been specified then carry out the handover stage assessment.

At handover stage: obtain the product and manufacturer of the equipment containing refrigerants from the invoice. Check the manufacturer's literature to determine the refrigerant and check the GWP with the manufacturer or obtain it from CIBSE GN1 (see guidance below).

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

The aim is to reduce the use of materials that cause global warming.

Guidance

CFCs, HCFCs and halons: professional and practical guidance on substances that deplete the ozone layer, GN1, CIBSE, 2000 – contains a list of common refrigerants and their associated GWP.

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Refrigerant leak detection

Criteria

Refrigerant leak detection systems are implemented.

- For internal plant rooms – a refrigerant leak detection system is specified and installed that uses fixed multi-point gas detectors and samples air in a number of locations.
- For rooftop and non-air-tight locations – manual refrigerant leak detection techniques are used, such as portable electronic refrigerant detectors and ultraviolet (UV) indication fluids, with a monthly inspection schedule.

Scoping

This measure applies only if centralised HVAC systems are installed.

It does not apply when split units or any systems using hydrocarbon and ammonia-based refrigerants with a GWP less than three are being installed.

Assessment

At design stage: check written specifications/contracts confirm this equipment will be installed.

At handover stage: obtain the product and manufacturer from the invoice and check the manufacturer’s literature.

At occupancy stage: review the occupier’s maintenance records to ensure this equipment is being used and maintained correctly and has not been disabled.

Rationale

The aim is to reduce the emissions of refrigerants to the atmosphere in the event of a leak. The emission of refrigerants has a four-fold effect:

- Environmental impact – many refrigerants damage the ozone layer and most also contribute to global warming.
- Higher running costs – leakage of refrigerant reduces efficiency.
- Increased servicing costs.
- Health and safety hazards – if located in confined spaces, exposure levels could potentially be exceeded, leading to suffocation if sufficient loss and displacement of air occurs.

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The following types of leak detection will not achieve this measure:

- all CFC/HCFC refrigerants used in rooftop systems; and
- an 'indirect' system that monitors parameters in the refrigeration system (such as pressures, temperatures and liquid levels) and calculates whether a leak is present.

Guidance

CFCs, HCFCs and halons: professional and practical guidance on substances that deplete the ozone layer, GN1, [CIBSE](#), 2000 – contains a list of common refrigerants and their associated GWP.

Code of practice for refrigerant leak tightness in compliance with the F-gas regulation, British Refrigeration Association, 2007.

Code of practice for the minimisation of refrigerant emissions from refrigerating systems, Institute of Refrigeration, 1995.

Guide 4: R22 Phase Out and F-Gas Regulations, Food & Drink Industry – Refrigeration Efficiency Initiative, Carbon Trust Networks Project, 2007.

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Limiting plant noise

Criteria

A noise impact assessment in compliance with BS 4142:1997 is undertaken and shows that new plant will not create a noise level more than 5dB above existing background noise levels.

Scoping

This measure applies if new plant is being installed.

Assessment

At design stage: check whether a noise impact assessment has been carried out; if so, obtain a copy of the report.

At handover stage: confirm with as-built drawings and during site visit that there have been no changes to the building since the impact assessment was undertaken.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

The aim is to reduce the impact of operational noise from new plant on the surrounding environment.

Guidance

Method for rating industrial noise affecting mixed residential and industrial areas, BS 4142:1997, BSI, 1997.

Sound insulation and noise reduction for buildings. Code of practice, BS 8233:1999, BSI, 1999.

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Reduce light pollution



Criteria

All lighting control motion detector time lags are reduced to a maximum of 10 minutes and lighting lux levels are reduced between the hours of 23.00 and 07.00 in accordance with Table 1 of ILE GN01 (see guidance below).

Scoping

This measure applies if external lighting and signage is specified as part of the fit-out.

Assessment

At design stage: check specifications and drawings.

At handover stage: review as-built drawings and check invoices to ensure that the specified equipment was purchased.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

The aim is to reduce disturbance from night time light pollution to neighbours.

Guidance

[Guidance notes for the reduction of obtrusive light](#), GN01, The Institution of Lighting Engineers, 2005.

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Refrigerant recovery



Criteria

Refrigerant recovery systems are implemented.

- For fixed multi-point refrigerant leak detection systems – an automated refrigerant leak recovery system is specified and installed. When a leak is detected, the system must have the capacity to automatically evacuate the refrigerant into a separate cylinder, to minimise release of refrigerant emissions to the atmosphere.
- For manual refrigerant leak detection systems – when a leak is manually detected, the system must have the capacity to transfer the refrigerant into a suitable external storage container. The refrigerant should not be purged from the system into the atmosphere.

Scoping

This measure applies only if centralised HVAC systems are installed.

It does not apply when split units or any systems using hydrocarbon and ammonia-based refrigerants with a GWP less than three are being installed.

Assessment

At design stage: check written specifications/contracts confirm this equipment will be installed.

At handover stage: obtain the product and manufacturer from the invoice and check the manufacturer's literature.

At occupancy stage: review the occupier's maintenance records to ensure this equipment is being used and maintained correctly and has not been disabled.

Rationale

The aim is to reduce the emissions of refrigerants to the atmosphere in the event of leakage. It is an offence under sections 33(1)(c) and 34 of the *Environmental Protection Act 1990* to deliberately or negligently discharge environmentally-damaging substances into the atmosphere.

Once a system has been identified as having a leak it is necessary to remove refrigerant from the section concerned and isolate the leaking component or section of the system. Pumping the system down in order to achieve this is unlikely to be sufficient, recovery of the refrigerant will be necessary. To recover the vapour left in the system, utilisation of recovery machines will be necessary (British Refrigeration Association, 2007).

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During repair, maintenance or decommissioning of refrigerant systems the following recovery options should be employed:

- recover and reuse refrigerant in the original system;
- recover, recycle and reuse by original owner;
- recover, reclaim and reuse by original owner;
- recover, reclaim and make available for reuse by others;
- recover and destroy.

Guidance

Code of practice for refrigerant leak tightness in compliance with the F-gas regulation, British Refrigeration Association, 2007.

Code of practice for the minimisation of refrigerant emissions from refrigerating systems, Institute of Refrigeration, 1995.

Safety code for refrigerating systems utilising group A3 refrigerants, Institute of Refrigeration, 2001.



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Cycle parking



Criteria

- One cycle space per 350m² of floor space is provided.
- Secure, lockable cycle racks are provided.

Note: When carrying out the calculation the number must be rounded up, i.e. if there is 450m² of floor space then two cycle spaces must be provided.

Scoping

This measure applies if there is tenant core/external space (including existing parking) with suitable access.

Assessment

At design stage: check specifications and drawings.

At handover stage: check as-built drawings and carry out a site visit.

At occupancy stage: if cycle racks have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and the cycle racks have not been changed or reduced in number, this measure will be achieved by default.

Rationale

The aim is to encourage staff to cycle to work.

Guidance

Ideally cycle spaces should be covered as well as being secure. Design guidelines can be found in [Cycle parking, Sustrans Information Sheet FF37](#).

Sustrans produce an information sheet called Active Travel In The Workplace: Planning for an Active Workforce, which provides additional information. [Sustrans Information Sheet](#)

A number of local councils are producing guidelines too, which recommend one space per 125–350m² of floor space. See Transport for London's [Workplace cycle parking guide](#).

