

SKArating[®]

**Good Practice Measures
for Higher Education
V1.0**



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SKA rating 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 any comments to support@SKArating.org

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Contents

The good practice measures for higher education are arranged by issue alphabetically and within each issue by SKA rank from highest to lowest.

An alternative contents list follows that presents the good practice measures for higher education in order of overall SKA rank from highest to lowest.

SKA rank	SKA ID	Good practice measure	Page
Ecology			
1	D80	Biodiversity	10
Energy and CO₂			
1	P10	Reduce lighting energy in use	12
2	P11	Reduce small power energy in use	13
3	D01	Energy efficient lighting	15
4	E04	Energy efficient light fittings	17
5	D02	Lighting controllability	18
6	E02	Energy efficient white LEDs	20
7	E01	Lighting controls	21
8	E28	Secondary window treatments	23
9	E05	Energy efficient heat pumps	25
10	E06	HVAC zone controls	26
11	D05	Energy efficient DHW	27
12	E11	Sources of primary energy	29
13	E22	IT comms room energy consumption	31
14	D51	Energy efficient specialist ventilation	33
15	E30	Fume cupboard selection and operation	35
16	D52	Energy efficient entrances	38
17	E26	Energy efficient commercial service cabinets	39
18	E29	Passive design approach	41
19	E24	Energy efficient hand-dryers	44
20	D54	Energy efficient lifts	45
21	E09	End-use sub-metering	48
22	E25	Sub-metering for specialist areas	50
23	D04	Improvement in daylighting	52
24	E08	Thermal sub-metering	53
25	D03	Energy efficient HVAC	55
26	D66	Energy modelling	57
27	P01	Reduce fit-out energy use	59
Materials			
1	M05	Hardwoods	60
2	M12	Soft flooring	62
3	M08	Partitions	64
4	M20	Chairs: task seating	66
5	M29	Chairs: soft seating	69

Contents

6	M09	Glazed partitions	72
7	M10	Ceilings	74
8	M19	Workstations and tables	76
9	M21	Storage units	79
10	D81	Responsible sourcing	82
11	M16	Wall covering	84
12	M11	Hard flooring	86
13	M27	Countertops	89
14	M06	Joinery	91
15	M07	Raised flooring systems	94
16	M04	Insulation	96
17	M23	Window treatments	99
18	M14	Paints and coatings	102
19	M15	Polishes and varnishes	104
20	M17	Doors	105
21	M18	Kitchen fittings	107
22	M13	Hard wall covering	109
23	M03	Screed	112
24	M22	Other loose ancillary furniture items	114
25	M28	WC cubicles and Integrated Plumbing Systems (IPS)	117
26	M24	Paper and towel dispensers	119
27	M25	Shopfitting display and exhibition equipment	121
28	M26	Internal signage	123
29	M02	Bricks	125
30	D21	Total recycled materials	128
31	D20	Timber	130
32	D19	Materials specification	132
33	D83	Total materials with EPD	133

Pollution

1	D22	Low-GWP insulation	135
2	D23	Low-impact refrigerants	138
3	D25	Limiting plant noise	140
4	D57	Refrigerant leak prevention	142
5	D24	Refrigerant leak detection	143
6	P17	Air quality impact assessment	145
7	D27	Refrigerant recovery	146

Project delivery

1	D71	Soft landings: aftercare (fine tuning, seasonal commissioning and POE)	148
2	D69	Soft landings: design workshops	151

Contents

3	D45	Building user guide	154
4	D70	Soft landings: commissioning, handover and training	156
5	P13	Furniture storage logistics	158
6	D82	Good laboratory design	160
7	P14	Social value actions	163
8	P16	Consumables inventory	165
9	P15	Furniture inventory	167
10	D44	CCS registration	168

Transport

1	D41	Cycle parking	169
2	D43	Cyclist lockers	170
3	D42	Shower facilities	171
4	D78	Travel plan	172
5	D79	Campus and/or building wide travel plan	174
6	D59	Construction phase CO ₂ emissions	176

Waste

1	D72	Pre-refurbishment audit	178
2	D60	Designing out waste	180
3	D12	Reduce gypsum waste	182
4	D09	Resource management plan (RMP)	183
5	D14	Reduce floor finishes waste	185
6	D75	Reduce specialist workbench waste	187
7	D16	Reduce chairs waste	188
8	D15	Reduce workstations and tables waste	190
9	D17	Reduce storage unit waste	192
10	D48	Reduce door waste	194
11	D13	Reduce ceiling systems waste	196
12	D61	Reduce shopfitting display equipment waste	198
13	D08	Recyclable waste storage space	200
14	P05	Reduce total waste in use	203
15	P06	Increase recycling of waste in use	206
16	D73	Reduce packaging waste	207
17	D74	Reduce raised access floor waste	208
18	D18	Reduce other loose furniture waste	209
19	D68	Reduce mechanical and electrical services waste	211

Water

1	P08	Reduce water in use	213
2	E14	Efficient taps	215
3	E23	Existing lower flush WCs	217
4	E12	New low flush WCs	219

Contents

5	E16	Showers	220
6	E19	Sanitary supply shut-off	222
7	E20	Leakage detection devices	224
8	E17	Water meter	226
9	E27	Water sub-meters	228
10	P07	Reduce fit-out water use	230
11	E18	Water management software	231

Wellbeing

1	D28	Thermal comfort assessment	233
2	D30	Lighting design	235
3	D29	Acoustic design	237
4	D33	Ventilation rates	239
5	D39	Outside views	241
6	D62	Breakout space	242
7	D76	Personal storage	244
8	D77	Biophillic design	246
9	D31	Daylight glare control	248
10	D32	Occupant HVAC control	251
11	D40	CO ₂ monitors	252
12	D36	Cleaning of existing air supply ductwork	254
13	D35	Specialist and printer-copier equipment area ventilation	256
14	D37	Fine air filters	257
15	D63	Low VOC finishes	258
16	D64	VOC monitors	260
17	P12	Fit-out VOC monitoring	262

Alternative contents list

The good practice measures for higher education are ordered by SKA rank from highest to lowest.

SKA rank	Issue	SKA ID	Good practice measure	Page
1	Energy & CO ₂	P10	Reduce lighting energy in use	12
2	Water	P08	Reduce water in use	213
3	Energy & CO ₂	P11	Reduce small power energy in use	13
4	Project delivery	D71	Soft landings: aftercare (fine tuning, seasonal commissioning and POE)	148
5	Energy & CO ₂	D01	Energy efficient lighting	15
6	Energy & CO ₂	E04	Energy efficient light fittings	17
7	Wellbeing	D28	Thermal comfort assessment	233
8	Energy & CO ₂	D02	Lighting controllability	18
9	Water	E14	Efficient taps	215
10	Wellbeing	D30	Lighting design	235
11	Wellbeing	D29	Acoustic design	237
12	Wellbeing	D33	Ventilation rates	239
13	Waste	D72	Pre-refurbishment audit	178
14	Materials	M05	Hardwoods	60
15	Materials	M12	Soft flooring	62
16	Pollution	D22	Low-GWP insulation	135
17	Waste	D60	Designing out waste	180
18	Waste	D12	Reduce gypsum waste	182
19	Pollution	D23	Low-impact refrigerants	138
20	Project delivery	D69	Soft landings: design workshops	151
21	Waste	D09	Resource management plan (RMP)	183
22	Energy & CO ₂	E02	Energy efficient white LEDs	20
23	Energy & CO ₂	E01	Lighting controls	21
24	Water	E23	Existing lower flush WCs	217
25	Water	E12	New low flush WCs	219
26	Project delivery	D45	Building user guide	154
27	Project delivery	D70	Soft landings: commissioning, handover and training	156
28	Project delivery	P13	Furniture storage logistics	158
29	Wellbeing	D39	Outside views	241
30	Waste	D14	Reduce floor finishes waste	185
31	Waste	D75	Reduce specialist workbench waste	187

Alternative contents list

32	Energy & CO ₂	E28	Secondary window treatments	23
33	Energy & CO ₂	E05	Energy efficient heat pumps	25
34	Waste	D16	Reduce chairs waste	188
35	Materials	M08	Partitions	64
36	Materials	M20	Chairs: task seating	66
37	Materials	M29	Chairs: soft seating	69
38	Materials	M09	Glazed partitions	72
39	Energy & CO ₂	E06	HVAC zone controls	26
40	Waste	D15	Reduce workstations and tables waste	190
41	Waste	D17	Reduce storage unit waste	192
42	Waste	D48	Reduce door waste	194
43	Waste	D13	Reduce ceiling systems waste	196
44	Materials	M10	Ceilings	74
45	Energy & CO ₂	D05	Energy efficient DHW	27
46	Energy & CO ₂	E11	Sources of primary energy	29
47	Water	E16	Showers	220
48	Materials	M19	Workstations and tables	76
49	Materials	M21	Storage units	79
50	Wellbeing	D62	Breakout space	242
51	Waste	D08	Recyclable waste storage space	200
52	Pollution	D25	Limiting plant noise	140
53	Transport	D41	Cycle parking	169
54	Water	E19	Sanitary supply shut-off	222
55	Materials	D81	Responsible sourcing	209
56	Energy & CO ₂	E22	IT comms room energy consumption	31
57	Energy & CO ₂	D51	Energy efficient specialist ventilation	33
58	Energy & CO ₂	E30	Fume cupboard selection and operation	35
59	Waste	D61	Reduce shopfitting display equipment waste	198
60	Project delivery	D82	Good laboratory design	160
61	Materials	M16	Wall covering	84
62	Materials	M11	Hard flooring	86
63	Materials	M27	Countertops	89
64	Materials	M06	Joinery	91
65	Materials	M07	Raised flooring systems	94
66	Materials	M04	Insulation	96
67	Pollution	D57	Refrigerant leak prevention	142

Alternative contents list

68	Transport	D43	Cyclist lockers	170
69	Waste	P05	Reduce total waste in use	203
70	Waste	P06	Increase recycling of waste in use	206
71	Energy & CO ₂	D52	Energy efficient entrances	38
72	Energy & CO ₂	E26	Energy efficient commercial service cabinets	39
73	Energy & CO ₂	E29	Passive design approach	41
74	Wellbeing	D76	Personal storage	244
75	Pollution	D24	Refrigerant leak detection	143
76	Transport	D42	Shower facilities	171
77	Wellbeing	D77	Biophillic design	246
78	Wellbeing	D31	Daylight glare control	248
79	Materials	M23	Window treatments	99
80	Materials	M14	Paints and coatings	102
81	Wellbeing	D40	CO ₂ monitors	252
82	Wellbeing	D32	Occupant HVAC control	251
83	Pollution	P17	Air quality impact assessment	145
84	Energy & CO ₂	E24	Energy efficient hand-dryers	44
85	Materials	M15	Polishes and varnishes	104
86	Materials	M17	Doors	105
87	Materials	M18	Kitchen fittings	107
88	Materials	M13	Hard wall covering	109
89	Waste	D73	Reduce packaging waste	207
90	Waste	D74	Reduce raised access floor waste	208
91	Project delivery	P14	Social value actions	163
92	Water	E20	Leakage detection devices	224
93	Materials	M03	Screed	112
94	Materials	M22	Other loose ancillary furniture items	114
95	Materials	M28	WC cubicles and Integrated Plumbing Systems (IPS)	117
96	Transport	D78	Travel plan	172
97	Transport	D79	Campus and/or building wide travel plan	174
98	Wellbeing	D36	Cleaning of existing air supply ductwork	254
99	Wellbeing	D35	Specialist and printer-copier equipment area ventilation	256
100	Wellbeing	D37	Fine air filters	257
101	Waste	D18	Reduce other loose furniture waste	209
102	Waste	D68	Reduce mechanical and electrical services waste	211
103	Ecology	D80	Biodiversity	10

Alternative contents list

104	Energy & CO ₂	D54	Energy efficient lifts	45
105	Materials	M24	Paper and towel dispensers	119
106	Materials	M25	Shopfitting display and exhibition equipment	121
107	Wellbeing	D63	Low VOC finishes	258
108	Energy & CO ₂	E09	End-use sub-metering	48
109	Energy & CO ₂	E25	Sub-metering for specialist areas	50
110	Energy & CO ₂	D04	Improvement in daylighting	52
111	Energy & CO ₂	E08	Thermal sub-metering	53
112	Energy & CO ₂	D03	Energy efficient HVAC	55
113	Energy & CO ₂	D66	Energy modelling	57
114	Materials	M26	Internal signage	123
115	Materials	M02	Bricks	125
116	Project delivery	P16	Consumables inventory	165
117	Water	E17	Water meter	226
118	Water	E27	Water sub-meters	228
119	Water	E18	Water management software	231
120	Wellbeing	D64	VOC monitors	260
121	Project delivery	P15	Furniture inventory	167
122	Pollution	D27	Refrigerant recovery	146
123	Project delivery	D44	CCS registration	168
124	Transport	D59	Construction phase CO ₂ emissions	176
125	Materials	D21	Total recycled materials	128
126	Materials	D20	Timber	130
127	Materials	D19	Materials specification	132
128	Materials	D83	Total materials with EPD	133
129	Energy & CO ₂	P01	Reduce fit-out energy use	59
130	Wellbeing	P12	Fit-out VOC monitoring	262
131	Water	P07	Reduce fit-out water use	230

Biodiversity

Criteria

Either a new space for biodiversity is provided in line with the scale of the project or improvements are made to existing green spaces. These can be on any tenant external space including roof or entrance space, balconies, outside breakout areas or surrounding green areas. A minimum of 1 habitat feature and 1 biodiversity enhancement are included from the list below:

Intensive green roof	Habitat features	Please choose one or more of the habitat features to include in the fit-out.
Extensive brown roof		
Green wall/hedging		
Planters		
Mulched planting beds		
Wild pond	Biodiversity enhancements	Please choose one or more of the biodiversity enhancements to include in the fit-out.
Standing water		
Bird nest/box		
Bat roost/box		
Bug box		
Dead wood/log piles		
Brown landscape: bare rock/gravels/sub-soil		
Nest cameras linked to monitors in public rest areas		

Scoping

This measure applies if there is tenant core/external space (including existing green space).

Assessment

At design stage: a space for biodiversity has been put into the design plans, this can include balcony, roof or external area and the minimum criteria requested for each is included.

At handover stage: carry out a site visit to confirm the design specifications have been met and maintenance procedures have been considered, with no clear safety or access issues.

At occupancy stage: carry out a site visit to confirm the design specifications have been met and maintenance procedures have been adhered to and the area has not been changed negatively.

Fit-out benchmark & assessment tool

Ecology

Issue

D80

ID

103

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Biodiversity [continued]

Rationale

Life on earth is reliant on ecosystem services and biodiversity. It provides materials, pollination, and carbon storage and provides essentials such as food, water, minerals and materials for human consumption. Biodiversity has decreased by 50% in the past 40 years. It can be easy to separate the urban environment and essentially give this space up without consideration of biodiversity but we are living in a time where we need to make small steps everywhere to improve biodiversity.

One area of concern is around habitat fragmentation and how cities have isolated green spaces either side of them. Making small improvements to our buildings can act as stepping stones and corridors for this wildlife to join up and improve overall biodiversity in the surrounding green areas. Studies have shown the wellbeing benefits of having a green space/stimulating view/outside break out area, and as such promoting the use of a green space where possible will enhance biodiversity and in turn improve aesthetics for staff. A further advantage of adding in a biodiversity measure is to add biodiversity to the agenda of a refurbishment. It has the potential to feed into campus wide strategies, engagement and also to be rewarded for having a positive environmental impact in an area that may have otherwise been neglected.

Guidance

- Step 1: identify safety, maintenance and access constraints.
- Step 2: identify what habitat features and enhancements should be considered*.
- Step 3: align plans with higher education biodiversity action plan, if not applicable then reference the local council or city biodiversity action plans.
- Step 4: design green space in accordance with the above with a minimum of 1 habitat feature and 1 biodiversity enhancement introduced.

*A biodiversity checklist tool will be available on the SKA assessor's web page to assist.

In the instance that a protected species has been recorded on site, it is a legal requirement that a professional ecologist must be appointed to undertake a site survey.

WWF *Living Planet Report*, 2014.

52 Tips for Biodiversity, EC.

Biodiversity scenarios: projections of 21st century change in biodiversity and associated ecosystem services, SCBD CBD Technical Series No. 50.

Psychological health and mental well-being, Forest Research.

On Green Roofs and Brown Roofs, Living roofs.