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Cyclist showers



Criteria

For staff numbers up to 100, one male and one female shower are provided. For every additional 100 staff (or part thereof), another shower is provided.

Scoping

This measure applies if there is sufficient tenant core/washroom space with suitable access.

Assessment

At design stage: check specifications explicitly reference the criteria.

At handover stage: carry out a site visit.

At occupancy stage: if showers have been added then carry out the design and handover stage assessments. If this measure was achieved at handover stage and the showers have not been changed or reduced in number, it will be achieved by default.

Rationale

The aim is to encourage staff to cycle to work by providing showers so that staff can freshen up after their cycle ride.

Guidance

[Active travel in the workplace – What’s right for your organisation?](#), Sustrans, 2008.

[A guide for employers – getting your workplace cycle friendly](#), London Cycling Campaign.

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Cyclist lockers



Criteria

One locker per cycle space is provided.

Scoping

This measure applies if there is sufficient tenant core/internal space with suitable access.

Assessment

At design stage: check specifications explicitly reference the criteria.

At handover stage: carry out a site visit.

At occupancy stage: if lockers have been added then carry out the design and handover stage assessments. If this measure was achieved at handover stage and the lockers have not been changed or reduced in number, it will be achieved by default.

Rationale

The aim is to encourage staff to cycle to work by providing lockers where staff can store clothes and cycle equipment.

Guidance

[A guide for employers – getting your workplace cycle friendly](#), London Cycling Campaign.

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Demolition salvage plan



Criteria

A demolition salvage plan is prepared prior to site work, and carried out during the construction phase.

Scoping

This measure applies to all fit-outs that include the strip-out of the old building.

Assessment

At design stage: this can be demonstrated either through the production of a site waste management plan (SWMP), or as an independent plan that just covers demolition waste. This report must be completed prior to the start of the strip-out.

At handover stage: records must be provided to demonstrate that the plan was carried out during the strip-out; these records must show as a minimum how much waste was diverted from landfill and preferably detail whether waste was subject to reuse, recycling, energy recovery or composting.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

A demolition/salvage audit is part of the site waste management plan (SWMP). All construction projects in England worth more than £300,000 must have a SWMP. Many fit-out projects will fall below this threshold, but it is good practice for these smaller projects to develop plans to manage the waste arising from the strip-out process. The goal is to promote the reuse of materials from the strip-out phase either on-site or on another site, rather than sending all materials for recycling or landfill.

Guidance

[A simple guide to site waste management plans](#), NetRegs.

Templates for creating a SWMP are available to download from [WRAP](#).

WRAPs Design out Waste tool for buildings and NetWaste tool can be used to populate the WRAP SWMP template and provides advice on initiatives for reducing waste in design and construction. Both tools are accessible online to registered users; registration is free. Visit nwtool.wrap.org.uk

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Plan to minimise site waste



Criteria

A site waste minimisation plan is prepared prior to site work, detailing measures to minimise waste generated on site. The plan must be carried out during the construction phase.

Scoping

This measure applies to all fit-outs.

Assessment

At design stage: this can be demonstrated either through the production of a site waste management plan, or as an independent plan that just covers waste minimisation from site activities. This report must be completed prior to the start of site work.

At handover stage: records must be provided to demonstrate that the plan was carried out during the construction phase; these records must show as a minimum how much waste was diverted from landfill and preferably detail whether waste was subject to reuse, recycling, energy recovery or composting.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

A site waste minimisation plan is part of the site waste management plan (SWMP). All construction projects in England worth more than £300,000 must have a SWMP. Many fit-out projects will fall below this threshold, but it is good practice for these smaller projects to develop plans to manage the waste arising from the project. The goal is to promote the reuse of waste materials either on-site or on another site, rather than sending all materials to landfill.

Guidance

[Achieving good practice waste minimisation and management](#), WRAP.

[A simple guide to site waste management plans](#), NetRegs.

WRAP's Design out Waste tool for buildings and NetWaste tool can be used to populate the WRAP SWMP template and provides advice on initiatives for reducing waste in design and construction. Both tools are accessible online to registered users; registration is free. Visit nwtool.wrap.org.uk

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Reduce workstations and tables sent to landfill



Criteria

At least 80% of the workstations and tables are:

- reused;
- recycled; or
- diverted from landfill.

Note: A product can be considered to have been reused where it is salvaged and used for its original intended purpose or where the majority of component parts of the product are remanufactured into new products without significant reprocessing.

Scoping

This measure applies if the removal of existing workstations and tables forms part of the fit-out contract.

Assessment

At design stage: check the waste management documents (as specified in D06, D07 and D09) cover the disposal of these products by reusing, recycling or otherwise diverting from landfill.

At handover stage: check waste records to confirm that these products were reused, recycled or otherwise diverted from landfill.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

The aim is to reduce the number of workstations and tables sent to landfill, which is highly wasteful in terms of energy and resource use.

Guidance

Redeployment can be broken down into three key areas:

- reuse – within the fit-out project or elsewhere within the organisation;
- donation – to charities, schools, etc.; or
- sale – to smaller companies and start up organisations, etc.

[Community Recycling Network](#) – a membership organisation supporting not-for-profit and community groups involved in recycling, reuse or waste minimisation projects.

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There are a number of organisations that specialise in the redeployment of office furniture. Two of the most well known are [Green Standards Trust](#) and [Green-Works](#); their websites provide useful information and guidance on this subject.

[WRAP](#) – the waste and resource action programme.



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Reduce chairs sent to landfill



Criteria

At least 80% of desk chairs are:

- reused;
- recycled; or
- diverted from landfill.

Note: A product can be considered to have been reused where it is salvaged and used for its original intended purpose or where the majority of component parts of the product are remanufactured into new products without significant reprocessing.

Scoping

This measure applies if the removal of existing chairs forms part of the fit-out contract.

Assessment

At design stage: check the waste management documents (as specified in D06, D07 and D09) cover the disposal of these products by reusing, recycling or otherwise diverting from landfill.

At handover stage: check waste records to confirm that these products were reused, recycled or otherwise diverted from landfill.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

The aim is to reduce the number of chairs sent to landfill, which is highly wasteful in terms of energy and resource use.

Guidance

Redeployment can be broken down into three key areas:

- reuse – within the fit-out project or elsewhere within the organisation;
- donation – to charities, schools, etc.; or
- sale – to smaller companies and start up organisations, etc.

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Reduce other loose furniture sent to landfill



Criteria

At least 80% of any other loose office furniture items (i.e. those items not covered by measures D15, D16, D17) are:

- reused;
- recycled; or
- diverted from landfill.

Note: A product can be considered to have been reused where it is salvaged and used for its original intended purpose or where the majority of component parts of the product are remanufactured into new products without significant reprocessing.

Scoping

This measure applies if the removal of other loose furniture items (not covered by measures D15, D16, D17) forms part of the fit-out contract.

Assessment

At design stage: check the waste management documents (as specified in D06, D07 and D09) cover the disposal of these products by reusing, recycling or otherwise diverting from landfill.

At handover stage: check waste records to confirm that these products were reused, recycled or otherwise diverted from landfill.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

The aim is to reduce the number of loose furniture items sent to landfill, which is highly wasteful in terms of energy and resource use.

Guidance

Redeployment can be broken down into three key areas:

- reuse – within the fit-out project or elsewhere within the organisation;
- donation – to charities, schools, etc.; or
- sale – to smaller companies and start up organisations, etc.

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Reduce storage units sent to landfill



Criteria

At least 80% of the office storage units are:

- reused;
- recycled; or
- diverted from landfill.

Note: A product can be considered to have been reused where it is salvaged and used for its original intended purpose or where the majority of component parts of the product are remanufactured into new products without significant reprocessing.

Scoping

This measure applies if the removal of existing storage units forms part of the fit-out contract.

Assessment

At design stage: check the waste management documents (as specified in D06, D07 and D09) cover the disposal of these products by reusing, recycling or otherwise diverting from landfill.

At handover stage: check waste records to confirm that these products were reused, recycled or otherwise diverted from landfill.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

The aim is to reduce the number of storage units sent to landfill, which is highly wasteful in terms of energy and resource use.

Guidance

Redeployment can be broken down into three key areas:

- reuse – within the fit-out project or elsewhere within the organisation;
- donation – to charities, schools, etc.; or
- sale – to smaller companies and start up organisations, etc.

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[WRAP](#) – the waste and resource action programme.



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Reduce carpets sent to landfill



Criteria

At least 80% of the waste carpet is:

- reused;
- recycled; or
- diverted from landfill.

Note: A product can be considered to have been reused where it is salvaged and used for its original intended purpose or where the majority of component parts of the product are remanufactured into new products without significant reprocessing.

Scoping

This measure applies if the removal of existing carpets forms part of the fit-out contract or if new carpets are being installed.

Assessment

At design stage: check the waste management documents (as specified in D06, D07 and D09) cover the disposal of carpets by reusing, recycling or otherwise diverting from landfill.

At handover stage: check waste records to confirm that the carpets were reused, recycled or otherwise diverted from landfill.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

The aim is to reduce flooring waste sent to landfill. In Europe, 30 million m² of carpet tiles are sent to landfill each year. This is highly wasteful in terms of energy and resource use.

Guidance

The sustainable options for removing carpets from the original office building prior to fit-out works are:

- reuse either on- or off-site;
- recycle;
- return (lease); or
- energy recovery.

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A number of the leading carpet manufacturers provide a service to sustainably dispose of carpet tiles. In addition there are not-for-profit charities such as [Green-Works](#) that accept carpet tiles for reuse.

When new carpets are fitted they should be designed to minimise the waste generated during the fitting process. Where excess new material has been ordered/delivered, the most sustainable option for diverting from landfill is to have an agreement with the carpet supplier that they will take back all unused material.



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Reduce timber sent to landfill



Criteria

At least 80% of waste timber is:

- reused;
- recycled; or
- diverted from landfill.

Scoping

This measure applies if the removal of existing timber and/or new on-site joinery works form part of the fit-out contract.

Assessment

At design stage: check the waste management documents (as specified in D06, D07 and D09) cover the disposal of timber by reusing, recycling or otherwise diverting from landfill.

At handover stage: check waste records to confirm that the timber was reused, recycled or otherwise diverted from landfill.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

Every year approximately 8–10 million tonnes of wood is produced for disposal in the UK. The aim is to reduce the amount of wood waste sent to landfill, which is highly wasteful in terms of energy and resource use.

Guidance

[RecycleWood](#) – provides a postcode search engine for wood recycling services.

[Wood Recyclers' Association](#) – provides a list of member companies. A code of practice is currently being developed for wood recyclers in conjunction with WRAP.

[WRAP](#) – the waste and resource action programme.

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Reduce ceilings sent to landfill



Criteria

At least 80% of the waste ceilings are:

- reused;
- recycled; or
- diverted from landfill.

Note: A product can be considered to have been reused where it is salvaged and used for its original intended purpose or where the majority of component parts of the product are remanufactured into new products without significant reprocessing.

Scoping

This measure applies if the removal of existing ceilings forms part of the fit-out contract or if new ceilings are being installed.

Assessment

At design stage: check the waste management documents (as specified in D06, D07 and D09) cover the disposal of ceilings by reusing, recycling or otherwise diverting from landfill.

At handover stage: check waste records to confirm that the ceilings were reused, recycled or otherwise diverted from landfill.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

The aim is to reduce the amount of ceiling waste sent to landfill, which is highly wasteful in terms of energy and resource use.

Guidance

[Community Recycling Network](#) – a membership organisation supporting not-for-profit and community groups involved in recycling, reuse or waste minimisation projects.

[WRAP](#) – the waste and resource action programme.

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Reduce partitions sent to landfill



Criteria

At least 80% of the waste partitions are:

- reused;
- recycled; or
- diverted from landfill.

Note: A product can be considered to have been reused where it is salvaged and used for its original intended purpose or where the majority of component parts of the product are remanufactured into new products without significant reprocessing.

Scoping

This measure applies if the removal of existing partitions forms part of the fit-out contract or if partitions are to be installed.

Assessment

At design stage: check the waste management documents (as specified in D06, D07 and D09) cover the disposal of partitions by reusing, recycling or otherwise diverting from landfill.

At handover stage: check waste records to confirm that the partitions were reused, recycled or otherwise diverted from landfill.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

The aim is to reduce the amount of partition waste sent to landfill, which is highly wasteful in terms of energy and resource use.

Guidance

[Community Recycling Network](#) – a membership organisation supporting not-for-profit and community groups involved in recycling, reuse or waste minimisation projects.

[WRAP](#) – the waste and resource action programme.

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Reduce doors sent to landfill



Criteria

At least 80% of doors are:

- reused;
- recycled; or
- diverted from landfill.

Note: A product can be considered to have been reused where it is salvaged and used for its original intended purpose or where the majority of component parts of the product are remanufactured into new products without significant reprocessing.

Scoping

This measure applies if the removal of doors forms part of the fit-out contract or if new doors are being installed.

Assessment

At design stage: check the waste management documents (as specified in D06, D07 and D09) cover the disposal of doors by reusing, recycling or otherwise diverting from landfill.

At handover stage: check waste records to confirm that doors were reused, recycled or otherwise diverted from landfill.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

The aim is to reduce the number of doors sent to landfill, which is highly wasteful in terms of energy and resource use.

Guidance

Redeployment can be broken down into three key areas:

- reuse – within the fit-out project or elsewhere within the organisation;
- donation – to charities, schools, etc.; or
- sale – to smaller companies and start up organisations, etc.

[Community Recycling Network](#) – a membership organisation supporting not-for-profit and community groups involved in recycling, reuse or waste minimisation projects.

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There are a number of organisations that specialise in the redeployment of office furniture. Two of the most well known are [Green Standards Trust](#) and Green-Works; their websites provide useful information and guidance on this subject.

[WRAP](#) – the waste and resource action programme.



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Reduce masonry sent to landfill

Criteria

At least 80% of the masonry is:

- reused; or
- recycled.

Scoping

This measure applies if the removal of existing masonry forms part of the fit-out contract or if masonry elements are specified for the fit-out.

Assessment

At design stage: check the waste management documents (as specified in D06, D07 and D09) cover the disposal of masonry by reusing or recycling.