Designing for Biodiversity: A technical guide for new and existing buildings, RIBA Publications.

Fit-out benchmark
& assessment tool

Ecology

Issue

D80

ID

103

Rank

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Education

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Reduce lighting energy in use

Criteria

For this GPM the Lighting Energy Numeric Indicator (LENI) calculation shall be calculated based on metered lighting consumption data as per the requirements of BS EN 15193:2007 – *Energy Performance of Buildings*. Calculations are to be based on 1 year of metered data.

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 enable lighting energy use to be measured (see guidance).

If sub-metering does not allow for lighting energy metering the measure will be in scope but will not be able to be achieved.

Assessment

This measure can only be assessed after a minimum of one year's occupation as the energy usage 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: check the provided 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 interior space (in m²).

The calculation is as follows:

$$\text{Lighting electricity in use (kWh/m}^2\text{)} = \frac{\text{Annual electricity usage related to lighting (kWh)}}{\text{Floor area (m}^2\text{)}}$$

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, the impact of these measures should be reflected in reduced annual energy consumption.

Guidance

BS EN 15193:2007 – *Energy Performance of Buildings*. British Standards, 2007.

Part L of the Building Regulations - *Non-Domestic Building Services Compliance Guide*. HM Government, 2013.

The SLL Code for Lighting. London: CIBSE, 2012.

Fit-out benchmark
& assessment tool

Energy & CO₂

Issue

P10

ID

1

Rank

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Page 1 of 1

Reduce small power energy in use

Criteria

Annual small power energy use is less than or equal to the tailored benchmark for the relevant type of space. Guideline tables in Section 20.2 and 20.3 of CIBSE Guide F 2012, shall be used as a minimum to assess specific areas of a higher education building.

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 electricity usage has to be measured over a full calendar year (365 days). This is to take account of seasonal variations, such as amount of daylight, and occupant behaviour, such as holidays.

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 interior space (in m²).

The calculation is as follows:

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

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 for the first year of occupation. However, the assessment period can start at any time within the first year of occupation (therefore finishing within the first 2 years of occupation).

Fit-out benchmark
& assessment tool

Energy & CO₂

Issue

P11

ID

3

Rank

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Reduce small power energy in use (continued)

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 to measure the benefit of them. As the assessment can be completed at any time during the first 2 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 because of 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 Benchmarks*, TM46, CIBSE, 2008.
- *Energy efficiency in buildings*, Guide F, CIBSE, 2012.

BS EN 15193:2007 – *Energy Performance of Buildings*. British Standards, 2007.

Guide F: Energy Efficiency in Buildings. London: CIBSE, 2012.

Part L of the Building Regulations – *Non-Domestic Building Services Compliance Guide*. HM Government, 2013.

The SLL Code for Lighting. London: CIBSE, 2012.

Fit-out benchmark & assessment tool

Energy & CO₂

Issue

P11

ID

3

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Energy efficient lighting

Criteria

Constantly occupied areas, such as lecturer theatres, classrooms and/or office spaces with a general illuminance of 300 to 500 lux, shall achieve a general lighting load of less than 7 W/m². Office spaces or other areas where also applicable, can achieve the load as a combination of ambient and task lighting sources, if suitable to the nature of the work.

Front and back-of-house circulation areas with a general illuminance of 100 lux shall achieve a general lighting load of less than 4 W/m².

And

Provide the LENI calculation for the entire installation in accordance with BS EN 15193:2007 – *Energy Performance of Buildings*.

The calculation is as follows:

$$\text{Lighting electricity in use (kWh/m}^2\text{)} = \frac{\text{Annual electricity usage related to lighting (kWh)}}{\text{Floor area (m}^2\text{)}}$$

The lighting installation in laboratories shall follow the controllability requirements of *S-Lab Environmental Good Practice for Laboratories Guide*, which states the following:

- Maximise the use of natural light.
- Switch off lights that are not needed through presence detection systems.
- Replace existing light fixtures with more energy efficient lighting.
- The ambient lighting load to not exceed 7W/m² or as a combination of ambient and task lighting sources, should that be suitable to the nature of the work. If not, task lighting to increase the lux levels on work surfaces to suit specific tasks undertaken in the laboratories.

Scoping

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

The criteria apply to constantly occupied areas, being lecturer theatres, classrooms and/or office spaces (either open plan or cellular), large entrance reception areas and exhibition halls with a general illuminance of 300 to 500 lux.

Laboratory criteria apply to such specialist areas only, any office or administrative areas associated with these should use the criteria relevant to such areas.

Other areas within higher education environments, such as toilet blocks, lift lobbies, stairs, tea points and kitchen preparation areas are excluded.

Fit-out benchmark & assessment tool

Energy & CO₂

Issue

D01

ID

5

Rank

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Energy efficient lighting (continued)

Assessment

At design stage: check specifications and drawings meet the required criteria.

At handover stage: check as-built drawings, and/or carry out a site visit for visual confirmation of installation and location.

At occupancy stage: if the general lighting layout has been changed, 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

An energy efficient lighting design depends on the type of lamp used, the type of luminaire installed and the control regime of the installation, as covered in more detailed by the Part L of the Building Regulations.

There is a wide range of lamps with different performances for different applications. The efficacy of a lamp gives an indication of the lamp's efficiency, with a high efficacy indicating a higher light output for a given energy consumption.

To optimise, lighting efficiency luminaires with high Light Output Ratios (LOR) should be used. LOR is a measure of a luminaire's efficiency and should be used to compare the performance of fittings.

Part L of the Building Regulations - Non-Domestic Building Services Compliance Guide, HM Government, 2013.

Guide F: Energy Efficiency in Buildings, London: CIBSE, 2012.

The SLL Code for Lighting, London: CIBSE, 2012.

BCO Guide to Specification, British Council for Offices, 2009.

Lighting Guide 07: Offices 2015, CIBSE, 2015.

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

Lighting technology overview, CTV021, Carbon Trust, 2007.

S-Lab Environmental Good Practice Guide for Laboratories, Version 1.0 October 2011, S-Lab (Safe, Successful and Sustainable Laboratories) initiative of HEEPI (Higher Education for Environmental Performance Improvement).

Laboratories for the 21st Century: Best Practice Guide, Efficient Electric Lighting in Laboratories, US Environmental Protection Agency, August 2006.

Fit-out benchmark & assessment tool

Energy & CO₂

Issue

D01

ID

5

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Page 2 of 2

Energy efficient light fittings

Criteria

All internal and external light fittings (luminaires) meet or exceed the Energy Technology List (ETL) criteria for high efficiency lighting units.

Scoping

This measure applies if new internal or external lighting units are being installed. This includes all general lighting, feature, task and emergency signage lighting but excludes any fittings being installed for specific learning or testing methodologies, such as plant growth lamps, UV curing lamps, etc.

Assessment

At design stage: check that written specifications/contracts state this equipment must comply with the ETL criteria. If the model and manufacturer have already been specified, 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, 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

To assess whether luminaires meet the good practice measure, download the criteria documents for 'high efficiency lighting units'. The luminaires being installed must meet the criteria relating to this document.

It is recommended that this is checked and documented by the electrical design engineer or electrical contractor installing the fittings.

Lighting technology overview, CTV021, Carbon Trust, 2007.

Market Transformation Programme on energy efficient products, Defra.

The Energy Related Products Directive on labelling of energy efficient products, NMO.

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E04

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6

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Lighting controllability

Criteria

The following scoping shall be provided as a minimum:

- Keep the 60lm/circuit-watt criteria stipulated by Part L, even with lighting controls in place.
- For teaching spaces, laboratories and workshops (where safe and appropriate to do so) provide a minimum of 2 lighting scenes, controllable by the main entrance door, and teacher's position (or remote control switching) where appropriate, together with manual override of automatic controls.
- Provide local task lighting to laboratories, workshops and work-desks in libraries and ICT spaces where appropriate.
- Reduce lighting levels to a maximum of 50% of its normal output in corridors and reception areas when these are not occupied.
- Automatically alter lighting levels in accordance with natural daylight levels for all window areas including window/exhibition displays, auditoria and laboratories.
- Time controls to turn off lighting out-of-hours, where appropriate.

Scoping

This measure addresses the following areas within a higher education building, including but not limited to:

- Reception spaces, break-out, eating and front-of-house circulation.
- Teaching spaces, workshops, laboratories and lecture theatres.
- Back-of-house circulation.
- Staff area, including offices and administration spaces.

Assessment

At design stage: check specifications and drawings meet the criteria.

At handover stage: check as-built drawings, and/or carry out a site visit for visual confirmation of installation and location.

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

Rationale

Good practice dictates that 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 when spaces are unoccupied.

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Lighting controllability (continued)

Guidance

Part L of the Building Regulations - Non-Domestic Building Services Compliance Guide, HM Government, 2013.

Guide F: Energy Efficiency in Buildings, London: CIBSE, 2012.

The SLL Code for Lighting, London: CIBSE, 2012.

BCO Guide to Specification, British Council for Offices, 2009.

Lighting Guide 07: Offices 2015, CIBSE, 2015.

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

Lighting technology overview, CTV021, Carbon Trust, 2007.

S-Lab Environmental Good Practice Guide for Laboratories, Version 1.0 October 2011, S-Lab (Safe, Successful and Sustainable Laboratories) initiative of HEEPI (Higher Education for Environmental Performance Improvement).

Laboratories for the 21st Century: Best Practice Guide, Efficient Electric Lighting in Laboratories, US Environmental Protection Agency, August 2006.

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D02

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Energy efficient white LEDs

Criteria

All internal and external lamps meet or exceed the Energy Technology List (ETL) criteria for energy efficient white LEDs.

Scoping

This measure applies if new internal or external lamps are being installed. This includes all signage lighting and excludes any lamp being installed for specific learning or testing methodologies, such as plant growth lamps, UV curing lamps, etc.

There may be occasional instances where existing light fittings cannot take energy efficient lamps. This measure remains in scope even though it cannot be achieved. This is because the aim of the assessment is to encourage more sustainable behaviour and 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, 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, 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

To assess whether LEDs meet the good practice measure, download the criteria documents for [Energy efficient white LEDs](#). The lamps being installed must meet the criteria relating to this document.

It is recommended that this is checked and documented by the electrical design engineer or electrical contractor installing the fittings.

Lighting technology overview, CTV021, Carbon Trust, 2007.

Market Transformation Programme on energy efficient products, Defra.

The Energy Related Products Directive on labelling of energy efficient products, NMO.

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E02

ID

22

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Lighting controls

Criteria

Lighting controls meet or exceed the Energy Technology List criteria (ETL criteria).

Scoping

This measure applies if new lighting controls are being installed.

Assessment

At design stage: check that written specifications/contracts state this equipment must comply with the ETL criteria. If the model and manufacturer have already been specified, 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, 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 and people turn on all the lights in a 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 ETL. The criteria can be found by searching the ETL catalogue. It is recommended that this is checked and documented by the electrical design engineer or electrical contractor installing the fittings.

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

[Market Transformation Programme on energy efficient products](#), Defra. [The Energy Related Products Directive on labelling of energy efficient products](#), NMO.

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E01

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23

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Lighting controls (continued)

Part L of the Building Regulations - *Non-Domestic Building Services Compliance Guide*, HM Government, 2013

SLL Code for Lighting, London: CIBSE, 2012.

SLL Lighting Guide 4: Sports, London: CIBSE, 2006.

SLL Lighting Guide 5: Lighting for Education, London: CIBSE, 2011.

Lighting Guide 07: Offices 2015, CIBSE, 2015.

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E01

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23

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Secondary window treatments

Criteria

A review of the thermal performance of existing windows and frames is undertaken that takes into account heat losses (U-values) and heat gains (G-values), and a strategy to retrofit windows to improve their performance is developed. The strategy should also take into account any cosmetic requirements of the building (i.e. historic, listed buildings and buildings within conservation areas) as well as occupant comfort, air infiltration, ventilation and condensation issues.

The strategy should select from the following most appropriate and efficient solutions:

- installing reflective or metallized films that absorb as well as reflect solar energy, or nano/ceramic films which use high-tech compounds to provide high performance, on elevations that experience high solar gains; OR
- install heat reflective or insulating shades or blinds. Insulating blinds will benefit all elevations, therefore should be installed on all windows.

And

- In addition to the above, recaulk frames and install appropriate weather stripping to minimise heat gains and losses from air infiltration.

Or

- Install secondary glazing system. Secondary glazing systems must also provide adequate ventilation and condensation controls.

Scoping

This measure is in scope for buildings where glazing is deemed to be poorly performing, and where consent has been given by the building manager/owner/landlord to recaulk or to alter frames.

This measure is automatically in scope for all historic, listed and conservation area buildings where consent by the conservation officer is given.

This GPM can apply to both windows and display glazing.

Scoping is assessor and project decision based on knowledge of the existing installations.

Assessment

At design stage: review design briefs, plans and specifications to confirm that the most appropriate strategy has been selected.

At handover stage: check that the appropriate strategy has been followed, and the technology installed.

At occupancy stage: check that no changes have been made to the installed solution.

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E28

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32

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Secondary window treatments (continued)

Rationale

Nearly a quarter of heat loss from our buildings occurs through single glazed windows. Fit-outs in historic buildings, listed buildings, or within conservation areas will have planning restrictions limiting the changes that can be made to the appearance of the building, and in most cases, retrofitting double glazed windows is prohibited. The measure is aiming at awarding efforts to reduce heat loss through single glazing wherever possible.

Guidance

Nearly a quarter of heat loss from our buildings occurs through single glazed windows. Fit-outs in historic buildings, listed buildings, or within conservation areas will have planning restrictions limiting the changes that can be made to the appearance of the building. In most cases, retrofitting double glazed windows is prohibited. Even in older buildings without restrictions, replacing windows may be cost prohibitive, or outside of the scope of a fit-out.

Recaulking and weatherstripping address the most significant cause of air infiltration through the existing windows and frames. In historic buildings with sash windows, air leakage can account for more than 60% of heat losses. Weatherstripping is usually simple to install and inexpensive. Correctly installed, weatherstripping will restrict air infiltration around openable windows. The right product must be selected to suit the opening type, but this offers a cost effective method of reducing heat losses in winter, and can effectively be combined with window films or insulating drapes/ blinds for a comprehensive solution where replacing windows is unavailable.

Many options for window films and insulating window dressings are currently available.

Secondary glazing is a fully independent window system installed to the room side of existing windows. The original windows remain in position and in their unaltered form. Suitable for both commercial and residential projects, secondary glazing is available as open-able, removable or fixed units. However, when draught proofing or designing secondary glazing to avoid heat losses, it is important to ensure that ventilation is sufficient, and that the risk of condensation is minimised. Secondary glazing can be relatively airtight, so other means of ventilation may need to be considered.

Glass and Glazing Federation promotes best practice and sets the highest technical and health and safety standards.

Energy saving windows, Energy Saving Trust.

Sun Control and Shading Devices, World Building Design Guide.

Wood, C., Bordass, B., Barker, P., *Research into the thermal performance of traditional windows: timber sash windows*, 2009.

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Energy efficient heat pumps

Criteria

Heat pumps are on the Energy Technology List (ETL), or meet/exceed the ETL criteria.

Scoping

This measure applies if new heat pumps are being installed.

Assessment

At design stage: check that written specifications/contracts state this equipment must be sourced from the ETL. If the model and manufacturer have already been specified, 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, 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, if passive approaches are not available.

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. Heat pumps can include air-to-air, air-to-water, water-to-water, air-to-ground or water-to-ground systems.

Market Transformation Programme on energy efficient products, Defra.

The Energy Related Products Directive on labelling of energy efficient products, NMO.

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E05

ID

33

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Page 1 of 1

HVAC zone controls

Criteria

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

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, or be demonstrated to meet the ETL criteria in full. If the model and manufacturer have already been specified, 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 or that it meets the ETL criteria in full.

At occupancy stage: if HVAC zone controls have been changed or added, 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. It is recommended the mechanical design engineer or mechanical contractor undertakes the review of the systems to document how they comply with the ETL criteria.

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

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E06

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Page 1 of 1

Energy efficient DHW

Criteria

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

Electricity-fuelled 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	1000	4.7
150	1.6	1100	4.8
200	2.1	1200	4.9
300	2.6	1300	5.0
400	3.1	1500	5.1
500	3.5	2000	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, it will be covered by the selection of space heating equipment (see E11 Sources of primary energy). This measure excludes electric heaters that have a storage capacity of less than 30 litres, such as sink-based boiling or chilled water taps or those that only produce hot water for making hot beverages.