At handover stage: check waste records to confirm that the masonry was reused or recycled.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

The aim is to reduce the amount of demolition and construction waste sent to landfill.

Guidance

[Fit-out waste guide](#), British Land, 2008

[WRAP](#) – the waste and resource action programme.

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Reduce C&D waste sent to landfill



Criteria

At least 80% of all construction and demolition (C&D) waste is:

- reused;
- recycled; or
- diverted from landfill.

Scoping

This measure applies to all fit-outs.

Assessment

At design stage: check waste management documents (as specified in D06, D07 and D09) cover the disposal of all waste products.

At handover stage: check waste records to confirm that 80% of waste was re-used, recycled or otherwise diverted from landfill.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

This measure covers all C&D waste, not just the specified products in other good practice measures. The purpose of this measure is to provide extra incentive to any contractor who manages to divert more than 80% of ALL construction and demolition waste from landfill.

Guidance

[CIRIA](#) – provides a database of construction-related recycling sites.

[Ecoconstruction](#) – recycled materials for construction.

[Freecycle](#) – a website promoting the reuse of materials.

[The National Materials Exchange](#) – a free online service facilitating the exchange of materials between construction sites.

[WRAP](#) – the waste and resource action programme.

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Increase recycled C&D waste



Criteria

At least 80% of all construction and demolition (C&D) waste is:

- reused; or
- recycled.

Note: Disposal through recovery is not acceptable for the award of this measure.

Scoping

This measure applies to all fit-outs.

Assessment

At design stage: check waste management documents (as specified in D06, D07 and D09) cover the disposal of all waste products.

At handover stage: check waste records to confirm 80% of waste was reused or recycled.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

This measure covers all C&D waste, not just the specified products in other good practice measures. The purpose of this measure is to provide extra incentive to any contractor who manages to recycle or reuse more than 80% of ALL construction and demolition waste.

This measure has the same scope as P03 but rewards the contractor only for reusing and recycling waste. This measure does not reward the contractor for incinerating these waste products to recover energy. This is because, although this option is better than sending these products to landfill, energy recovery is not considered best practice for waste streams arising from the office fit-out process.

Guidance

[CIRIA](#) – provides a database of construction-related recycling sites.

[Ecoconstruction](#) – recycled materials for construction.

[Freecycle](#) – a website promoting the reuse of materials.

[The National Materials Exchange](#) – a free online service facilitating the exchange of materials between construction sites.

[WRAP](#) – the waste and resource action programme.

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Reduce total waste in use



Criteria

Annual total waste generated by the office is less than 80kg per staff member per year.

Scoping

This measure applies to all occupancy stage assessments.

Assessment

This measure can only be assessed after a minimum of one year's occupation as the waste generated has to be measured over a full calendar year (365 days). This is to take account of seasonal variations and occupant behaviour, such as holidays.

At occupancy stage: review the occupier's records for waste disposal for the last year to determine the total mass (kg) of the waste arising from the occupation of the office (whether sent to landfill or otherwise diverted from landfill). Divide this by the number of full time equivalent staff.

Rationale

The UK commercial industry produces approximately 40 million tonnes of waste per annum of which approximately 50% is disposed at landfill.

The standard tax per tonne of waste to landfill is increasing annually. This cost will be passed onto the building end user therefore increasing the cost of disposing of waste.

The aim of this measure is to encourage occupants to reduce the overall amount of operational waste generated by the occupation of the office.

Guidance

The occupier should have an agreement with a firm that has a waste carriers licence. This firm should be able to provide records to the tenant showing how their waste has been disposed of, i.e. recycled, incinerated or sent to landfill. The figures provided should be by mass of waste generated by the occupier. It is the responsibility of the occupier to select a waste carrier that is capable of providing the level of information required.

The targets set by this good practice measure have been taken from Section 4 'Waste Management Systems' of *Public Health Engineering, Guide G, CIBSE, 2004*.

See also good practice measure P06 Increase recycling of waste in use, which sets targets for how much total waste should be recycled or otherwise diverted from landfill.

[WRAP](#) – Waste and Resource Action Programme.

[Waste Online](#) – information resource on ways to reduce waste in the workplace.

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Recyclable waste storage space



Criteria

Space is provided for the storage of segregated recyclable waste generated from the tenant's operations. This space could be central or provided on the floor adjacent to workstations. The area must be clearly marked as an area for recycled waste bins.

Scoping

This measure applies to all fit-outs.

Assessment

At design stage: check drawings to ensure this area is marked and shown as being specifically for recyclable waste storage.

At handover stage: carry out a site visit to confirm that the area exists.

At occupancy stage: carry out a site visit to confirm that the area exists and is in regular use. It does not have to be the same space as that created at handover stage.

Rationale

The aim is to encourage the provision of a storage space dedicated to recyclable materials and so enable occupiers to recycle operational waste.

Guidance

[Envirowise](#)

[WRAP](#) – the waste and resource action programme.

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SWMP



Criteria

A site waste management plan (SWMP) is prepared and at least 80% of waste produced on site is diverted from landfill. The plan is in line with the voluntary code of practice *Site Waste Management Plans: Guidance for Construction Contractors and Clients* (see guidance below).

Scoping

This measure applies to all fit-outs.

Assessment

At design stage: review the SWMP and check that the plan demonstrates that at least 80% of waste will be diverted from landfill.

At handover stage: review the SWMP and records to confirm that more than 80% of waste was diverted from landfill.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

A SWMP is compulsory in England for all construction projects with a value greater than £300,000. This measure requires that a SWMP is provided for all projects regardless of value.

At present the government does not require that a SWMP sets a target for reducing the amount of waste sent to landfill. The purpose of this measure is to set a target ahead of proposed government regulations. In 2007 the government produced a Waste Strategy for England that accredited the construction industry as a significant contributor of waste to landfill. The government set the following targets:

- 50% reduction in waste to landfill by 2012; and
- zero waste to landfill by 2020.

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Guidance

[Site Waste Management Plans: Guidance for Construction Contractors and Clients](#), DTI, 2004. Additional resources to support the development of SWMPs are available from [Constructing Excellence](#).

[The Site Waste Management Plans Regulations 2008](#)

Templates for creating a SWMP are available to download from [WRAP](#).

WRAP's Design out Waste tool for buildings and NetWaste tool can be used to populate the WRAP SWMP template and provides advice on initiatives for reducing waste in design and construction. Both tools are accessible online to registered users; registration is free. Visit nwtool.wrap.org.uk

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Increase recycling of waste in use



Criteria

At least 80% of all waste arising from occupation is:

- reused;
- recycled; or
- composted or used for anaerobic digestion (applies to food waste only).

Note: Disposal through incineration is not acceptable for the award of this measure.

Scoping

This measure applies to all occupancy stage assessments.

Assessment

This measure can only be assessed after a minimum of one year's occupation as the waste generated has to be measured over a full calendar year (365 days). This is to take account of seasonal variations and occupant behaviour, such as holidays.

At occupancy stage: review the occupier's records for waste disposal for the last year to determine whether more than 80% by mass (tonnes) of the waste arising from the occupation of the office was either reused or recycled.

Rationale

The UK commercial industry produces approximately 40 million tonnes of waste per annum of which approximately 50% is disposed at landfill.

The standard tax per tonne of waste to landfill is increasing annually. This cost will be passed onto the building end user therefore increasing the cost of disposing of waste.

This measure has the same scope as P05 but rewards the occupier only for reusing and recycling waste. This measure does not reward the occupier for incinerating waste products to recover energy. Studies by WRAP indicate that 60–80% of office waste is paper and recycling rather than incineration is the environmentally-preferable option for paper. Recycling is also the preferred option for other office waste streams.

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Guidance

The occupier should have an agreement with a firm that has a waste carriers licence. This firm should be able to provide records to the tenant showing how their waste has been disposed of, i.e. recycled, incinerated or sent to landfill. The figures provided should be by mass of waste generated by the occupier. It is up to the occupier to select a waste carrier that is capable of providing the level of information required.

[WRAP](#) – the Waste and Resource Action Programme.

[Waste Online](#) – information resource on ways to reduce waste in the workplace.

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Reduce water in use



Criteria

Water use is less than 0.55m³/m²/year or less than 4m³/person/year.

Scoping

This measure applies to occupancy stage assessments if washrooms (in tenant or landlord areas) have been installed or changed. If good practice measures E12–E18 were in scope at the handover stage assessment, this measure is in scope.

Assessment

This measure can only be assessed after a minimum of one year's occupation as the water use has to be measured over a full calendar year (365 days). This is to take account of seasonal variations in water use over time, e.g. due to holidays.

At handover stage: record water meter readings.

At occupancy stage: take meter readings and use the meter readings taken at the handover stage to calculate the annual water consumption in m³ (the difference between the readings). Calculate the water use based either on net lettable floor area or number of full time equivalent employees.

The calculation is as follows:

$$\begin{array}{l} \text{Water use by} \\ \text{floor area} \\ \text{(m}^3\text{/m}^2\text{/year)} \end{array} = \frac{\text{annual water consumption (m}^3\text{)}}{\text{floor area (m}^2\text{)}}$$

$$\begin{array}{l} \text{Water use by} \\ \text{employee} \\ \text{(m}^3\text{/person/year)} \end{array} = \frac{\text{annual water consumption (m}^3\text{)}}{\text{number of employees}}$$

Rationale

The aim is to encourage the occupant to reduce water consumption. The targets set here are based on good practice benchmarks. If the fit-out process has introduced water-efficiency measures, then the impact of these measures should be reflected in reduced annual water consumption.

Guidance

Ideally the water consumption should be measured during the first year of occupation. However, the assessment period can start at any time within the first year of occupation, but it must finish within the first two years of occupation

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If this measure is in scope but a water meter for the space being assessed has not been fitted, this measure will remain in scope even though it will not be possible to achieve it. This is because the client has chosen to implement resource-saving measures but has no way of measuring the benefit of them. As the assessment can be completed during the first two years of occupation, the client has time to install the meters required.

Performance targets can be found in CIRIA Guidance W11 [Key Performance Indicators for water use in offices](#).



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Lower flush WCs



Criteria

WCs have an effective flush volume of 4.5 litres or less and are on the Water Technology List (WTL).

Scoping

This measure applies if WCs are being installed or replaced or if washrooms containing WCs are being installed or replaced.

Assessment

At design stage: check written specifications/contracts state this equipment must be sourced from the WTL. If the model and manufacturer have already been specified then carry out the handover stage assessment.

At handover stage: check invoices and obtain the name of the equipment manufacturer and the model number; check the model is listed on the WTL.

At occupancy stage: if WCs have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and WCs have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce water use within the office.

Guidance

The Inland Revenue uses a Water Technology List of systems that are eligible for 100% capital allowances. It includes a list of manufacturers of water efficient systems. Visit www.eca-water.gov.uk

Products must be on the Water Technology List as Defra regularly tests WTL listed-products to check they meet the thresholds required by the Enhanced Capital Allowances eligibility criteria. This provides more reliable evidence that the product meets the requirements, rather than just a manufacturer's declaration.

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Existing lower flush WCs

Criteria

Existing WCs are retrofitted with WC flushing devices to provide a 20% reduction in the flush volume of the WC (see guidance). These fittings are on the Water Technology List (WTL).

Scoping

This measure applies if there are existing washroom facilities containing WCs and the reduction of flush volumes is planned.

Assessment

At design stage: check written specifications/contracts state this equipment must be sourced from the WTL. If the model and manufacturer have already been specified then carry out the handover stage assessment.

At handover stage: check invoices and obtain the name of the equipment manufacturer and the model number; check the model is listed on the WTL.

At occupancy stage: if flushing devices have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and flushing devices have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce water use within the office. Retrofit WC flushing devices are fitted to existing cisterns or WC suites to enable a reduction in the volume of water per flush.

Guidance

The Inland Revenue uses a Water Technology List of systems that are eligible for 100% capital allowances. It includes a list of manufacturers of water efficient systems. Visit www.eca-water.gov.uk

Products must be on the Water Technology List as Defra regularly tests WTL listed-products to check they meet the thresholds required by the Enhanced Capital Allowances eligibility criteria. This provides more reliable evidence that the product meets the requirements, rather than just a manufacturer's declaration.

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Low flow taps



Criteria

Flow rate on taps is limited to 6 litres/minute up to a pressure of 5 bar +/- 0.2 bar and the tap fitting or flow controller is on the Water Technology List (WTL).

Note: This measure can be achieved by using a tap that meets the requirements or installing a flow controller to control the flow through the tap.

Scoping

This measure applies if taps are being installed or replaced.

The criteria apply to washroom areas and further ancillary rooms where taps are installed for hand washing. The criteria do not apply to taps installed in commercial kitchens, tea points, cleaner's workrooms or similarly specialised spaces.

Assessment

At design stage: check written specifications/contracts state this equipment must be sourced from the WTL. If the model and manufacturer have already been specified then carry out the handover stage assessment.

At handover stage: check invoices and obtain the name of the equipment manufacturer and the model number; check the model is listed on the WTL.

At occupancy stage: if taps have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and taps have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce water usage within the office.

Guidance

The Inland Revenue uses a Water Technology List of systems that are eligible for 100% capital allowances. It includes a list of manufacturers of water efficient systems. Visit www.eca-water.gov.uk

Products must be on the Water Technology List as Defra regularly tests WTL listed-products to check they meet the thresholds required by the Enhanced Capital Allowances eligibility criteria. This provides more reliable evidence that the product meets the requirements, rather than just a manufacturer's declaration.

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Shut-off taps



Criteria

Automatic shut-off taps are installed. Each time the tap is activated the water only flows for a maximum of 20 seconds. The tap is on the Water Technology List (WTL).

Scoping

This measure applies if taps are being installed or replaced.

The criteria apply to washroom areas and further ancillary rooms where taps are installed for hand washing. The criteria do not apply to taps installed in commercial kitchens, tea points, cleaner's workrooms or similarly specialised spaces.

Assessment

At design stage: check written specifications/contracts state this equipment must be sourced from the WTL. If the model and manufacturer have already been specified then carry out the handover stage assessment.

At handover stage: check invoices and obtain the name of the equipment manufacturer and the model number; check the model is listed on the WTL.

At occupancy stage: if taps have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and taps have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce water usage within the office.