Assessment

At design stage: check written specifications/contracts state that gas-fuelled equipment must be sourced from 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, carry out the handover stage assessment.

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Energy efficient DHW (continued)

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

At occupancy stage: if the DHW system has been changed or added, carry out the handover stage assessment. If this measure was achieved at handover stage and the DHW system has not been changed or added to, 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 (ETL)** 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'.

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

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Sources of primary energy

Criteria

Boilers are on the Energy Technology List (ETL) or meet/exceed the ETL criteria.

Or

Where a project is located on a campus with a district heating network but is not connected, the project connects to the district heating network.

Or

Where a project is already connected to a district heating network, the project makes a capital contribution to improving the efficiency of the existing network such as improving boiler controls, improving network insulation or upgrading boiler plant.

Scoping

This measure applies if new boilers are installed, new connections are made to a district heating network, or the project is already connected to a district heating network.

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, carry out the handover stage assessment.

Where a new connection is being made to an existing district heating system, drawings and specifications for the new connection

Where the project is already connected to a district heating system, copies of cost plans and/or contracts demonstrating a capital contribution will be made to upgrade of the network, and the scope of the upgrade being contributed to.

At handover stage: obtain the name of the equipment manufacturer and the model number; check it is on the ETL. Where a new connection is made to an existing network, as-built drawings and photographs demonstrating the new connection.

Where existing connections are retained, a copy of the contract between project and network operator demonstrating the capital contribution for upgrades has been made.

At occupancy stage: if the boilers have been changed or added, 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.

Where connections have been made or retained to an existing district heating network, ensure the connection is still being used.

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E11

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46

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Sources of primary energy (continued)

Rationale

The aim is to provide energy efficient sources of heating to the project.

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.

Market Transformation Programme on energy efficient products, Defra.

The Energy Related Products Directive on labelling of energy efficient products, NMO.

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Issue

E11

ID

46

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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; or

Server applications are migrated from on-site servers to the cloud and on-site equipment is minimised to only the equipment necessary to connect users to the cloud.

Scoping

This measure applies if IT comms rooms and their support services are being installed, altered or upgraded or if the fit-out requires new or additional access to IT services. This measure is in scope if the works are procured through the main contractor or as a client direct order.

Assessment

At design stage: check written specifications/contracts for new IT comms rooms, or the written IT strategy document for the project that demonstrates the requirement for new IT access and the selected IT strategy demonstrating a cloud based solution will be pursued.

At handover stage: check calculations of the DCiE are based on the installed equipment, or check that the Comms room and IT strategy is as per the IT Strategy document. This may include proof of contracts with cloud providers for location of functions such as e-mail.

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

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.

Recent research indicates that cloud computing offers significant potential energy savings compared to traditional local data centres and comms rooms due to the increased efficiency of cloud data centres.

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E22

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56

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IT comms room energy consumption (continued)

Guidance

The energy efficiency potential of cloud-based software: a US case study.

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.

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

$$PUE = \frac{Total\ Facility\ Power}{IT\ Equipment\ Power}$$

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.

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 visit the [Green Grid](#).

Fit-out benchmark & assessment tool

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ID

56

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Energy efficient specialist ventilation

Criteria

The following criteria are met where the spaces listed are within scope:

Catering kitchens

- Design and refurbish kitchen ventilation and extraction systems in accordance with the guidance set out in CIBSE TM50, *Energy efficiency in commercial kitchens*.

Laboratories

- Fume cupboards are specified and installed in accordance with BS 7989 parts 1 and 2.
- Heat recovery and/or air recirculation on main supply and extract air is provided.
- Ventilation plant to laboratory areas is provided with variable speed drives and demand response.

Auditoria and event space

- Heat recovery and/or air recirculation on main supply and extract air is provided.
- Ventilation plant to laboratory areas is provided with variable speed drives and demand response with CO2 sensing.

Scoping

This measure applies to:

- a commercial kitchen if the ventilation and extraction systems are being installed, upgraded or replaced;
- a laboratory if the ventilation and extraction systems are being installed, upgraded or replaced or if new fume or safety cabinets are being installed;
- a café, auditoria (including lecture theatre) or other event space if the ventilation and extraction systems are being installed, upgraded or replaced.

Assessment

At design stage: review specification documents/clauses to confirm that the system is designed in accordance with the relevant criteria for each space.

At handover stage: carry out a site visit or review as-built drawings for visual confirmation that the system is installed as designed.

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

Rationale

The aim is to encourage the installation of energy efficient kitchen ventilation and extraction systems.

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D51

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57

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Energy efficient specialist ventilation (continued)

Guidance

The definition of a 'commercial kitchen' is any space used for food preparation by professional caterers. This includes restaurants, cafes, coffee shops, staff canteens, etc.

This measure applies where any of the following items are installed, upgraded or replaced:

- fans;
- ventilation controls;
- heat recovery equipment;
- ventilation grease removal systems;
- ductwork;
- fume cupboards; and
- microbial safety cabinets.

TM50, *Energy efficiency in commercial kitchens*, CIBSE, 2009.

Guide A, *Environmental design*, CIBSE, 2015.

Guide F, *Energy efficiency in buildings*, CIBSE, 2012.

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D51

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57

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Fume cupboard selection and operation

Criteria

Air flow measures

All compulsory measures and at least one optional measure must be implemented:

Compulsory measures:

- Install variable air volume (VAV) models and set the minimum safe face velocity to achieve the minimum required containment performance.

Optional measures:

- Ensure sufficient containment at the lowest face velocity in compliance with test requirements of BS EN 14175 by targeting face velocities of 0.3ms⁻¹ where risk assessment permits.
- Provide evidence that future requirements for face velocities to be increased in order to suit different activities have been considered and an allowance for this has been included in the sizing of the ventilation system.

Energy efficiency measures

All compulsory measures and at least one option measure must be implemented:

Compulsory measures:

- Ensure largest working sash opening does not exceed 500mm (default maximum working opening height of 400mm). Sashes can be raised higher to permit access for setting up, etc.

Optional measures:

- Provide controls to switch fume cupboards to a setback condition in periods of non-use or off when out of normal working hours, with the option of locally overriding this where experiments are run overnight or during weekends.
- Install passive infrared monitoring to set back air volume and/or automatic sash closure in absence of users.

Monitoring and operational guidance

All measures must be implemented:

- Monitor fume cupboard usage by measuring fan power and/or air volumes via the building management system (monthly data reports can be used to analyse operational behaviour).
- Provide a user guide that includes operation advice on reducing energy usage, this should be delivered/defined with the compulsory training outlined in HSE CGS 201.

Scoping

This measure applies if fume cupboards are being installed, upgraded or replaced.

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E30

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58

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Page 1 of 3

Fume cupboard selection and operation (continued)

Assessment

At design stage: check that written specification for all fume cupboard equipment meets the compliance criteria; provide evidence of the consideration of the design face velocities and equipment sizing.

At handover stage: collate delivery notes or invoices responding to the criteria for installed products and produce evidence that information on energy efficient operation is distributed at the handover stage. A site assessment should be completed to confirm sash height compliance and that operational data are exported to BMS.

At occupancy stage: provide evidence that fume cupboards are switched off during prolonged periods of disuse (e.g. weekends, holiday periods) and a statement outlining the safety issues that limit the ability to do this. Guidance on good practice operation techniques must be displayed within lab space to advise lower energy operation. There should be a review of BMS monthly reporting data.

Rationale

Lab buildings typically have high energy usage, which also provides the potential for greater savings through low energy design, fit-out and operation. A fume cupboard in constant operation can have significant energy usage (up to £1,650 per annum).

The aim is to improve the energy efficiency of fume cupboards by including the following measures:

- the use of variable volume models;
- consideration of containment performance at lower face velocities;
- consideration future usage changes when determining equipment sizing;
- restricting sash opening heights; and
- providing the ability to monitor cupboard usage and information on efficient operation.

These measures have been found to reduce the energy usage of fume cupboards when implemented correctly. The requirements of this document facilitate a reduction of energy usage and CO₂ emissions from fume cupboard equipment.

Guidance

Energy savings data for laboratories that employ fume cupboard energy saving measures are documented within S-lab case studies and case studies available through the international [sustainable campus network](#).

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Fume cupboard selection and operation (continued)

Further guidance can be found in the following documents:

ANSI/ASHRAE Standard 62.1-2016. *Ventilation for Acceptable Indoor Air Quality*, 2016.

B2 Ventilation, Guide B, CIBSE, 2016.

BS EN 14175-2: Fume Cupboards. Safety and Performance Requirements, 2003

The Safe Use, Maintenance, and Testing of Laboratory Fume Cupboards: Part 6.5, Natural Environment Research Council, 2007.

Control Guidance Sheet 201 – Fume Cupboard, Health and Safety Executive, 2003.

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Energy efficient entrances

Criteria

Building entrances, including DDA pass doors, should meet one of the following criteria:

- no over door heaters/air curtains and implement a closed door policy;
- use over door heaters/air curtains that only use heat from a VRF system or rejected heat (from cash machines if present, etc.) and automatically controlled to switch off out-of-hours and to moderate temperature;
- an entrance lobby and/or a revolving door with no over door heaters/air curtains; or
- sensor-controlled automatic rapid-opening/closing doors.

Scoping

This measure applies if building entrances, over door heaters and/or air curtains are being installed, upgraded or replaced. Building entrances include the door sets, framing and adjacent glass panels part of an integrated entrance system.

Assessment

At design stage: review specification documents/clauses.

At handover stage: carry out a site visit or review as-built drawings for visual confirmation that the system is installed as designed.

At occupancy stage: the building entrance should be reviewed to assess whether it meets the criteria.

Rationale

Over door heaters/air curtains use significant amounts of energy, so ideally they should not be used. Where they are specified they should be connected to a VRF system or other source of rejected heat to save energy.

Operating with a closed door policy can save over 30% of electricity use for lighting and heating in a store according to a recent case study.

Guidance

Air curtain guide, HEVAC.

BSRIA Application Guide 2/97, Air curtains – commercial applications, BSRIA, 1997.

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71

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Energy efficient commercial service cabinets

Criteria

Food storage and display cabinets:

If new, the commercial service cabinets and refrigerated display cabinets must be on the Energy Technology List (ETL).

Laboratory cold storage equipment:

If new, laboratory fridges and freezers comply with the criteria on the Energy Technology List for professional refrigerated storage cabinets.

Bar cellar cooling equipment:

If new, bar and cellar cooling equipment must be on the Energy Technology List.

All equipment types:

If reconditioned, the refrigeration equipment must have had at least one of the following energy efficient measures fitted as part of the reconditioning process:

- new lighting;
- new compressors;
- new solid doors; or
- additional insulation.

Scoping

This measure applies to all commercial refrigeration equipment that is being installed. This includes cabinets that are funded and supplied by a drinks supplier.

Assessment

At design stage: check written specifications/contracts state that this equipment must meet the criteria.

At handover stage: if new equipment has been installed, obtain the name of the equipment manufacturer, the model number and the specifications; check it is on the ETL. For laboratory equipment, obtain manufacturers data and compare to the ETL criteria. If reconditioned cabinets have been installed, get evidence from the supplier about the measures that have been fitted as part of the reconditioning process.

At occupancy stage: if refrigeration equipment has been changed or added, repeat the handover stage assessment. If this measure was achieved at handover stage and the service cabinets have not been changed or added, this measure will be achieved by default.

Rationale

The aim is to encourage the use of energy efficient commercial service cabinets, and promote the uptake of energy efficiency benchmarking for laboratory equipment.

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ID

72

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Page 1 of 2

Energy efficient commercial service cabinets (continued)

Guidance

A commercial service cabinet is the name given to any refrigerated spaces with a solid door used for storing food and drink. Any units with a glass door are known as refrigerated display cabinets. Cooling equipment for cooling either cellars or drinks themselves are listed on the ETL as cellar cooling equipment.

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 commercial service cabinets.

At present no equivalent standard for laboratory fridges and freezers exists, however the performance requirements for commercial service cabinets are relevant to laboratory equipment, and can be used as a guide in the selection of energy efficient equipment.

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Passive design approach

Criteria

The design team will endeavor to realise a fit-out design that makes use of opportunities to reduce the environmental impact of the space's operation through issues such as effective use of daylight, interior air flows based on room and space divisions, ventilation and cooling.

A 'design approach workshop' is to be held at the beginning of the design process. This will include:

- A review/challenge of the brief. Assessing the potential to reorganise spaces to provide a lower energy design strategy while providing comfort.
- An initial analysis of the space to identify opportunities for passive design solutions. For a new-build fit-out, this initial study identifies means of preserving the design intent. For a refurbishment, a review of the current operational performance carried out and considered against the new proposals for improvements.

Actions from the meeting must assign responsible parties for taking the opportunities identified forward into the design and implementation.

Scoping

This measure is in scope where opportunities for passive design exist such as existing openable windows, flexibility over the arrangement of uses, opportunity to add shading devices or impact façade performance.

Assessment

At design stage: 'design approach workshop' to be carried out, and:

- if a refurbishment, a pre fit-out occupant and building performance survey to be undertaken.
- if new build, an assessment of design intent to be provided including minutes of 'design approach workshop' with identified opportunities and action owners, including a description of practical concepts identified to be taken forward.

At handover stage: identification of adopted concepts to be confirmed on site through photos and as built plans.

At occupancy stage: if this measure was achieved at handover stage, ensure the issues implemented have been retained in occupancy.

Rationale

In order to take a more holistic approach to design, constraints and opportunities must be identified sufficiently early to act on them and improve the performance of the space in both energy and comfort terms.

The aim is to consider the relationship of the fit-out to the base building at the beginning of the process; identifying opportunities to reduce the environmental impact of lighting, ventilation and cooling in operation at this early stage.

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E29

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73

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Page 1 of 3

Passive design approach (continued)

This would, for example, include: challenging the brief where active cooling could be avoided; organising space to take best advantage of natural ventilation; placing high heat gain areas strategically.

Guidance

This measure can be supported and incrementally met through the targeting and achievement of measures such as:

- D04 Daylighting.
- E28 Secondary window treatment.
- D31 Daylight glare control.

Agenda for 'design approach workshop'

Attendees must include (as a minimum):

- FM team representative;
- occupant representative;
- design team engineer; and
- design team architect.

A. Refurbishment

- What do we know about current use and performance of the space?
- What does the feedback from current/previous occupants say about space layout, control, etc.?
- Does the existing space have any known issues, e.g. too hot, too cold, too draughty, poor ventilation, too much glare, too dark?
- Can daylight be improved?
- Are there any layouts or strategies that would improve any known issues, e.g. can uses with high gains be located strategically?
- What opportunities are available to reduce environmental impact and improve comfort?
- Can windows be opened or are there any other opportunities for natural ventilation?
- Can the brief be challenged to support more natural ventilation?
- Can internal gains be reduced through equipment selection?
- Can the layout be arranged to make the most of any opportunities, e.g. for offices or meeting spaces?
- Can thermal mass be exploited and is it appropriate for the space?
- What opportunities are there to use lower energy methods of ventilation to achieve the requirements of the occupants?
- How does the proposed fit-out impact on ventilation and daylight, e.g. do partitions create unwanted issues?
- Can solar gains be reduced (shading and/or high performance glazing)?
- Can a comfort analysis be undertaken that demonstrates natural ventilation is feasible?

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Page 2 of 3

Passive design approach (continued)

- Is a mixed mode approach more appropriate for winter and/or hot summer days?
- B. New build
- What is the design intent of the base build space?
 - What constraints are there on the use of the space, e.g. acoustics, required internal conditions?
 - What opportunities are available to reduce environmental impact and improve comfort?
 - How does the proposed fit-out impact on ventilation and daylight, e.g. do partitions create unwanted issues?
 - Can the layout be arranged to make the most of any opportunities, e.g. for offices or meeting spaces?
 - Can windows be opened, or are there any other opportunities for natural ventilation?
 - Can thermal mass be exploited and is it appropriate for the space?
 - Can internal gains be reduced through equipment selection, or controls, e.g. daylight dimming, presence/absence detection?
 - Does the proposed internal layout of the building maximise the opportunity for daylight and natural ventilation?
 - Has a comfort analysis been undertaken by base build designers that demonstrates natural ventilation is feasible?
 - Can the brief be challenged to support more natural ventilation?
 - Is a mixed mode approach more appropriate for winter and/or hot summer days?

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Energy efficient hand-dryers

Criteria

All electrically-operated hand-dryers meet at least one of the following criteria:

- meet all the following criteria:
 - have a nominal power output of 1600 W or less;
 - use no more than (\leq) 5.5 kWh of electricity per 1,000 standard drying cycles in its normal mode of operation (if this information is available by the manufacturer);
 - have a drying time of 15 seconds or less;
 - have an equipment motor speed of 20,000 rpm or more; and
 - are sensor activated; or
- have been awarded a carbon reduction label by The Carbon Trust; or
- are on the Energy Technology List for ‘High Speed Hand Air Dryers’.

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, carry out the handover stage assessment.

At handover stage: check the installed equipment meets the criteria.

At occupancy stage: if hand-dryers have been changed or added, 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 high speed air hand dryer products that have the greatest energy efficiency.

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 ‘High Speed Hand Air Dryers’.

Carbon Trust Product Footprint Certification.

The [latest research paper](#) from Massachusetts Institute of Technology (MIT) concludes that high speed hand air dryers have a lower life cycle impact than paper towels and warm air hand dryers.

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E24

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Energy efficient lifts

Criteria

Existing Lifts

An assessment is undertaken of the current energy usage of the existing lifts using ISO 25745-2:2015 *Energy performance of lifts, escalators and moving walks - Part 2: Energy calculation and classification for lifts*.

The assessment is then used to inform of the best methods of upgrading energy performance of the existing lifts. As a minimum each of the following must be considered, with at least 2 features installed:

- Lift car lighting upgrade to LED.
- Fitting a controller to enable the lift to operate in a standby condition during off-peak periods. For example the power side of the lift controller and other operating equipment such as lift car lighting, user displays and ventilation fans switch off when the lift has been idle for a prescribed length of time. The times for entering idle and standby periods should be assessed and selected for the particular installation.
- Where the lift machine is suitable, a drive controller capable of variable speed, variable-voltage, and variable-frequency (VVVF) control of the drive motor is fitted.
- Where the drive system is suitable and a study indicates that a regenerative drive produces an energy saving greater than the additional standby energy used to support the drives (typically on intensively used lifts with long travel), a regenerative drive is fitted.
- Where an AC variable voltage (ACVV) traction drive is fitted, the drive is replaced with a suitable variable frequency (VVVF) drive
- Where a Ward-Leonard traction drive system is fitted, the standby generator is replaced with a suitable electronic drive (DC SCR).

New lifts

An analysis is undertaken of the energy usage of at least 2 lifts options using ISO 25745-2:2015 *Energy performance of lifts, escalators and moving walks -- Part 2: Energy calculation and classification for lifts*.

The installed lift must as a minimum include:

- controls that allow for both standby and idle modes;
- LED only lighting; and
- a drive controller capable of variable-speed, variable-voltage, variable-frequency.

And, if the lift assessment shows that a regenerative drive will save energy, they are included in the specification.

Scoping

The measure is in scope when the refurbishment of existing lifts, or the installation of new ones, is in the project's scope.

Fit-out benchmark & assessment tool

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D54

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Page 1 of 3

Energy efficient lifts (continued)

Assessment

At design stage:

Existing Lifts

Copy of the Lift Energy Performance assessment to be provided, highlighting the items considered and the inclusion of the two recommended upgrades. Review the specification documents confirming the 2 energy performance features that are to be undertaken as a minimum.

New Lifts

Copy of the Lift Energy Performance comparison for the 2 or more lifts considered.

Review the specification documents confirming the energy performance features that are to be undertaken as a minimum.

At handover stage: collate delivery notes or invoices responding to the criteria for installed products on site to confirm that the models and installed features have been included as specified and the lifts are the ones specified at the design stage.

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

Rationale

This measure is to acknowledge that lifts can use a significant proportion of a building's energy use. Some estimates place this at about 5% of a building's energy use.

Modern lifts (traction) are very efficient from an energy/work done perspective. For such traction lifts, the focus for potential energy saving is with the energy usage when the lift is in standby and idle modes and, for intensively used lifts, on the use of regenerative drives. Regenerative drives, which use the lift's kinetic energy when descending to generate current, are most appropriate for high use and high buildings and are not necessarily cost beneficial in low use situations or low rise buildings. They can also have interface issues with the buildings' electrical supply.

Older lifts often have hydraulic drive systems that are far less efficient (than modern traction lifts) in use but typically draw lower currents when not in use. Older traction lifts might use various types of machine and drive that are not as efficient as modern types. For new lifts, while the industry has largely moved away from hydraulic lifts and less efficient traction drives, there are still some situations, such as low use lifts, goods lifts and some special applications, where hydraulic lifts are an appropriate solution.

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Energy efficient lifts (continued)

Guidance

Energy Efficiency of Lifts, Dr.Gina Barney, 2005.

ISO 25745-2:2015 *Energy performance of lifts, escalators and moving walks -- Part 2: Energy calculation and classification for lifts.*

CIBSE Guide D 2015: *Transportation Systems in Buildings.*

Energy Models for Lifts, Dr. Gina Barney.

Towards Low Carbon Lifts, Dr. Gina Barney.

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End-use 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;
- renewables – PV units and other renewable energy sources to monitor performance;
- humidification;
- major fans with air handling units with greater than 10kW input power;
- lifts;
- escalators;
- cooling systems with greater than 20kW input power;
- data centres;
- space heating (including combined heating and cooling systems such as variable refrigerant flow (VRF) systems with greater than 50kW input power);
- domestic hot water (if they are powered by electricity) – a minimum of one sub-meter per floor and per tenancy area within a floor (excluding tea points); and
- any other major energy consuming items are covered under the measure E25 Sub-metering for specialist areas.

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

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 and complies with the criteria.

At handover stage: check meters have been installed and meet the specification by reviewing operation and maintenance manuals, as built schematics or invoices, or by a site inspection. Confirm that the data is available in a user friendly manner for metering within a large estate using a screenshot as evidence.

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E09

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108

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End-use sub-metering (continued)

At occupancy stage: check the AMT system is operational by reviewing the output from the building management system 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. Confirm that the data is available in a user friendly manner for metering within a large estate using a screenshot as evidence.

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.

Guidance

An example of another major energy consuming item is a heat pump, including heat pumps and condensers forming part of a VRF or split unit heating and cooling system.

Building Energy Metering, CIBSE TM39, 2009.

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

Better Metering Toolkit.

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Issue

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ID

108

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Sub-metering for specialist areas

Criteria

Automatic monitoring and targeting (AMT) equipment is installed for specialist areas/equipment, as below. 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:

- X-ray machines;
- MRI scanners;
- scanning electron microscopes;
- environmentally controlled chambers;
- cold rooms;
- server rooms;
- clean rooms (energy intensive); and
- consideration of equipment that does not plug into the mains.

In addition any large quantities of units that do plug into mains, which may collectively have high energy consumption, e.g. small power loads can consume significant amounts of power. For example ultra-low temperature storage units have a 3 pin plug but can consume between £500 to £1,500 of electricity per year and a research-heavy building can house 10-20 units.

Scoping

This measure applies to the fit-out of specialist areas or equipment incorporating any of the equipment or areas listed above.

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 operation and maintenance manuals, as built schematics or invoices, or by a site inspection. Confirm that the data is available in a user friendly manner for metering within a large estate using a screenshot as evidence.

At occupancy stage: check the AMT system is operational by reviewing the output from the building management system 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. Confirm that the data is available in a user friendly manner for metering within a large estate using a screenshot as evidence.

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Sub-metering for specialist areas (continued)

Rationale

Specialist equipment and specialist areas can consume large quantities of energy but few benchmarks exist to understand good practise. In addition equipment is often left on and may not be used optimally. These are relatively untapped areas where metering and visualisation of energy consumption can add some transparency to operational activity and enable future benchmarking.

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.

Guidance

An example of another major energy consuming item is a heat pump, including heat pumps and condensers forming part of a VRF or split unit heating and cooling system.

Building Energy Metering, CIBSE TM39, 2009.

Better Metering Toolkit.

TM50:2009 *Energy efficiency in commercial kitchens*, CIBSE, 2009.

TM39:2009 *Building Energy Metering*, CIBSE, 2009.

Building Regulations Part L2A, HM Government, 2013.

Building Regulations Part L2B, HM Government, 2010.

Energy saving trust – Home appliances.

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109

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Improvement in daylighting

Criteria

- average daylight factor is 2% or greater; or
- Average Daylight Illuminance (ADI) values of 300 lux for 2,000 hours (climate based modelling).

Scoping

This measure applies if alterations are made to the building façade, with the opportunity to redesign glazing. It also applies if roof lights are to be added.

The criteria apply only to occupied floor spaces such as office/workshop/teaching 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 or ADI 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, 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 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 - A Guide for Designers: Lighting for the Built Environment, CIBSE, 2014.

EFA daylight design guide, Education Funding Agency, 2014.

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D04

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Page 1 of 1

Thermal sub-metering

Criteria

Automatic monitoring and targeting (AMT) equipment is installed. AMT equipment comprises meters, an automatic meter reading device and analytical software. Heat meters should be MID or BS EN 1434 approved.

The meter component is installed for each floor and each tenancy area within a floor for space heating and cooling, steam and domestic hot water.

And:

At project completion ensure the tenant/occupant has taken a meter reading to support measure P08 Reduce water in use required in the occupancy assessment.

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 (for example, 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 operation and maintenance manuals, as-built schematics or invoices, or by a site inspection. Ensure that the biannual calibration of sub-meters by the manufacturer or supplier is covered within the maintenance schedule. Confirm that the data is made directly available to the client team in a user friendly manner for metering within a large estate using a screenshot as evidence.

Obtain written confirmation that proves the client has the meter readings upon occupation if the screen shots required above are not sufficient.

At occupancy stage: check the AMT system is operational by reviewing the output from the building management system 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. Ensure that the biannual calibration of sub-meters by the manufacturer or supplier is being undertaken. Confirm that the data is made directly available to the client team in a user friendly manner for metering within a large estate using a screenshot as evidence.

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E08

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Thermal sub-metering (continued)

Rationale

Monitoring energy usage enables 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.

Guidance

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

Building Energy Metering, CIBSE TM39, 2009.

Energy efficiency in buildings, Guide F, CIBSE, 2004.

Better Metering Toolkit.

Fit-out benchmark & assessment tool

Energy & CO₂

Issue

E08

ID

111

Rank

SKA Higher
Education

Version 1.0 2016

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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) or meet the ETL criteria stipulated for the relevant equipment:

- boiler equipment;
- heat pumps;
- HVAC zone controls;
- motors and drives;
- refrigeration equipment;
- air-to-air heat exchangers;
- localised rapid steam generators;
- compressed air equipment; and
- warm air and radiant heaters.

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 or meet the ETL criteria. If the model and manufacturer have already been specified, 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 or review the manufacturer's literature, and ensure it complies with the ETL criteria.

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

Rationale

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

Fit-out benchmark
& assessment tool

Energy & CO₂

Issue

D03

ID

112

Rank

SKA Higher
Education

Version 1.0 2016

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Page 1 of 2

Energy efficient HVAC (continued)

Guidance

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

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.

Including air-to-air heat exchangers on the list covers the process of recovering energy from air expelled into the atmosphere, and using it as supply air. This means less energy is needed to heat the supply air, so emissions are reduced. Various devices can be used, including plate heat exchangers, thermal wheels, run-around coils, heat-pipe generators and regenerators.

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

Fit-out benchmark & assessment tool

Energy & CO₂

Issue

D03

ID

112

Rank

SKA Higher
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Energy modelling

Criteria

Energy modelling is undertaken for the fit-out using energy modelling software selected and applied in accordance with CIBSE AM11 *Building Performance Modelling* (specifically chapter 4). A full dynamic thermal analysis must be undertaken at the detailed design stage. The model should include the energy use and heat gains associated with the equipment and the people that are likely to be in the space. A report must be produced, based on the findings of the modelling exercise, that highlights the most appropriate passive design measure(s) for the fit-out: this report must show that the proposed measures save energy and meet thermal comfort requirements. At least one of the recommended measures must be implemented.

The energy model should include reasonable assumptions about the performance of the existing building envelope (if it is not being improved), based on as built drawings or a survey of the building elements.

Scoping

This measure is only in scope if the client decides to undertake energy modelling or if the project includes energy-intensive spaces such as laboratories.

This measure is not in scope if the design team installs passive energy measures but does not carry out energy modelling. This is because retail units can suffer from overheating, so the addition of insulation could increase energy use (through increased cooling demand) rather than reducing energy use.

Assessment

At design stage: review the energy modelling report to ensure that it meets the criteria. Review drawings and specifications provided to confirm that at least one of the passive design measures recommended within the report is included within the design.

At handover stage: ensure that at least one of the passive design measures recommended within the report is installed by reviewing the O&Ms, as-built schematics or invoices, or by a site inspection.

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

Rationale

The use of energy modelling during the design stage is encouraged to identify the most appropriate passive design measures for the fit-out, helping to reduce the energy demand of the space. Examples of passive measures are insulation and window films.

Fit-out benchmark & assessment tool

Energy & CO₂

Issue

D66

ID

113

Rank

SKA Higher Education

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Energy modelling (continued)

Guidance

The modelling must cover whole space being fitted-out.

Thermal comfort levels are defined in CIBSE Guide A, *Environmental Design*, 8th edition, 2015.

CIBSE AM11: *Building performance modelling*, CIBSE, 2015.

Fit-out benchmark & assessment tool

Energy & CO₂

Issue

D66

ID

113

Rank

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Page 2 of 2

Reduce fit-out energy use

Criteria

All energy use on site is metered, records are kept and the site manager regularly reviews usage figures. Meter readings are taken at a frequency appropriate (at least once a fortnight) to the project programme with at least 5 measurements taken over the whole duration.

At the end of the project, total project delivery energy usage in kWh is to be added to the project evidence box on the SKA online tool.

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 energy use. Obtain an assessment, schedule, or meeting minutes to demonstrate consideration has been given to the significant energy consuming items, highlighting any viable measures for energy reductions. The schedule also includes an energy target in kWh per m².

At handover stage: following completion, review the records of energy usage the project team must review consumption and discuss the possible future actions to reduce levels and provide meeting minutes.

The final energy usage figure is inputted into the project details tab on the SKA online tool.

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

Rationale

The aim is to encourage the reduction of energy use during the construction process by monitoring energy consumption. Active monitoring helps raise awareness of energy use among construction staff and therefore encourages them to make reductions.

Collection of this data will enable the contractor and subsequent SKA schemes to set 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 Green Construction Board and action plans](#).

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 Innovation and Skills (BIS). These include benchmarks for energy use.

Fit-out environmental good practice on site guide, CIRIA, 2016.

How to reduce CO₂ on construction sites, Green Construction Board.

Fit-out benchmark & assessment tool

Energy & CO₂

Issue

P01

ID

129

Rank

SKA Higher Education

Version 1.0 2016

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Page 1 of 1

Hardwoods

Criteria

100% of hardwood meets at least one of the following criteria:

- is reclaimed; or
- where new hardwood is used, is supplied with a Chain of Custody (CoC) from one of the following schemes only:
 - Forest Stewardship Council (FSC);
 - Programme for the Endorsement of Forest Certification (PEFC); or
 - Grown in Britain (GiB).
- project achieves full FSC or PEFC project certification.

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. Grown in Britain licenced timber may be a preference in addition to FSC and/or PEFC certification.

At handover stage: check delivery note (or invoices) for all timber and timber products. All delivery tickets or invoices for new timber and timber products must detail the quantity, 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, 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.

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.

Fit-out benchmark & assessment tool

Materials

Issue

M05

ID

14

Rank

SKA Higher Education

Version **1.0 2016**

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Page 1 of 2

Hardwoods (continued)

The maximum evidence required will consist of 3 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.

[Forest Stewardship Council \(FSC\)](#).

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

[Grown in Britain \(GiB\)](#).

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

For a growing list of SKA compliant products and materials that hold the [SKA Product Compliant Label](#) please refer to the [online database](#).

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

- If a cubicle is 60% timber and 40% steel, all of the timber must be sourced from one of the following schemes: (Grown in Britain/FSC/PEFC) or be FSC 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 cubicle contains 80% recycled steel.

Note: this measure is in scope if existing cubicles are repaired rather than replaced with a new cubicle. It is considered more sustainable to repair a cubicle than replace it with a new one. The measure is automatically met because repairs to existing cubicles are classified under 'reuse'.