Guidance

The Inland Revenue uses a Water Technology List of systems that are eligible for 100% capital allowances. It includes a list of manufacturers of water efficient systems. Shut-off taps can be found under 'efficient taps>automated shut off taps'
Visit www.eca-water.gov.uk

Products must be on the Water Technology List as Defra regularly tests WTL listed-products to check they meet the thresholds required by the Enhanced Capital Allowances eligibility criteria. This provides more reliable evidence that the product meets the requirements, rather than just a manufacturer's declaration.

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Showers



Criteria

Flow rate to showers is limited to 9 litres/minute up to a pressure of 5 bar +/- 0.2 bar and the flow controller fittings are on the Water Technology List (WTL).

Note: This measure can be achieved by using a shower that meets the requirements or installing a flow controller to control the flow through the shower.

Scoping

This measure applies if showers are being installed or replaced.

Assessment

At design stage: check written specifications/contracts state this equipment must be sourced from the WTL. If the model and manufacturer have already been specified then carry out the handover stage assessment.

At handover stage: check invoices and obtain the name of the equipment manufacturer and the model number; check the model is listed on the WTL.

At occupancy stage: if showers have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and showers have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce water use within the office.

Guidance

The Inland Revenue uses a Water Technology List of systems that are eligible for 100% capital allowances. It includes a list of manufacturers of water efficient systems. Visit www.eca-water.gov.uk

Products must be on the Water Technology List as Defra regularly tests WTL listed-products to check they meet the thresholds required by the Enhanced Capital Allowances eligibility criteria. This provides more reliable evidence that the product meets the requirements, rather than just a manufacturer's declaration.

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Water meter



Criteria

The meter is capable of transmitting information on water use to a central data logger for water management purposes. The meter is on the Water Technology List (WTL).

Scoping

This measure applies if the water supply system is being installed or modified or if a water meter is being connected to the existing system.

Assessment

At design stage: check written specifications/contracts state this equipment must be sourced from the WTL, and that it is a pulsed water meter. If the model and manufacturer have already been specified then carry out the handover stage assessment.

At handover stage: check invoices and obtain the name of the equipment manufacturer and the model number; check the model is listed on the WTL and the meter is capable of transmitting information on water use to a central data logger for water management purposes.

At occupancy stage: if the water meter has been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and the water meter has not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce water use within the office by providing feedback to occupiers on water use. The measure is in scope if water supply systems are being modified as this presents an opportunity to install a water meter.

Guidance

The Inland Revenue uses a Water Technology List of systems that are eligible for 100% capital allowances. It includes a list of manufacturers of water efficient systems. Visit www.eca-water.gov.uk

Products must be on the Water Technology List as Defra regularly tests WTL listed-products to check they meet the thresholds required by the Enhanced Capital Allowances eligibility criteria. This provides more reliable evidence that the products meet the requirements, rather than just a manufacturer's declaration.

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Water management software



Criteria

Dedicated 'water use' management software is used for analysing and reporting on water use data and the software is on the Water Technology List.

Scoping

This measure applies if the water supply system is being installed or modified or if water management software is added to the existing system.

Assessment

At design stage: check written specifications/contracts state this equipment must be sourced from the WTL. If the model and manufacturer have already been specified then carry out the handover stage assessment.

At handover stage: check the invoices and obtain the name of the equipment manufacturer and the model number; check the model is on the WTL.

At occupancy stage: if water management software has been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and the software has not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the potable water usage within the office by providing feedback to occupiers on water use. The measure is in scope if water supply systems are being modified as this presents an opportunity to install a water meter and the associated analytical software.

Guidance

Water meters and water management software can identify significant opportunities for water savings by monitoring water usage. This measure requires dedicated water use management software for analysing, reporting and communicating meaningful water management information to achieve water use savings.

The Inland Revenue uses a Water Technology List of systems that are eligible for 100% capital allowances. It includes a list of manufacturers of water efficient systems. Visit www.eca-water.gov.uk

Products must be on the Water Technology List as Defra regularly tests WTL listed-products to check they meet the thresholds required by the Enhanced Capital Allowances eligibility criteria. This provides more reliable evidence that the product meets the requirements, rather than just a manufacturer's declaration.

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Sanitary supply shut-off



Criteria

A control system to isolate the water supply when the washrooms are unoccupied is specified and installed. This usually comprises a solenoid valve and occupancy sensor. The device must be on the Water Technology List (WTL).

Scoping

This measure applies if the water supply system is being installed or modified or if a sanitary supply shut-off system is connected to the existing system.

Assessment

At design stage: check written specifications/contracts state this equipment must be sourced from the WTL. If the model and manufacturer have already been specified then carry out the handover stage assessment.

At handover stage: check invoices and obtain the name of the equipment manufacturer and the model number; check the model is listed on the WTL.

At occupancy stage: if the sanitary supply shut-off system has been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and the system has not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce the water loss if minor leaks occur in toilet areas. These minor leaks can result in large water losses but are not always immediately detected.

Control devices can be used to shut off flow at predetermined times or in particular situations, for example when water devices are not in use. They may be timed, condition-sensitive or programmed, or manually controlled at a central unit.

Guidance

The Inland Revenue uses a Water Technology List of systems that are eligible for 100% capital allowances. It includes a list of manufacturers of water efficient systems. Sanitary supply shut-off systems can be found under 'flow controllers>control devices'. Visit www.eca-water.gov.uk

Products must be on the Water Technology List as Defra regularly tests WTL listed-products to check they meet the thresholds required by the Enhanced Capital Allowances eligibility criteria. This provides more reliable evidence that the products meet the requirements, rather than just a manufacturer's declaration.

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Leakage detection devices



Criteria

A system that has the ability to warn of water leaks is installed and is on the Water Technology List (WTL).

Scoping

This measure applies if the water supply system is being installed or modified or if a detection system is being connected to the existing system.

Assessment

At design stage: check written specifications/contracts state this equipment must be sourced from the WTL. If the model and manufacturer have already been specified then carry out the handover stage assessment.

At handover stage: check the invoices and obtain the name of the equipment manufacturer and the model number; check the model is on the WTL.

At occupancy stage: if the detection system has been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and the detection system has not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce water usage within the office by providing feedback to management on potential leaks in the water system. In turn, this will reduce the long-term leaks and subsequent damage to the structure. The measure is in scope if water supply systems are being modified as this presents an opportunity to install a leakage detection system.

Guidance

A leakage detection system is required to cover all mains water for the area of the fit-out.

The Inland Revenue uses a Water Technology List of systems that are eligible for 100% capital allowances. It includes a list of manufacturers of water efficient systems. Visit www.eca-water.gov.uk

Products must be on the Water Technology List as Defra regularly tests WTL listed-products to check they meet the thresholds required by the Enhanced Capital Allowances eligibility criteria. This provides more reliable evidence that the product meets the requirements, rather than just a manufacturer's declaration.

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Leakage pressure reducing valve controller



Criteria

A device to analyse, record and control water pressure via the pressure reducing valve is installed and is on the Water Technology List (WTL).

Scoping

This measure applies if the water supply system is being installed or modified or if a controller is being connected to the existing system.

Assessment

At design stage: check written specifications/contracts state this equipment must be sourced from the WTL. If the model and manufacturer have already been specified then carry out the handover stage assessment.

At handover stage: check invoices and obtain the name of the equipment manufacturer and the model number; check the model is on the WTL.

At occupancy stage: if the controller has been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and the controller has not been changed or added, this measure will be achieved by default.

Rationale

The aim is to reduce water lost through leakage. Pressure reduction is a very effective means of achieving this, particularly at night when demand on the distribution system is lower, which causes water pressure to rise. The measure is in scope if water supply systems are being modified as this presents an opportunity to install a leakage pressure reducing valve controller.

Guidance

The Inland Revenue uses a Water Technology List of systems that are eligible for 100% capital allowances. It includes a list of manufacturers of water efficient systems. Leakage pressure reducing valve controllers can be found under 'leakage detection equipment>pressure reducing valve controllers'.
Visit www.eca-water.gov.uk

Products must be on the Water Technology List as Defra regularly tests WTL listed-products to check they meet the thresholds required by the Enhanced Capital Allowances eligibility criteria. This provides more reliable evidence that the product meets the requirements, rather than just a manufacturer's declaration.

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Reduce fit-out water use



Criteria

All water use on site is metered, records are kept and the site manager regularly reviews consumption figures.

Scoping

This measure applies to all fit-outs.

Assessment

At design stage: obtain commitment from the design team that the fit-out contractor will meter and keep records of water use.

At handover stage: review the records of water use.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

The aim is to encourage the reduction of water use during the construction process by monitoring water consumption. Active monitoring helps raise awareness of water use among construction staff and therefore encourages them to make reductions.

Collection of this data will enable the contractor to set targets for water reduction in future fit-out projects.

Guidance

For a general overview of why water management on site is required refer to the document [Achieving sustainability on construction procurement](#).

The construction industry key performance indicators are published each year by Constructing Excellence using performance data collected from across the UK construction sector by the Department for Business Enterprise and Regulatory Reform (formerly DTI). These include benchmarks for water use. Refer to www.constructingexcellence.org.uk for more information.

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Thermal comfort assessment



Criteria

Thermal comfort modelling to CIBSE AM11 has been carried out at the design stage; the results of this modelling are used to select a service strategy to CIBSE Guide A. (See guidance below.)

Scoping

This measure applies if HVAC systems are being installed or replaced.

Assessment

At design stage: review a modelling report to check occupant comfort has been considered in the selection of the most appropriate service strategy.

At handover stage: check the applied service strategy follows the modelling report and occupant comfort has been considered.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

Thermal comfort is an important criterion for occupant wellbeing. The use of thermal modelling at the design stage of the fit-out should aim to select the HVAC strategies that provide optimal comfort and minimise overheating risks.

Guidance

Building energy and environmental modelling, Applications Model AM11, [CIBSE](#), 1998.

Environmental design (7th edition), Guide A, [CIBSE](#), 2006.

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Noise level standards



Criteria

Criteria recommended by the British Standards Institute are met. Indoor ambient noise level in unoccupied offices must fall within the following ranges:

- 35–40dB LAeq,T in meeting rooms;
- 40–50dB LAeq,T in cellular offices; and
- 45–50dB LAeq,T in open plan offices.

Scoping

This measure applies if a fresh air handling unit (AHU) is being installed or replaced.

Assessment

At design stage: obtain a report from a qualified acoustician and check against the criteria.

At handover stage: check sound measurements taken by a qualified acoustician.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

Noise is defined as unwanted or harmful sound. Noise is part of everyday life, but loud noise can permanently damage hearing. Noise can also cause distraction from tasks, making people more inefficient or inattentive.

Central AHUs are a major source of internal noise; internal noise levels need to be considered during the design stage of the fit-out to ensure that appropriate measures are taken.

Guidance

Sound insulation and noise reduction for buildings. Code of practice, BS 8233:1999, BSI, 1999.

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Lighting design



Criteria

Lighting levels (measured in lux) are designed to meet those in CIBSE *Lighting Guide 7: Office Lighting* (see guidance below).

Scoping

This measure applies if general office lighting is being installed, replaced or modified.

The criteria does not apply to circulation and/or service space.

Assessment

At design stage: review specification documents/clauses to confirm that lighting levels are designed to meet those set out in CIBSE *Lighting Guide 7*.

At handover stage: carry out a site visit, review as-built drawings or check invoices to ensure the specified lighting has been installed in the correct place.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

The visual comfort of office workers is affected by the levels of illumination on the working surfaces. Different lux levels are required for different office areas, such as occupied workspaces and corridors. Task-based lighting should ensure maximum visual comfort, while avoiding over-illumination of spaces where high lighting levels are not required.

Guidance

Code for Lighting, Part 3 – Lighting Design, [CIBSE](#), 2009.

Lighting Guide 7: Office Lighting, [CIBSE](#), 2005.

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Daylight glare control



Criteria

All the following criteria must be met:

- Occupant-controlled window coverings (typically blinds or screens) are fitted to the external windows and atria that receive sunlight directly or indirectly.
- Coverings are designed to provide optimum glare control and allow the best possible retention of views out with the coverings drawn closed.
- Fabric screens, where specified, have a visual light transmittance (VLT) of less than 10%.

Scoping

This measure applies if window coverings are specified or installed.

Assessment

At design stage: check specifications and manufacturer's literature and policies.

At handover stage: check materials' receipts for compliance with specification or carry out a site visit.

At occupancy stage: if window coverings have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and the window coverings have not been changed or added, this measure will be achieved by default.

Rationale

Glare control is important for occupants comfort, particularly in relation to users' workstations. The *Health and Safety (Display Screen Equipment) Regulations 1992 (Amended 2002)* Schedule to Regulation 3 requires that: 'Windows shall be fitted with a suitable system of adjustable covering to attenuate the daylight that falls on the workstation' (Crown copyright material is reproduced with the permission of the Controller of HMSO and the Queen's Printer for Scotland). This requirement is commonly met by provision of internally fitted, externally fitted or encapsulated blinds to external windows and atria windows.

Guidance

The manufacture of window coverings and their materials should not contribute to resource depletion or persist in the environment if disposed of (e.g. to landfill). This aspect is covered by good practice measures relating to material selection; however, for blinds, and particularly fabric blinds, the material selection for reasons of wellbeing and its physical and environmental performance are closely

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linked and should be considered together in any process of specification. For example fabric blinds should meet the Eco-tex 100 Standard.

Although the VLT rate is provided by most suppliers of blinds the following guidance can assist in the calculation of glare reduction:

Glare reduction is the percentage reduction in visible light transmission through glazing, from glass without covering to that with covering. It can be calculated from the following formula:

$$GR = \left(\frac{VLT1 - VLT2}{VLT1} \right) \times 100$$

Where:

- VLT1 is the visible light transmission of the window without treatment; and
- VLT2 is visible light transmission of window after treatment.

Visible light transmission and glare reduction are related and to reduce glare the amount of visible light transmitted must be reduced.

Further guidance and information on the selections can be found at this Australian-based website ecospecifier.org

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Occupant HVAC control



Criteria

Local occupant controls are installed to enable occupants to adjust the temperature of different areas within the office.

Scoping

This measure applies only to those services (heating, ventilation and/or air conditioning) that have been installed as part of the fit-out. If no changes have been made to existing services then this measure should not form part of the assessment.