Fit-out benchmark & assessment tool

Materials

Issue

M05

ID

14

Rank

SKA Higher Education

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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; or
- if new:
 - are manufactured with at least 50% recycled content (measured by mass) and 100% recyclable content (designed for deconstruction with components that can be recycled);
 - 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;
 - have a Cradle to Cradle Silver or higher certificate;
 - are supplied with an environmental product declaration (other than that written for the Green Book Live), written in accordance with ISO 14025 standards;
 - carpets are installed as part of a manufacturer’s recycling or ‘take back’ scheme and are labelled accordingly; or
 - carpets are installed using a dry adhesive corner tile system as opposed to traditional contact adhesive.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations – Self-declared environmental claims*; and
- state IAQ emissions.

Scoping

This measure applies if soft floor coverings (carpet, vinyl, linoleum, rubber, synthetic thermoplastic) 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 delivery notes or invoices, and manufacturer’s take back scheme agreement where relevant, for all installed products responding to the criteria and/or obtain a statement of reuse for all relevant products/materials.

At occupancy stage: if soft floor coverings have been changed or added, 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.

Fit-out benchmark & assessment tool

Materials

Issue

M12

ID

15

Rank

**SKA Higher Education
1.0 2016**

Version

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Soft flooring (continued)

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.

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 method.

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-ups. If it does it gets a rating based on this generic make-up. If it does not match a generic make-up, 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.

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: *Environmental labels and declarations – Type III environmental declarations – Principles and procedures*.

ISO 14021:2016: *Environmental labels and declarations – Self-declared environmental claims*.

The **Cradle to Cradle programme** lists all the products that have been certified.

The Green book Live.

EPD The Green Yardstick.

Guide to understanding the embodied impacts of construction products, Construction Products Association.

For a growing list of SKA compliant products and materials that hold the **SKA Product Compliant Label** please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M12

ID

15

Rank

**SKA Higher
Education**

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Partitions

Criteria

All partitions meet at least one of the following criteria:

- are reused; or
- if new:
 - are re-locatable (see guidance for definition);
 - the panels are manufactured with at least 90% recycled and 100% recyclable content;
 - all the plasterboards 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.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations – Self-declared environmental claims*; and
- state IAQ emissions.

Scoping

This measure applies if partitions are specified, partially modified or installed.

Assessment

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

At handover stage: collate delivery notes or invoices for all installed products, ensuring they respond to the criteria.

At occupancy stage: if partitions have been changed or added, 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.

Fit-out benchmark & assessment tool

Materials

Issue

M08

ID

35

Rank

SKA Higher Education

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Partitions (continued)

Guidance

A re-locatable or reusable modular partition system can be removed and relocated without substantial repair; it should be capable of reinstallation within a tolerance of ± 10mm of the original installed height.

Note: demountable partitions cannot be taken down without damaging or destroying some or all of the components, and therefore do not meet this GPM.

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

If a partition is 10% timber and 90% plasterboard, all of the timber must be sourced from reclaimed timber or 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.

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-ups: if it does it gets a rating based on this generic make-up. If it does not match a generic makeup 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.

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

ISO 14025:2006: *Environmental labels and declarations – Type III environmental declarations – Principles and procedures*.

For a growing list of SKA compliant products and materials that hold the **SKA Product Compliant Label** please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M08

ID

35

Rank

**SKA Higher
Education**

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Chairs: task seating

Criteria

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

- are reused; or
- if new:
 - are manufactured with at least 40% recycled, renewable or otherwise compliant content (measured by mass) and 90% recyclable content (measured by mass) and designed for deconstruction with components that can be recycled;
 - have a Cradle to Cradle Silver or higher certificate;
 - the company manufacturing the products is certified under the Furniture Industry Sustainability Programme (FISP) scheme;
 - are supplied with an environmental product declaration, written in accordance with ISO 14025 standards;
 - have been awarded a Business and Institutional Furniture Manufacturers Association (BIFMA) 'level' certification; or
 - have been awarded the EU Ecolabel or equivalent label.

And if not covered already by the above:

- plastic parts with a weight ≥ 50 g shall be visibly marked in accordance with the requirements of ISO 11469 or ISO 1043 so that polymeric materials can be identified to ensure they are able to be recycled, recovered or disposed of in the correct manner at end of life;
- where fabric is specified it must all comply with one of the following:
 - Oeko Tex certified;
 - GreenGuard certified;
 - Cradle 2 Cradle silver or above certified;
 - Global Organic Textile Standard (GOTS universal standard for organic fibres);
 - Global Recycle Standard;
 - SMART Sustainable Textile Standard of Silver or above; and
 - Nordic Swan labelled.
- where upholstery padding all to be CertiPUR , Blue Angel or equally certified.

And

- if timber or containing timber elements, the timber meets the criteria of good practice measure D20 Timber.

Note: a fabric that complies with criteria listed above is an example of an otherwise compliant material instead of it being just compliant with the set recycled content.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations - Self-declared environmental claims*; and
- state IAQ emissions.

Fit-out benchmark & assessment tool

Materials

Issue

M20

ID

36

Rank

SKA Higher Education

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Page 1 of 3

Chairs: task seating (continued)

Scoping

This measure applies if task or meeting 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 delivery notes or invoices, and manufacturer's take back scheme agreement where relevant, for all installed products responding to the criteria and/or obtain a statement of reuse for all relevant products/materials.

At occupancy stage: if chairs have been changed or added, 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.

Guidance

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

If a chair is 80% timber and 20% fabric, all of the timber must be sourced from one of the compliant schemes as defined in good practice measure D20 Timber. For the product to be compliant, all the fabric must be able to be recycled at the end of its life to make up the 100% recyclable requirement.

If a chair is made up of 40% metal, 30% fabric, 10% plastic components and 20% padding; with all metal parts at 60% recycled content and none in the padding or plastic parts, the recycled content of the fabric will need to be a minimum of 60% to achieve the 40% minimum recycled content.

Fit-out benchmark & assessment tool

Materials

Issue

M20

ID

36

Rank

SKA Higher
Education

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Chairs: task seating (continued)

All the fabric, plastic and padding materials must also be 100% recyclable at the end of their life for the product to be compliant. Metals are widely recycled in existing waste streams so they can be accepted as compliant by default.

Where metals are included in a product and the exact recycled percentage is not readily available, the recognised industry average by the representative industry body in each case can be accepted (also see note on page 9 in WRAP's 'Rule of Thumb' document).

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 a good source of evidence to support the claim that a product is recyclable.

Information on the [EU Ecolabel scheme](#).

[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: [Environmental labels and declarations – Type III environmental declarations – Principles and procedures](#).

[EUROPUR](#) – European association of flexible polyurethane foam blocks manufacturers.

The [Cradle to Cradle programme](#) lists all the products that have been certified.

[Climatex Lifecycle](#), a Cradle to Cradle certified fabric.

[Revision of EU Ecolabel Criteria for Furniture](#).

[Revision of the European Ecolabel and Green Public Procurement \(GPP\) criteria for furniture](#).

[European Commission Green Public Procurement \(GPP\) Training Toolkit – Module 3: Purchasing Recommendations](#).

[Harmonisation framework for indoor material labelling schemes in the EU](#).

[All ecolabels on furniture](#).

For a growing list of SKA compliant products and materials that hold the [SKA Product Compliant Label](#) please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M20

ID

36

Rank

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Education**

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Chairs: soft seating

Criteria

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

- are reused;
- if new,
 - are manufactured with at least 40% recycled, renewable or otherwise compliant content (measured by mass) and 90% recyclable content (measured by mass) and designed for deconstruction with components that can be recycled;
 - have a Cradle to Cradle Silver or higher certificate;
 - the company manufacturing the products is certified under the Furniture Industry Sustainability Programme (FISP) scheme;
 - are supplied with an environmental product declaration, written in accordance with ISO 14025 standards;
 - have been awarded a Business and Institutional Furniture Manufacturers Association (BIFMA) 'level' certification; or
 - have been awarded the EU Ecolabel or equivalent label.

And if not covered already by the above:

- where plastic parts with a weight ≥ 50 g shall be visibly marked in accordance with the requirements of EN ISO 11469 or EN ISO 1043 so that polymeric materials can be identified to ensure they are able to be recycled, recovered or disposed of in the correct manner at end of life;
- where fabric is specified it must all comply with one of the following:
 - Oeko Tex certified
 - GreenGuard certified.
 - Cradle 2 Cradle silver or above certified.
 - Global Organic Textile Standard (GOTS universal standard for organic fibres).
 - Global Recycle Standard.
 - SMART Sustainable Textile Standard of Silver or above.
 - Nordic Swan.
- where upholstery padding all to be CertiPUR , Blue Angel or equally certified.

And

- if timber or containing timber elements, the timber meets the criteria of good practice measure D20 Timber.

Fit-out benchmark & assessment tool

Materials

Issue

M29

ID

37

Rank

SKA Higher Education

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Chairs: soft seating (continued)

Note: a fabric that complies with criteria listed above is an example of an otherwise compliant material instead of it being just compliant with the set recycled content.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations – Self-declared environmental claims*; and
- state IAQ emissions.

Scoping

This measure applies if soft seating 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 delivery notes or invoices, and manufacturer's take back scheme agreement where relevant, for all installed products responding to the criteria and/or obtain a statement of reuse for all relevant products/materials.

At occupancy stage: if chairs have been changed or added, 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.

Guidance

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

If a chair is 80% timber and 20% fabric, all of the timber must be sourced from one of the compliant schemes as defined in good practice measure D20 Timber. For the product to be compliant, all the fabric must be able to be recycled at the end of its life to make up the 100% recyclable requirement.

Fit-out benchmark & assessment tool

Materials

Issue

M29

ID

37

Rank

SKA Higher
Education
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Chairs: soft seating (continued)

If a chair is made up of 40% metal, 30% fabric, 10% plastic components and 20% padding – with all metal parts at 60% recycled content and none in the padding or plastic parts – the recycled content of the fabric will need to be a minimum of 60% to achieve the 40% minimum recycled content.

All the fabric, plastic and padding materials must also be 100% recyclable at the end of their life for the product to be compliant. Metals are widely recycled in existing waste streams so they can be accepted as compliant by default.

Where metals are included in a product and the exact recycled percentage is not readily available, the recognised industry average by the representative industry body in each case can be accepted (also see note on page 9 in WRAP's 'Rule of Thumb' document).

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 a good source of evidence to support the claim that a product is recyclable.

Information on the [EU Ecolabel scheme](#).

[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: [Environmental labels and declarations – Type III environmental declarations – Principles and procedures](#).

The [Cradle to Cradle programme](#) lists all the products that have been certified.

[Climatex Lifecycle](#), a Cradle to Cradle certified fabric.

[Revision of EU Ecolabel Criteria for Furniture](#).

[Revision of the European Ecolabel and Green Public Procurement \(GPP\) criteria for furniture](#).

[European Commission Green Public Procurement \(GPP\) Training Toolkit - Module 3: Purchasing Recommendations](#).

[Harmonisation framework for indoor material labelling schemes in the EU](#).

[All ecolabels on furniture](#).

For a growing list of SKA compliant products and materials that hold the [SKA Product Compliant Label](#) please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M29

ID

37

Rank

**SKA Higher
Education
1.0 2016**

Version

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Glazed partitions

Criteria

All partitions meet at least one of the following criteria:

- are reused; or
- if new:
 - are re-locatable (see guidance for definition), and are manufactured in a factory that has achieved and maintains an Environmental Management System in accordance with ISO 14001; or
 - are supplied with an environmental product declaration written in accordance with ISO 14025 standards.

And

- if containing timber components, the timber meets the criteria of good practice measure D20 Timber.

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 delivery notes or invoices for all installed products, ensuring they respond to the criteria.

At occupancy stage: if partitions have been changed or added, 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.

Guidance

A re-locatable or reusable modular partition system can be removed and relocated.

Reusing a minimum of 80% of the components again, measured by weight, it should be capable of reinstallation within a tolerance of ± 10mm of the original installed height.

Fit-out benchmark & assessment tool

Materials

Issue

M09

ID

38

Rank

SKA Higher Education
Version 1.0 2016

Version

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Glazed partitions (continued)

Note: demountable partitions cannot be taken down without damaging or destroying some or all of the components, and therefore do not meet this SKA criteria.

For a growing list of SKA compliant products and materials that hold the [SKA Product Compliant Label](#) please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M09

ID

38

Rank

**SKA Higher
Education**

Version **1.0 2016**

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Ceilings

Criteria

All suspended ceilings, ceiling tiles or membranes meet at least one of the following criteria:

- are reused;
- if new:
 - mineral/stone wool are manufactured with at least 50% recycled content;
 - Gypsum have a recycled content of at least 80%; or
 - steel have a minimum recycled content of 60%;

And

- irrespective of the material, the manufacturer has a take back scheme for the material at end of life, which confirms that no materials will be sent to landfill; or
- if new, have a Cradle to Cradle Silver or Platinum certificate; or
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards.

And

- if containing timber components, the timber meets the criteria of good practice measure D20 Timber.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations – Self-declared environmental claims*; and
- state IAQ emissions.

Scoping

This measure applies if suspended ceiling systems or membranes are specified, installed or partly modified.

Assessment

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

At handover stage: collate delivery notes or invoices, and manufacturer's take back scheme agreement where relevant, for all installed products responding to the criteria and/or obtain a statement of reuse for all relevant products/materials.

At occupancy stage: if suspended ceilings have been changed or added, 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.

Fit-out benchmark & assessment tool

Materials

Issue

M10

ID

44

Rank

SKA Higher Education
Version 1.0 2016

Version

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Ceilings (continued)

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.

Guidance

The target for the recycled content of suspended ceilings is based on WRAP's stated good practice for mineral ceiling tiles and market performance. 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.

It is recognised that the grid and tiles are specified and warranted as a system. However the grid component of the system has been excluded from the assessment as the vast majority of grids in suspended ceiling systems are made from steel or aluminium and these already contain a relatively high proportion of recycled content. There is insufficient evidence to favour one over the other as both metals hold their value and there is a good market for scrap: neither needs to be sent to landfill. Therefore suspended ceiling systems are differentiated by the tile rather than the grid.

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: *Environmental labels and declarations – Type III environmental declarations – Principles and procedures*.

For a growing list of SKA compliant products and materials that hold the [SKA Product Compliant Label](#) please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M10

ID

44

Rank

**SKA Higher
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Version **1.0 2016**

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Workstations and tables

Criteria

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

- are reused; or
- if new:
 - are manufactured with at least 80% recycled, renewable or otherwise compliant content (measured by mass) and 100% recyclable content (measured by mass) designed for deconstruction with components that can be recycled;
 - have a Cradle to Cradle Silver or higher certificate;
 - the company manufacturing the products is certified under the Furniture Industry Sustainability Programme (FISP) scheme;
 - are supplied with an environmental product declaration, written in accordance with ISO 14025 standards;
 - have been awarded a Business and Institutional Furniture Manufacturers Association (BIFMA) 'level' certification; or
 - have been awarded the EU Ecolabel.

And

- where fabric is specified (on frames or screens part of a desk system) it must meet one of the following:
 - Cradle to Cradle Silver or higher;
 - have an OEKOtex100; and
 - EU Ecolable certificate or other of equal performance.

And

- plastic parts with a weight ≥ 50 g shall be visibly marked in accordance with the requirements of ISO 11469 or ISO 1043 so that polymeric materials can be identified to ensure they are able to be recycled, recovered or disposed of in the correct manner at end of life.

And

- if containing timber components, the timber meets the criteria of good practice measure D20 Timber.

Note: a fabric that complies with a criteria listed above is an example of an otherwise compliant material instead of it being just compliant with the set recycled content.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations – Self-declared environmental claims*; and
- state IAQ emissions.

Fit-out benchmark & assessment tool

Materials

Issue

M19

ID

48

Rank

SKA Higher Education

Version **1.0 2016**

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Workstations and tables (continued)

Scoping

This measure applies if workstations or tables are specified or installed and includes desk screens where present.

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 delivery notes or invoices, and manufacturer's take back scheme agreement where relevant, for all installed products responding to the criteria and/or obtain a statement of reuse for all relevant products/materials.

At occupancy stage: if workstations or tables have been changed or added, 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.