Assessment

At design stage: check drawings show the location of the occupant controls and define appropriate thermal zones.

At handover stage: carry out a site visit to confirm the location of the occupant controls.

At occupancy stage: if controls have been changed or added then carry out the handover stage assessment. If this measure was achieved at handover stage and controls have not been changed or added, this measure will be achieved by default.

Rationale

The ability to control local temperature is important for an occupant's sense of wellbeing.

Guidance

Faber and Kell's Heating and Air Conditioning of Buildings (10th edition), Elsevier.

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Ventilation rates



Criteria

Ventilation rate is at least 12 litres per second per person in the office spaces.

Scoping

This measure applies to mechanically ventilated office spaces if the ventilation strategy is being changed, e.g. if the AHU is being replaced or new equipment is being installed.

This measure applies to naturally ventilated offices if the windows are being changed.

Assessment

At design stage: check specifications state the design ventilation rate.

At handover stage: review testing and commissioning report to confirm ventilation rates.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

Maintaining adequate fresh air within the office space is important to the health of the occupants as stale air can cause a variety of symptoms such as headaches.

Guidance

BCO Guide to Specification, [British Council for Offices](#), 2009

Heating, ventilating, air conditioning and refrigeration, Guide B, [CIBSE](#), 2005.

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Clean existing air supply ductwork



Criteria

The existing air supply ductwork is cleaned as part of the fit-out works.

Scoping

This measure applies if there is an existing HVAC system that is not being replaced.

If the fit-out encompasses only a few floors in a building with a central HVAC system for the whole of the building, then this measure should not be assessed. This is because the benefits from duct cleaning are only achieved if the whole system is cleaned; if the whole system is not cleaned, the non-cleaned elements will re-contaminate the cleaned elements as the air flows through the system.

Assessment

At design stage: check specification or obtain confirmation that a specialist ductwork cleaning firm will be employed.

At handover stage: check invoices to confirm that the ductwork was cleaned.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

All offices with mechanical ventilation should be supplied with uncontaminated air. If not properly maintained, ductwork can suffer from particulate (dust) contamination and microbial contamination. These pollutants contaminate the air passing through the ductwork and can cause allergic reactions in office workers.

Guidance

Hygienic maintenance of office ventilation ductwork, TM26, [CIBSE](#), 2000.

Internal cleanliness of ventilation systems, Guide to good practice, [Heating and Ventilating Contractors' Association](#), 2002.

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Printer-copier equipment area ventilation



Criteria

Dedicated local extract vents for printing and photocopying rooms or areas are provided.

Scoping

This measure applies if the installation of office equipment is part of the fit-out contract or if separate rooms are defined as part of the fit-out.

Assessment

At design stage: check the drawings show the locations of printer areas and the dedicated local extract vents.

At handover stage: carry out a site visit to confirm the locations of printer areas and dedicated local extract vents.

At occupancy stage: if the location of the printer areas or the local extract vents has changed then carry out the handover stage assessment. If this measure was achieved at handover stage and the location has not changed, this measure will be achieved by default.

Rationale

Printers and photocopiers give off a number of toxic gases, the main one being ozone. Ozone is unstable and usually decomposes rapidly. However, if the area around a printer is not well ventilated then concentrations of ozone can build up, causing a number of symptoms such as irritation to the eyes and upper respiratory tract.

The provision of a separate extract vent in areas designated for printers and photocopiers can ensure that the build up of ozone does not occur.

Guidance

Workers Health Centre [fact sheet on photocopiers](#).

[Ozone: Health hazards and precautionary measures](#), Guidance note EH38, HSE, 1983.

[Photocopiers and printers in the office](#), a bulletin produced by the Transport and Salaried Staffs Associate Trade Union.

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Fine air filters



Criteria

Mechanical ventilation units are fitted with secondary filters; the filter class is between F6 and F9, with an efficiency of 70–98%.

Scoping

This measure applies to all mechanically ventilated buildings.

Assessment

At design stage: check specification documents/clauses state the fine filters will be installed.

At handover stage: check invoices to confirm the filters were installed.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

Installation of higher grade filters will prevent particulate matter from entering the building.

Guidance

Air filters, Application Guide 8/97, BSRIA, 1997.

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DHW design



Criteria

Domestic hot water (DHW) system is designed in accordance with either of the following guidance:

- HSE Approved Code of Practice and Guidance L8; or
- CIBSE TM13.

(See guidance below.)

Scoping

This measure applies to all newly installed or modified domestic hot water systems.

Assessment

At design stage: obtain specification documents/clauses confirming that codes of practice are being met or exceeded.

At handover stage: check the design has not been altered from design stage specifications and reconfirm that codes of practice are being met or exceeded.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

Legionella bacteria do not multiply below 20°C and will not survive above 60°C. Best practice includes keeping equipment clean and avoiding water stagnation.

Guidance

Legionnaires' disease – the control of legionella bacteria in water systems, Approved Code of Practice and Guidance L8, HSE, 2000.

Minimising the risk of Legionnaire's disease, TM13, [CIBSE](#), 2002.

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Outside views



Criteria

All workstations intended for non-transient workers are within seven metres of external windows and benefit from an outside view; the view must be visible within 65 degrees rotation from the normal working position at those workstations.

For the purpose of these criteria:

- transient workers include visitors and those using touchdown workstations;
- 'hot-desking' or shared desks are considered to be part of the non-transient workstation provision; and
- outside views are views to external and atrium spaces that benefit from full daylight.

Scoping

This measure applies if workstations are being installed.

Assessment

At design stage: check plans to ensure internal layouts are in accordance with the criteria.

At handover stage: carry out a site visit to confirm internal layouts are in accordance with the criteria.

At occupancy stage: if internal layouts have changed then carry out the handover stage assessment. If this measure was achieved at handover stage and internal layouts have not changed, this measure will be achieved by default.

Rationale

The aim is to ensure good quality workspace and wellbeing for occupants. Key to this are two factors: reduction of eye strain by ensuring access to long distance views, and the psychological benefit experienced from views to naturally lit spaces.

Guidance

BCO Guide to Specification, [British Council for Offices](#), 2009

Littlefield, D., *Metric Handbook: Planning and Design Data* (3rd edition), Architectural Press, 2007.

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CO₂ monitoring



Criteria

CO₂ sensors are installed to control the mechanical ventilation to ensure that ventilation is increased when CO₂ concentrations rise above 0.25% CO₂ (as shown in CIBSE Guide B – see guidance below).

Scoping

This measure applies to mechanically ventilated office spaces if the ventilation strategy is being changed, e.g. if the AHU is being replaced or new equipment is being installed. If existing ductwork is being relocated or an existing AHU is being relocated then this is not considered to be a change in ventilation strategy so this measure would not be in scope.

Assessment

At design stage: review specifications and contracts.

At handover stage: check the specified equipment was installed by reviewing as-built drawings or checking invoices.

At occupancy stage: this measure is not assessed. The measure is achieved by default if it was achieved at handover stage.

Rationale

Air change rates impact the level of CO₂ and have a direct relationship with indoor air quality and airborne transmission of respiratory infections. Control of airflow rates can be achieved through CO₂ sensors to establish a minimum rate.

Guidance

Heating, ventilating, air conditioning and refrigeration, Guide B, [CIBSE](#), 2005.

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