Guidance

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

If a desking system is made up of 60% laminated timber tops and 40% steel frame component, all of the timber must be sourced as defined in good practice measure D20 Timber, with the remaining 40% of the product, in this case steel, needing to meet one of the criteria listed above. In this example the manufacturer would need to demonstrate that the steel used in the desk contains 60% recycled content. This would make it 24% of the total mass and with the compliant timber a total of 84%, which is just above the criteria. Both metal and timber are considered as recyclable so they will meet the requirement for 100% recyclability. Timber components are accepted as compliant as it is a renewable material, increasingly being reclaimed and reused.

Fit-out benchmark & assessment tool

Materials

Issue

M19

ID

48

Rank

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Workstations and tables (continued)

Where desk screens are also specified their materials and mass become part of the calculations 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 a good source of evidence to support the claim that a product is recyclable.

Information on the [EU Ecolabel scheme](#).

[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: [Environmental labels and declarations – Type III environmental declarations – Principles and procedures](#).

The [Cradle to Cradle programme](#) lists all the products that have been certified.

[The Greenguard screen fabric database](#).

For a growing list of SKA compliant products and materials that hold the [SKA Product Compliant Label](#) please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M19

ID

48

Rank

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Storage units

Criteria

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

- are reused; or
- if new:
 - are manufactured with at least 60% recycled, renewable or otherwise compliant content (measured by mass) and 100% recyclable content (measured by mass) designed for deconstruction with components that can be recycled;
 - have a Cradle to Cradle Silver or higher certificate;
 - the company manufacturing the products is certified under the Furniture Industry Sustainability Programme (FISP) scheme;
 - are supplied with an environmental product declaration, written in accordance with ISO 14025 standards;
 - have been awarded a Business and Institutional Furniture Manufacturers Association (BIFMA) 'level' certification; or
 - have been awarded the EU Ecolabel or equivalent label.

And if not covered already by the above:

- plastic parts with a weight ≥ 50 g shall be visibly marked in accordance with the requirements of EN ISO 11469 or EN ISO 1043 so that polymeric materials can be identified to ensure they are able to be recycled, recovered or disposed of in the correct manner at end of life;
- where fabric is specified it must all comply with one of the following:
 - Oeko Tex certified;
 - GreenGuard certified;
 - Cradle 2 Cradle silver or above certified;
 - Global Organic Textile Standard (GOTS universal standard for organic fibres);
 - Global Recycle Standard;
 - SMART Sustainable Textile Standard of Silver or above; and
 - Nordic Swan labelled.
- where upholstery padding all to be CertiPUR, Blue Angel or equally certified.

And

- if timber or containing timber components, the timber meets the criteria of good practice measure D20 Timber.

Fit-out benchmark & assessment tool

Materials

Issue

M21

ID

49

Rank

SKA Higher Education

Version **1.0 2016**

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Storage units (continued)

Note: a fabric that complies with criteria listed above is an example of an otherwise compliant material instead of it being just compliant with the set recycled content.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations – Self-declared environmental claims*; and
- state IAQ emissions.

Scoping

This measure applies if storage units are installed in any space, including those used in retail back of house.

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 delivery notes or invoices, and manufacturer's take back scheme agreement where relevant, for all installed products responding to the criteria and/or obtain a statement of reuse for all relevant products/materials.

At occupancy stage: if storage units have been changed or added, 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.

Guidance

Example of how to assess a storage unit containing timber as well as other materials:

If a storage unit is made using 80% steel and 20% laminated timber panels, all of the timber must be sourced from one of the compliant schemes as defined in good practice measure D20 Timber, and all the metal parts must have a minimum of 75% recycled content to comply. Both materials must be able to be recycled at the end of the unit's life to make up the 100% recyclable requirement.

Fit-out benchmark & assessment tool

Materials

Issue

M21

ID

49

Rank

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Page 2 of 3

Storage units (continued)

Where metals are included in a product and the exact recycled percentage is not readily available, the recognised industry average by the representative industry body in each case can be accepted (also see note on page 9 in WRAP's 'Rule of Thumb' document).

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 a good source of evidence to support the claim that a product is recyclable.

Zero emissions from office, contract and kitchen furniture, BFM report funded by the TSB and concluded in 2008, including detailed impacts from a redesign of a tub chair example.

Implications of sustainable development for UK reproduction furniture manufacturers. BFM Ltd (2002), London.

Information on the [EU Ecolabel scheme](#).

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: *Environmental labels and declarations – Type III environmental declarations – Principles and procedures.*

The [Cradle to Cradle programme](#) lists all the products that have been certified.

For a growing list of SKA compliant products and materials that hold the [SKA Product Compliant Label](#) please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M21

ID

49

Rank

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Responsible sourcing

Criteria

10% of the total material measures in scope (rounded up to the nearest integer) must achieve this measure in order to enable the project to be awarded this GPM. Which measures are included in the 10% is the project team's decision.

For example, where soft flooring is specified and is to be included within this measure, all soft flooring must comply with the requirements.

All materials (within those that form the selected 10%) must meet at least one of the following criteria:

- Supplier has been successfully audited against SEDEX SMETA criteria.
- Product has been assessed and certified under BES 6001 or manufactured under a scheme that complies with the requirements of BS 8902.
- Product has applicable chain of custody certification (e.g. FSC or PEFC).
- Manufacturing site is certified to an internationally recognised environmental management system (e.g. EMAS or ISO 14001), which has a scope that covers the products manufacture.
- Procuring organisation has been independently audited against a recognised procurement standard (e.g. BS 8903 or ISO 20400).

Note: in the above list, 'recognised' means adopted and used by more than one organisation.

Scoping

This measure will always be in scope for all projects where at least one materials measure is in scope.

Assessment

At design stage: documented confirmation of the materials to be included in the measure and justification that this represents 10%. Written methodology by which each item being sourced under this measure is expected to meet the criteria, and evidence that requirements have or will be communicated to suppliers prior to procurement commencing.

At handover stage: evidence of compliance with criteria that may include but is not limited to: audit reports, third party certifications, delivery notes, invoices, as installed drawings, sites photos, etc. This evidence must confirm that the product and/or supplier meet the criteria, the specific supplier used to supply the product/material and the product/material specified has been installed.

At occupancy stage: continued procurement of the products, replacement parts, etc. to be sourced in accordance with these guidelines. Evidence of this would be expected to be the same as that required at handover. Where supplier or material has changed the new supplier, product or material must meet the same requirements. If no materials have been affected, this measure will be achieved or not as in the handover assessment.

Fit-out benchmark & assessment tool

Materials

Issue

D81

ID

55

Rank

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Page 1 of 2

Responsible sourcing (continued)

Rationale

To consider the sourcing and supply of raw materials and the social, ethical and environmental impacts of material selection.

Guidance

Information on Sedex and SMETA.

Further details of BES 6001 [certified products](#).

Details of [establishing a scheme under BS 8902 Responsible sourcing sector certification schemes for construction products](#).

Information on [environmental management schemes](#).

For details on sustainable procurement standards:

- [BS 8903:2010 Principles and framework for procuring sustainably](#)
- [ISO 20400 Sustainable procurement](#)

Certification against ISO 20400 will be available from 2017.

Fit-out benchmark & assessment tool

Materials

Issue

D81

ID

55

Rank

**SKA Higher
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Wall covering

Criteria

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

- are reused,
- if new;
 - are manufactured with at least 40% recycled content;
 - have a Cradle to Cradle Silver – Platinum certificate; or
 - are supplied with an environmental product declaration, written in accordance with ISO 14025 standards.

And

- where paper-based wallpaper is specified, meet the criteria of D20 Timber.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations – Self-declared environmental claims*; and
- state IAQ emissions.

Scoping

This measure applies if wallpaper is specified or installed.

The criteria apply to paper, paper backed vinyl, vinyl and woven and non-woven fibre fabric-backed wall coverings.

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 delivery notes or invoices for all installed products, ensuring they respond to the criteria.

At occupancy stage: if wallpaper has been changed or added, 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.

Fit-out benchmark & assessment tool

Materials

Issue

M16

ID

61

Rank

SKA Higher Education
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Wall covering (continued)

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.

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

The manufacturer must clearly demonstrate and state that the 'recyclable' material does not degrade in quality after recycling and can be re-used for a similar application.

Adhesives

A number of European countries have introduced labelling schemes to show the VOC emissions of various products used within the indoor environment:

- **Blue Angel** is a German voluntary environmental product label, whose category RAL-UZ 113 covers adhesives.
- **M1** is a Finnish classification for low emissions.
- **Eurofins** is a label operated by Eurofins, a testing company. The 'gold' standard demonstrates compliance with all European VOC labels.
- **EMICODE** is a testing and classification of products based on emissions. The tested products include primers, levelling compounds, insulating underlays, mortars, adhesives, joint sealants and parquet coatings.
- **Émissions dans l'Air Intérieur** is compulsory VOC emission labelling in France only. It covers construction products installed indoors, floor and wall coverings, paints and lacquers. Products are rated from C to A+.

The UK has a set of standards for testing various construction products. One of the test requirements for these products is to test the formaldehyde emission levels. The standards for testing VOCs in adhesives (EN 13999-1:2007 and BS 3046:1981) also cover other VOCs.

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

Guide to understanding the embodied impacts of construction products, Construction Products Association.

The **Cradle to Cradle programme** lists all the products that have been certified.

ISO 14025:2006: *Environmental labels and declarations – Type III environmental declarations – Principles and procedures*.

ISO 14021:2016: *Environmental labels and declarations – Self-declared environmental claims*.

For a growing list of SKA compliant products and materials that hold the **SKA Product Compliant Label** please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M16

ID

61

Rank

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Hard flooring

Criteria

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

- are reused; or
- if new:
 - are manufactured with at least 25% recycled and 100% recyclable content, designed for deconstruction with components that can be recycled, measured by mass;
 - have been awarded the EU Ecolabel;
 - have an A or A+ rating in BRE's The Green Guide to Specification for the education scheme;
 - have an A or A+ rating in BRE's Green Book Live database for the education scheme;
 - have a Cradle to Cradle Silver or higher certificate;
 - are supplied with an environmental product declaration (other than that written for the Green Book Live), written in accordance with ISO 14025 standards; or
 - if timber, or containing timber components, meet the criteria of good practice measure D20 Timber.

And

All adhesives used to fix the material to the floor should meet the relevant requirements of good practice measure D63 Low VOC finishes.

Or

Adhesives used to fix the material to the floor must allow covering to be entirely demountable so that it can be reused or recycled.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations - Self-declared environmental claims*; and
- state IAQ emissions.

Scoping

This measure applies if hard flooring is specified or installed, e.g. ceramic, porcelain or composite tiles, timber and any other such rigid materials and not covered under M12 Soft flooring.

Assessment

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

At handover stage: collate delivery notes or invoices, and manufacturer's take back scheme agreement where relevant, for all installed products responding to the criteria and/or obtain a statement of reuse for all relevant products/materials.

Fit-out benchmark & assessment tool

Materials

Issue

M11

ID

62

Rank

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Hard flooring (continued)

At occupancy stage: if hard flooring has been changed or added, 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.

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 the purchase of second-hand floor coverings is the preferred option.

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.

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

If a cubicle is 60% timber and 40% steel, all of the timber must be sourced from reclaimed sources or 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 cubicle contains 80% recycled steel.

The Green Guide to Specification, BRE.

GreenSpec – a directory of sustainable construction products in the UK.

ISO 14025:2006: *Environmental labels and declarations – Type III environmental declarations – Principles and procedures*.

ISO 14021:2016: *Environmental labels and declarations - Self-declared environmental claims*.

Fit-out benchmark & assessment tool

Materials

Issue

M11

ID

62

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Hard flooring (continued)

The [Cradle to Cradle programme](#) lists all the products that have been certified.

[Guide to understanding the embodied impacts of construction products](#), Construction Products Association.

The [EU Ecolabel scheme](#).

For a growing list of SKA compliant products and materials that hold the [SKA Product Compliant Label](#) please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M11

ID

62

Rank

**SKA Higher
Education**

Version **1.0 2016**

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Countertops

Criteria

All standard application countertops (e.g. retail shops or breakout spaces) must meet at least one of the following criteria:

- are reused;
- if new, are manufactured with at least 80% recycled content and are 100% recyclable;
- if new, are manufactured from rapidly renewable materials; or
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards.

And

- if timber or containing timber components, the timber meets the criteria of good practice measure D20 Timber.

All performance application worktops (e.g. specialist application, laboratories, workshops) that contain timber must meet at least one of the following criteria:

- are reused; or
- if new are manufactured utilising minimum 70% timber content, which meets the criteria of good practice measure D20 Timber.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations – Self-declared environmental claims*; and
- state IAQ emissions.

Scoping

This measure applies if countertops are specified or installed. It excludes items already assessed under M18 Kitchen fittings.

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 delivery notes or invoices, and manufacturer's take back scheme agreement where relevant, for all installed products responding to the criteria and/or obtain a statement of reuse for all relevant products/materials.

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

Fit-out benchmark & assessment tool

Materials

Issue

M27

ID

63

Rank

SKA Higher Education

Version **1.0 2016**

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Countertops (continued)

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.

Guidance

Choosing construction products: Guide to the recycled content of mainstream construction products, reference guide, GB Version 4.1, WRAP, June 2008.

Worktops can now be made from a variety of materials with high sustainability credentials as detailed below:

- timber products as in D20 Timber;
- rapidly renewable products;
- 80%+ recycled glass products; and
- worktops made from 100% recycled coffee cups/yoghurt pots.

Rapidly renewable (as defined by ISO 14021) are materials from both plant and/or animal fibres that have a harvest cycle of less than 10 years, such as bamboo, hemp, cork and straw and can be harvested in a sustainable fashion.

[Wood Panel Industries Federation](#).

For a growing list of SKA compliant products and materials that hold the [SKA Product Compliant Label](#) please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M27

ID

63

Rank

**SKA Higher
Education**

Version **1.0 2016**

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Joinery

Criteria

100% of materials used in the joinery for the fit-out:

- is reclaimed; or
- it is new timber and meets the criteria of good practice measure D20 Timber.

And

Where joinery items are completed off-site, paint finishes should meet the criteria of M14 Paints, and polishes and varnishes should meet the criteria of M15 Polishes and varnishes.

And

All adhesives used in the assembly of each joinery item must have been tested to EN 13999 or ISO16000 standards and show that carcinogenic and volatile organic compounds are absent; or the adhesive is to have been awarded one of the following labels:

- Eurofins Indoor Air Comfort Gold standard.
- Blue Angel RAL-UZ 113.
- M1 Emissions Classification for construction products.

All materials other than those stated above, such as glass or composite panel products, must contain a minimum of 10% recycled and 100% recyclable content.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations – Self-declared environmental claims*; and
- state IAQ emissions.

All assemblies must be designed for deconstruction with components that can be recycled.

And

All joinery companies supplying the project can demonstrate:

- Membership to a recognised federation/association which requires sustainable practice as standard OR Silver Level Membership to Supply Chain Sustainability School.
- An environmental policy demonstrating awareness of environmental impacts specific to the organisation such as the PAS 82.

Scoping

This measure applies if joinery is specified or installed.

Assessment

At design stage: check specifications explicitly reference the above criteria as applicable to the materials and items in scope.

Fit-out benchmark
& assessment tool

Materials

Issue

M06

ID

64

Rank

SKA Higher
Education

Version 1.0 2016

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Page 1 of 3

Joinery (continued)

At handover stage: collate delivery notes or invoices responding to the criteria for installed products. All invoices for new timber and timber products must detail the quantity, 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 the Forest Stewardship Council (FSC), category B evidence will not be accepted.

All adhesives, paints, varnishes and polish products used as a part of each finished joinery item must be supplied with evidence that they meet the relevant criteria.

For joinery companies, there must be sufficient credible evidence to demonstrate membership or environmental policies to demonstrate above criteria.

At occupancy stage: if joinery has been changed or added, 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.

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 be certified by one of the schemes detailed in D20 Timber.

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 3 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.

Adhesives

A number of European countries have introduced labelling schemes to show the VOC emissions of various products used within the indoor environment:

- **Blue Angel** is a German voluntary environmental product label, whose category RAL-UZ 113 covers adhesives.

Fit-out benchmark & assessment tool

Materials

Issue

M06

ID

64

Rank

**SKA Higher
Education**

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Page 2 of 3

Joinery (continued)

- **M1** is a Finnish classification for low emissions.
- **Eurofins** is a label operated by Eurofins, a testing company. The 'gold' standard demonstrates compliance with all European VOC labels.

The UK has a set of standards for testing various construction products. One of the test requirements for these products is to test the formaldehyde emission levels. The standards for testing VOCs in adhesives (EN 13999-1:2007, and BS 3046:1981) also cover other VOCs.

ISO 14021:2016 *Environmental labels and declarations - Self-declared environmental claims*.

Forest Stewardship Council (FSC).

Programme for the Endorsement of Forest Certification (PEFC).

Supply Chain Sustainability School.

British Woodworking Federation.

National Association of Shopfitters.

Timber Trade Federation.

For a growing list of SKA compliant products and materials that hold the **SKA Product Compliant Label** please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M06

ID

64

Rank

**SKA Higher
Education**

Version **1.0 2016**

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Raised flooring systems

Criteria

All raised flooring panels and sheet materials meet at least one of the following criteria:

- are reused;
- if new, the manufacturer has a recognisable take back scheme for the material at end of life, that confirms that no materials will be sent to landfill; or
- are supplied with an environmental product declaration written in accordance with ISO 14025 standards.

And

- if containing timber components, the timber meets the criteria of good practice measure D20 Timber.

Scoping

This measure applies if raised flooring is specified new, partially repaired and installed.

Assessment

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

At handover stage: collate delivery notes or invoices, and manufacturer's take back scheme agreement where relevant, for all installed products responding to the criteria and/or obtain a statement of reuse for all relevant products/materials.

At occupancy stage: if raised flooring has been changed or added, 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.

Fit-out benchmark & assessment tool

Materials

Issue

M07

ID

65

Rank

SKA Higher Education
Version 1.0 2016

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Raised flooring systems (continued)

Guidance

ISO 14025:2006: *Environmental labels and declarations – Type III environmental declarations – Principles and procedures.*

ISO 14021:2016: *Environmental labels and declarations – Self-declared environmental claims.*

For a growing list of SKA compliant products and materials that hold the [SKA Product Compliant Label](#) please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M07

ID

65

Rank

**SKA Higher
Education**

Version **1.0 2016**

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Insulation

Criteria

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

If new:

- are **natureplus** labelled product;
- composite materials must be able to be separated readily at the end of first use:
 - are assembled without the use of adhesives;
 - can be demonstrated that materials can be easily separated now; and
 - the materials are robust enough to separate and not to disintegrate.
- are manufactured with at least 50% recycled (measured by mass) and 100% recyclable content that is designed for deconstruction, reclaim and reuse with recyclable components;
- are manufactured from at least 50% renewable material, e.g. hemp, flax, newspaper, wool;
- are manufactured with a combination of at least 50% recycled content and 50% renewable material, e.g. hemp, flax, newspaper, wool;
- 80% of the insulation has an A+ or A rating in BRE's The Green Guide to Specification;
- 80% of the insulation has 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.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations – Self-declared environmental claims*; and
- state IAQ emissions.

Scoping

This measure applies if new or reused insulation (either fire, thermal or acoustic) is specified or installed in the building fabric, in joints, in and under floor, in and behind linings, in and above ceilings, in partitions and around building services.

Assessment

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

At handover stage: collate delivery notes or invoices for all installed products, ensuring they respond to the criteria.

Fit-out benchmark & assessment tool

Materials

Issue

M04

ID

66

Rank

SKA Higher Education

Version **1.0 2016**

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Insulation (continued)

At occupancy stage: if insulation has been changed or added, 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 embodied lifetime environmental impacts of materials that can be estimated using life cycle analysis (LCA). Renewable materials have the added benefit of sequestering carbon during growth and offer a carbon reduction in the inventory of material impacts.

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

Guidance

Products that are renewable materials:

- Animal:
 - sheep’s wool
 - goat hair
 - bird feather, etc.
- Wood and wood derived:
 - wood fibre
 - cork
 - cellulose fibre
 - cellulose flake
 - recycled newspaper, etc.
- Plant fibre:
 - flax
 - hemp
 - straw
 - cotton, etc.
- Mixed:
 - aerated hemp-crete
 - hemp-lime
 - paper-crete, etc.

It has been suggested that basalt (the material used to make rock mineral wool) could be considered a renewable material as the rock source is replenished by volcanic activity, and is a very common material.

Fit-out benchmark & assessment tool

Materials

Issue

M04

ID

66

Rank

**SKA Higher
Education**

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Insulation (continued)

However, at this stage SKA does not deem this acceptable as a definition of a 'renewable' material. This is because the rock is not replenished at the site from which it is extracted.

UK manufactured stone mineral fibre insulation uses imported resources.

The target for the recycled content is based on the target set for stone mineral 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.

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.

BRE's *The Green Guide to Specification* provides a set of generic makeups for this product. Find the makeup of the product and see if it matches any of the generic makeups; if it does it achieves a rating based on this generic makeup.

If it does not match a generic makeup, 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.

GreenSpec – a directory of sustainable construction products in the UK: Materials Guide.

ISO 14025:2006: *Environmental labels and declarations – Type III environmental declarations – Principles and procedures*.

ISO 14021:2016: *Environmental labels and declarations – Self-declared environmental claims*.

For a growing list of SKA compliant products and materials that hold the **SKA Product Compliant Label** please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M04

ID

66

Rank

**SKA Higher
Education**

Version **1.0 2016**

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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 (measured by mass) and 100% recyclable content (designed for deconstruction with components that can be recycled);
- if new, have a Cradle to Cradle Silver or higher certificate;
- 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.

And

- if timber or containing timber components, the timber meets the criteria of good practice measure D20 Timber.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations – Self-declared environmental claims*; and
- state IAQ emissions.

Scoping

This measure applies if window treatments are specified or installed.

The criteria apply to the main shading material of blinds, drapes and curtains.

Note: wall graphic, window or glass partition film materials are to be assessed under wall coverings.

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 delivery notes or invoices, and manufacturer's take back scheme agreement where relevant, for all installed products responding to the criteria and/or obtain a statement of reuse for all relevant products/materials.

At occupancy stage: if window treatments have been changed or added, 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.

Fit-out benchmark & assessment tool

Materials

Issue

M23

ID

79

Rank

SKA Higher Education
1.0 2016

Version

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Window treatments (continued)

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.

Guidance

Example of how to assess an item containing timber as well as other materials:

If an item is 60% timber and 40% steel, then all of the timber must be reclaimed or 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.

Where recyclable content is identified, a confirmed route for recycling into new products of a similar quality must be identified. The manufacturer must clearly demonstrate and state that the ‘recyclable’ material does not degrade in quality after recycling and can be re-used for a similar application.

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.

Fit-out benchmark & assessment tool

Materials

Issue

M23

ID

79

Rank

**SKA Higher
Education**

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Window treatments (continued)

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.

GreenSpec – a directory of sustainable construction products in the UK. The **Cradle to Cradle programme** lists all the products that have been certified.

Further accreditation for textile products can be found at **Oeko-Tex**.

ISO 14021:2016: *Environmental labels and declarations – Self-declared environmental claims*.

Guide to understanding the embodied impacts of construction products, Construction Products Association.

For a growing list of SKA compliant products and materials that hold the **SKA Product Compliant Label** please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M23

ID

79

Rank

**SKA Higher
Education**

Version **1.0 2016**

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Paints and coatings

Criteria

All paints and coatings meet at least one of the following criteria:

- have been awarded the EU Ecolabel;
- are manufactured with at least 50% recycled content; or
- have been assessed by Life Cycle Assessment (LCA) and there is a published environmental product declaration (EPD), written in accordance with ISO 14025.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations - Self-declared environmental claims*; and
- state IAQ emissions.

Scoping

This measure applies if paints or coatings are specified or used.

Paint and coatings definition includes:

- Lacquers, stains, oils, waxes, surface impregnations, plenum surface sealers, floor paints.
- Polyester powder coatings and PVDF, PVF2 used on metal profiles.

Polishes and varnishes are covered by M15 Polishes and varnishes.

Assessment

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

At handover stage: collate delivery notes or invoices for all installed products, ensuring they respond to the criteria.

At occupancy stage: if paint or coating has been changed or added, 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 embodied lifetime environmental impacts of selected and specified products that can be calculated 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 estimated impacts for disposal or other end-of-life scenarios. LCA is the basis of environmental product declarations (EPD) and environmental preference methods for exactly equivalent property and application materials and product selection.

Fit-out benchmark
& assessment tool

Materials

Issue

M14

ID

80

Rank

SKA Higher
Education
Version 1.0 2016

Version

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Paints and coatings (continued)

Guidance

The EU Ecolabel scheme and paints criteria were published in the Official Journal (OJEU) in 2014 and will remain valid until at least 20 May 2018.

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

The **Paints Directive** has amended the **VOC Solvent Emissions Directive** through its article 13. The amendment removed a sub activity of 'Vehicle Refinishing' ('the coating of road vehicles as defined in Directive 70/156/EEC, or part of them, carried out as part of vehicle repair, conservation or decoration outside of manufacturing installations') from the scope of the VOC Solvents Directive, as the 'vehicle refinishing products' fall under the scope of the Paints Directive.

Various studies were performed in preparation of the Directive including:

- the 'Decopaint' study on the *Potential or Reducing Emissions of Volatile Organic Compounds (OC) Due to the Use of Decorative Paints and Varnishes for Professional and Non-professional use*;
- a *Screening study to identify reductions in VOC emissions due to the restrictions in the VOC content of products*; and
- a *cost and benefit analysis of the Directive*.

Paintcare.

British Coatings Federation.

ISO 14021:2016 *Environmental labels and declarations – Self-declared environmental claims*.

Guide to understanding the embodied impacts of construction products, Construction Products Association.

For a growing list of SKA compliant products and materials that hold the **SKA Product Compliant Label** please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M14

ID

80

Rank

**SKA Higher
Education**

Version **1.0 2016**

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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.

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: collate delivery notes or invoices for all installed products, ensuring they respond to the criteria.

At occupancy stage: if polishes and varnishes have been changed or added, 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.

Guidance

The [EU Ecolabel scheme](#).

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

ISO 14025:2006: [Environmental labels and declarations – Type III environmental declarations – Principles and procedures](#).

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

[Guide to understanding the embodied impacts of construction products](#), Construction Products Association.

For a growing list of SKA compliant products and materials that hold the [SKA Product Compliant Label](#) please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M15

ID

85

Rank

SKA Higher Education

Version 1.0 2016

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Doors

Criteria

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

- are re-used;
- if new:
 - are manufactured in a factory that has achieved and maintains an Environmental Management System in accordance with ISO 14001 with either (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) and contain average recycled content figures as follows:
 - steel section 15%;
 - stainless steel 75%;
 - copper sheet 60%;
 - aluminium extrusion 44%; and
 - aluminium sheet 73%.
 - are supplied with an environmental product declaration, written in accordance with ISO 14025 standards; and
 - if containing timber components, the timber meets the criteria of good practice measure D20 Timber.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations – Self-declared environmental claims*; and
- state IAQ emissions.

Scoping

This measure applies if doors are specified or installed. Ironmongery is currently not included in the assessment.

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 delivery note or invoice for installed products responding to the criteria or obtain a statement of retention/reuse of existing doors.

At occupancy stage: if doors have been changed or added, 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.

Fit-out benchmark & assessment tool

Materials

Issue

M17

ID

86

Rank

SKA Higher Education
1.0 2016

Version

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Doors (continued)

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.

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 timber as well as other materials:

If a door is 90% timber and 10% steel, all of the timber must be reclaimed or 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 other 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: *Environmental labels and declarations – Type III environmental declarations – Principles and procedures.*

ISO 14021:2016: *Environmental labels and declarations – Self-declared environmental claims.*

For a growing list of SKA compliant products and materials that hold the SKA Product Compliant Label please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M17

ID

86

Rank

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Education
1.0 2016**

Version

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Kitchen fittings

Criteria

Non-timber material in all kitchen fittings for tea points, including cupboards, worktops, shelves and carcass (framework) meet at least one of the following criteria:

- are reused; or
- if new:
 - are manufactured with at least 80% recycled content (measured by mass) and 100% recyclable content (designed for deconstruction with components that can be recycled);
 - are manufactured with 80% renewable content (straw or hemp) sourced from a UK manufacturing base; or
 - are supplied with an environmental product declaration, written in accordance with ISO 14025 standards.

Note: if the only non-timber material is the laminate finish, this is currently excluded from the assessment.

And

Non-timber material in all kitchen fittings for commercial kitchens, including cupboards, worktops, workbenches, canopies and shelving, meet at least one of the following criteria:

- are reused;
- if new, are manufactured with at least 60% recycled content; or
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards.

And

- if containing timber components, the timber meets the criteria of good practice measure D20 Timber.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations - Self-declared environmental claims*; and
- state IAQ emissions.

Scoping

This measure applies if kitchen fittings are installed in tea points and/or commercial kitchens.

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 delivery notes or invoices, and manufacturer's take back scheme agreement where relevant, for all installed products responding to the criteria and/or obtain a statement of reuse for all relevant products/materials.

Fit-out benchmark & assessment tool

Materials

Issue

M18

ID

87

Rank

SKA Higher Education

Version **1.0 2016**

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Page 1 of 2

Kitchen fittings (continued)

At occupancy stage: if kitchen fittings have been changed or added, 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.

Guidance

A 'commercial kitchen' is any space used for food preparation by professional caterers, including staff canteens, etc.

A 'tea point' is a food preparation space provided for staff to prepare drinks and food for themselves. Any equipment installed in it will be of 'domestic' scale.

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 kitchen fitting containing a timber as well as other materials:

If a commercial kitchen fitting is 60% timber and 40% steel, all of the timber must be sourced from one of the schemes as defined in good practice measure D20 Timber or be reclaimed timber. The remaining 20% of the product, in this case steel, will need to meet one of the other criteria listed above. In this example the manufacturer needs to demonstrate that the steel used in the kitchen fitting contains 60% recycled content.

Choosing construction products: Guide to the recycled content of mainstream construction products, reference guide, GB Version 4.1, WRAP, June 2008.

International Stainless Steel Forum.

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

ISO 14025:2006: *Environmental labels and declarations — Type III environmental declarations — Principles and procedures.*

ISO 14021:2016: *Environmental labels and declarations - Self-declared environmental claims.*

For a growing list of SKA compliant products and materials that hold the [SKA Product Compliant Label](#) please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

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Hard wall covering

Criteria

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

- are reused; or
- if new:
 - are manufactured with at least 70% recycled content and 100% recyclable content, measured by mass (excluding wall tiles);
 - wall tile (ceramic, glass, clay, stone, porcelain), are manufactured with at least 50% recycled content and 100% recyclable content, measured by mass;
 - have a Cradle to Cradle Silver certification or above;
 - have an EU Ecolabel;
 - are supplied with an environmental product declaration, written in accordance with ISO 14025 standards; or
 - if timber, or containing timber components to meet the criteria of good practice measure D20 Timber.

And

All adhesives used to fix the material to the floor should meet the relevant requirements of good practice measure D63 Low VOC finishes.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations – Self-declared environmental claims*; and
- state IAQ emissions.

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 Wall covering and M14 Paints and coatings 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 delivery notes or invoices, and manufacturer's take back scheme agreement where relevant, for all installed products responding to the criteria and/or obtain a statement of reuse for all relevant products/materials.

At occupancy stage: if wall coverings have been changed or added, 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.

Fit-out benchmark & assessment tool

Materials

Issue

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Hard wall covering (continued)

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.

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 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: *Environmental labels and declarations – Type III environmental declarations – Principles and procedures*.

ISO 14021:2016: *Environmental labels and declarations – Self-declared environmental claims*.

Guide to understanding the embodied impacts of construction products, Construction Products Association.

The [Cradle to Cradle programme](#) lists all the products that have been certified.

The [EU Ecolabel scheme](#).

For a growing list of SKA compliant products and materials that hold the [SKA Product Compliant Label](#) please refer to the [online database](#).

Adhesives

A number of European countries have introduced labelling schemes to show the VOC emissions of various products used within the indoor environment:

- **Blue Angel** is a German voluntary environmental product label, whose category RAL-UZ 113 covers adhesives.
- **M1** is a Finnish classification for low emissions.
- **Eurofins** is a label operated by Eurofins, a testing company. The 'gold' standard demonstrates compliance with all European VOC labels.
- **EMICODE** is a testing and classification of products based on emissions. The tested products include primers, levelling compounds, insulating underlays, mortars, adhesives, joint sealants and parquet coatings.

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Materials

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ID

88

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Hard wall covering (continued)

- *Émissions dans l'Air Intérieur* is compulsory VOC emission labelling in France only. It covers construction products installed indoors, floor and wall coverings, paints and lacquers. Products are rated from C to A+.

The UK has a set of standards for testing various construction products. One of the test requirements for these products is to test the formaldehyde emission levels. The standards for testing VOCs in adhesives (EN 13999-1:2007, and BS 3046:1981) also cover other VOCs.

Cranfield Institute of Environment and Health Indoor Air Quality UK.

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Screed

Criteria

All screeds or their ingredients must meet at least one of the following criteria:

- if cement:sand based, are manufactured with cement replacement and recycled aggregates in one of the following options:
 - are CEM III/A 52.5L low carbon cement (blended 65% GGBS and 35% OPC);
 - have a screed mix low carbon blend recipe of cement and builders sand (clean sharp) 1:3-5 (weight), 1:4 in most cases; or
 - are manufactured with at least 50% recycled content and are 100% recyclable.
- if not cement:sand based, they contain one of the following: gypsum, desulferisation gypsum, calcium sulfate or anhydrite screed;
- are sourced from a certified manufacturer with a BES 6001 'Good' or better performance rating; or
- are supplied with an environmental product declaration (EPD), written in accordance with ISO 14025 standards.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations – Self-declared environmental claims*; and
- state IAQ emissions.

Scoping

This measure applies if screed is specified or installed; this includes all screeds used for floor repairs, replacement, build-up, leveling or wearing, etc.

Assessment

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

At handover stage: collate delivery notes or invoices for all installed products, ensuring they respond to the criteria.

At occupancy stage: if screed has been changed or added, 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 embodied 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 and materials that just declare parts of the impacts are accepted, such as recycled and recyclable content and VOC emissions.

Fit-out benchmark & assessment tool

Materials

Issue

M03

ID

93

Rank

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Page 1 of 2

Screed (continued)

Guidance

An example of recycled screed is where the sand normally used in screed can be replaced by recycled vitrified or amorphous glass. Glass and Ordinary Portland Cement (OPC) are not compatible and a cement replacement with blended OPC and ground granulated blast-furnace slag (GGBS) cement should be considered.

The target for the recycled content of new screed is based on the targets set by WRAP.

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: Materials Guide.

ISO 14025:2006: *Environmental labels and declarations – Type III environmental declarations – Principles and procedures*.

ISO 14021:2016: *Environmental labels and declarations – Self-declared environmental claims*.

Ty-Mawr ecological building materials – contains information about recycled aggregates for screed.

BES 6001 **Responsible Sourcing of Construction Products**.

For a growing list of SKA compliant products and materials that hold the **SKA Product Compliant Label** please refer to the [online database](#).

With the government's increasing focus on sustainable development, many construction companies are recognising the need to prove that their buildings are constructed with sustainability in mind. One element of this is the responsible sourcing of products used in their construction and the onus of proof that is increasingly being passed on to the manufacturers of those construction products.

The BRE standard BES 6001 has been published to enable construction product manufacturers to ensure and then prove that their products have been made with constituent materials that have been responsibly sourced. The standard describes a framework for addressing the organisational governance, supply chain management and environmental and social aspects in ensuring the responsible sourcing of construction products. Independent, third party assessment and certification against the requirements of BES 6001 then gives the organisation the ability to prove that an effective system for ensuring responsible sourcing exists and adds credibility to any claims made.

Fit-out benchmark & assessment tool

Materials

Issue

M03

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93

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Other loose ancillary furniture items

Criteria

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

- are reused; or
- if new:
 - are manufactured with at least 40% recycled, renewable or otherwise compliant content (measured by mass) and 90% recyclable content (measured by mass) and designed for deconstruction with components that can be recycled;
 - have a Cradle to Cradle Silver or higher certificate;
 - the company manufacturing the products is certified under the Furniture Industry Sustainability Programme (FISP) scheme;
 - are supplied with an environmental product declaration, written in accordance with ISO 14025 standards;
 - have been awarded a Business and Institutional Furniture Manufacturers Association (BIFMA) 'level' certification; or
 - have been awarded the EU Ecolabel or equivalent label.

And if not covered already by the above;

- where plastic parts with a weight ≥ 50 g shall be visibly marked in accordance with the requirements of EN ISO 11469 or EN ISO 1043 so that polymeric materials can be identified to ensure they are able to be recycled, recovered or disposed of in the correct manner at end of life;
- where fabric is specified it must all comply with one of the following:
 - Oeko Tex certified;
 - GreenGuard certified;
 - Cradle 2 Cradle silver or above certified;
 - Global Organic Textile Standard (GOTS universal standard for organic fibres);
 - Global Recycle Standard;
 - SMART Sustainable Textile Standard of Silver or above; and
 - Nordic Swan labelled.
- where upholstery padding all to be CertiPUR , Blue Angel or equally certified.

And

- if timber or containing timber components, the timber meets the criteria of good practice measure D20 Timber.

Fit-out benchmark & assessment tool

Materials

Issue

M22

ID

94

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Other loose ancillary furniture items (continued)

Note: a fabric that complies with criteria listed above is an example of an otherwise compliant material instead of it being just compliant with the set recycled content.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations – Self-declared environmental claims*; and
- state IAQ emissions.

Scoping

This measure applies if furniture not covered by good practice measures M19 Workstations and tables, M20 Chairs: task seating, M21 Storage units and M29 Chairs: soft seating is specified, retained, modified, replaced or installed. Example items can include but are not limited to furniture as such lecterns and audio-visual stands.

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 delivery notes or invoices, and manufacturer's take back scheme agreement where relevant, for all installed products responding to the criteria and/or obtain a statement of reuse for all relevant products/materials.

At occupancy stage: if furniture has been changed or added, 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.

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Materials

Issue

M22

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Other loose ancillary furniture items (continued)

Guidance

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

If a chair is 80% timber and 20% fabric, all of the timber must be sourced from one of the compliant schemes as defined in good practice measure D20 Timber. For the product to be compliant, all the fabric must be able to be recycled at the end of its life to make up the 100% recyclable requirement.

If a chair is made up of 40% metal, 30% fabric, 10% plastic components and 20% padding; with all metal parts at 60% recycled content and none in the padding or plastic parts, the recycled content of the fabric will need to be a minimum of 60% to achieve the 40% minimum recycled content.

All the fabric, plastic and padding materials must also be 100% recyclable at the end of their life for the product to be compliant. Metals are widely recycled in existing waste streams, so they can be accepted as compliant by default.

Where metals are included in a product and the exact recycled percentage is not readily available, the recognised industry average by the representative industry body in each case can be accepted (also see note on page 9 in WRAP's 'Rule of Thumb' document).

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 a good source of evidence to support the claim that a product is recyclable.

Information on the [EU Ecolabel scheme](#).

[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: [Environmental labels and declarations – Type III environmental declarations – Principles and procedures](#).

The [Cradle to Cradle programme](#) lists all the products that have been certified.

For a growing list of SKA compliant products and materials that hold the [SKA Product Compliant Label](#) please refer to the [online database](#).

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Materials

Issue

M22

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WC cubicles and Integrated Plumbing Systems (IPS)

Criteria

All WC cubicles must meet at least one of the following criteria:

- are reclaimed and reused from the same or other site(s).
- If new:
 - are manufactured with at least 70% recycled content (measured by mass) and 100% recyclable content (designed for deconstruction with components that can be reused or recycled);
 - are manufactured with 70% renewable content (e.g. timber, straw or hemp, etc.) sourced from a UK manufacturing base; or
 - are supplied with an environmental product declaration (EPD), written in accordance with ISO 14025 standard.

And

- if timber or containing timber components, the timber meets the criteria of good practice measure D20 Timber.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations – Self-declared environmental claims*; and
- state IAQ emissions.

Scoping

This measure applies if components are specified new, reclaimed, upgraded (including repair) or installed.

Integrated Panel Systems (IPS) for concealed cisterns with or without basins, dispensers, hand dryers, WCs and urinals attached are covered by this good practice measure.

Vanity units including basins, and counter tops, are covered by this measure. Basins, WCs, and urinals are not included in the assessment.

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 delivery notes or invoices, and manufacturer's take back scheme agreement where relevant, for all installed products responding to the criteria and/or obtain a statement of reuse for all relevant products/materials.

At occupancy stage: if the components have been changed or added, 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.

Fit-out benchmark
& assessment tool

Materials

Issue

M28

ID

95

Rank

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WC cubicles and Integrated Plumbing Systems (IPS) [continued]

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.

Guidance

The target for the recycled content of WC Cubicles, etc. is based on the targets set by WRAP.

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.

Example of how to assess a new cubicle containing timber as well as other materials:

If a cubicle is 60% timber and 40% steel, then all of the timber must be sourced from one of the following schemes (Grown in Britain/FSC/PEFC) or 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 cubicle contains 80% recycled steel.

ISO 14025:2006: *Environmental labels and declarations – Type III environmental declarations – Principles and procedures*.

For a growing list of SKA compliant products and materials that hold the [SKA Product Compliant Label](#) please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M28

ID

95

Rank

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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 (measured by mass) and 100% recyclable content (designed for deconstruction with components that can be recycled);
 - have been awarded the EU Ecolabel;
 - are supplied with an environmental product declaration, written in accordance with ISO 14025 standards;
- and if timber or contain timber components, meet the criteria of good practice measure D20 Timber.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations – Self-declared environmental claims*; and
- state IAQ emissions.

Scoping

This measure applies if paper/towel dispensers are specified, retained and 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 delivery notes or invoices, and manufacturer's take back scheme agreement where relevant, for all installed products responding to the criteria and/or obtain a statement of reuse for all relevant products/materials.

At occupancy stage: if dispensers have been changed or added, 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.

Fit-out benchmark & assessment tool

Materials

Issue

M24

ID

105

Rank

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Paper and towel dispensers (continued)

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. Where recyclable content is identified a confirmed route for recycling into new products of a similar quality must be identified. The product manufacturer must clearly demonstrate and state that the ‘recyclable’ material does not degrade in quality after recycling and can be re-used for a similar application. The aim is to promote a closed loop cycle of material use with minimal material waste.

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.

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

GreenSpec – a directory of sustainable construction products in the UK.

Further accreditation for textile products can be found at **Oeko-Tex**.

The **EU Ecolabel scheme**.

ISO 14025:2006: *Environmental labels and declarations – Type III environmental declarations – Principles and procedures*.

ISO 14021:2016: *Environmental labels and declarations – Self-declared environmental claims*.

Guide to understanding the embodied impacts of construction products, Construction Products Association.

For a growing list of SKA compliant products and materials that hold the **SKA Product Compliant Label** please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M24

ID

105

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Shopfitting display and exhibition equipment

Criteria

All shopfitting display and exhibition equipment should meet at least one of the following criteria:

- is reused;
- if new, is manufactured with 15% recycled content;
- has been assessed using the BRE LIST tool to evaluate the LCA (life cycle assessment) and for every product specified and installed, the one with the lowest ecopoints (CO₂ per unit) has been selected; or
- if new, are modular and can be updated without additional use of resources or elements sent to landfill.

And

- where integrated lighting is present this all needs to be compliant with good practice measure E02 Energy efficient white LEDs or E04 Energy efficient light fittings.

And

- Plastic parts with a weight ≥50 g shall be visibly marked in accordance with the requirements of ISO 11469 or ISO 1043 so that polymeric materials can be identified to ensure they are able to be recycled, recovered or disposed of in the correct manner at end of life.

And

- if timber or containing timber components, the timber meets the criteria of good practice measure D20 Timber.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations – Self-declared environmental claims*; and
- state IAQ emissions.

Scoping

This measure applies if any of the following shopfitting, display and exhibition display equipment is specified or installed:

- free standing displays (gondolas, open shelves, display cabinets and display cases);
- parasite displays (those hanging off other displays); or
- shelf and counter displays.

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

Note: electrical and electronic display equipment is not covered by this measure.

Fit-out benchmark & assessment tool

Materials

Issue

M25

ID

106

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Shopfitting display and exhibition equipment (continued)

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 delivery notes or invoices, and manufacturer's take back scheme agreement where relevant, for all installed products responding to the criteria and/or obtain a statement of reuse for all relevant products/materials.

At occupancy stage: if the shopfitting, display or exhibition equipment has been changed or added, 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

Often shopfitting, display and exhibition equipment is over-engineered for the lifespan of use, as users commonly update the equipment every 3–5 years (BRE LIST). Manufacturers do not advertise or market their products based upon their environmental credentials. The aim of this good practice measure is to encourage the design teams to select products with a lower embedded lifetime environmental impact.

Guidance

BRE Press: Information Paper, IP 1/11, *LIST (Low Impact Shopfitting Tool) for designing greener shopfitting display equipment*, March 2011.

Choosing construction products: Guide to the recycled content of mainstream construction products, reference guide, GB Version 4.1, WRAP, June 2008. This document confirmed that galvanised steel products have a recycled content of 15%, which represents good practice.

For a growing list of SKA compliant products and materials that hold the [SKA Product Compliant Label](#) please refer to the [online database](#).

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Internal signage

Criteria

All internal signage must meet at least one of the following criteria:

- are reused;
- if new:
 - all components are manufactured with one or a combination of the below materials:
 - a recycled content of at least:
 - aluminium extrusion – 44%;
 - aluminium sheet – 73%;
 - steel section – 60%;
 - steel sheet – 60%;
 - stainless steel – 75%;
 - copper sheet – 60%;
 - glass – 10%; and
 - recycled composite materials – 80%.
 - adhered rapidly renewable products – 100%;
 - adhered graphics – 100% manufactured from non-PVC products; and
 - textiles to have the OekoTEX or Ecolabel certification or be made with rapidly renewable products.
- are modular and can be updated without additional use of recourses or elements sent to landfill;
- have a BES 6001 'Good' rating or better;
- are supplied with an environmental product declaration, written in accordance with ISO 14025 standards; or
- are Greenguard Certified or have a Cradle to Cradle Silver or higher certificate.

And

- if timber or containing timber components, the timber meets the criteria of good practice measure D20 Timber.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations – Self-declared environmental claims*; and
- state IAQ emissions.

Fit-out benchmark & assessment tool

Materials

Issue

M26

ID

114

Rank

SKA Higher Education

Version **1.0 2016**

If you would like to comment on this measure please email support@skarating.org

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Internal signage (continued)

Scoping

This measure applies if internal signage for promotions, displays, way finding and adhered graphic products (manifestations) are specified or installed. It applies to both procurement routes: ordered through and supplied by the main contractor or a subcontractor of the fit-out; or supplied by the occupant/tenant directly.

Excludes electronic meeting room booking systems, statutory, means of escape and illuminated sign light fittings.

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 delivery notes or invoices, and manufacturer's take back scheme agreement where relevant, for all installed products responding to the criteria and/or obtain a statement of reuse for all relevant products/materials.

At occupancy stage: if the signage has been changed or added, carry out the handover stage assessment. If this measure was achieved at handover stage and the signage 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, 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.

Guidance

Rapidly renewable (as defined by ISO 14021) are materials from both plant and/or animal fibres that have a harvest cycle of less than 10 years, such as bamboo, hemp, cork and straw and can be harvested in a sustainable fashion.

Modular construction enables customers to extend or repair signage systems with ease. Laser-printed paper graphic inserts allow clients to use recycled paper and update signs in-house.

For a growing list of SKA compliant products and materials that hold the [SKA Product Compliant Label](#) please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M26

ID

114

Rank

**SKA Higher
Education
1.0 2016**

Version

If you would like to comment on this measure please email support@skarating.org

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Bricks

Criteria

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

- are reclaimed;
- are new unfired clay bricks;
- are new extruded fired clay bricks;
- if new:
 - are manufactured with at least 30% recycled and 100% recyclable content; and
 - are sourced from a certified manufacturer with a BES 6001 ‘Very Good’ performance rating for the product and the corresponding quarry; or
 - are supplied with an environmental product declaration (EPD), written in accordance with ISO 14025 standard.

Any recycled and recyclable content claims must:

- comply with ISO 14021:2016 *Environmental labels and declarations – Self-declared environmental claims*; and
- state IAQ emissions.

Note: if the bricks are sourced from outside the UK and the EU they may not be considered as meeting the requirements of this good practice measure due to the impact of transport. The assessor has to use their judgment in applying this rule. The EPD may help make this judgment.

Scoping

This measure applies if bricks are specified or installed.

Assessment

At design stage: check that specifications explicitly reference the criteria or specify a product that meets the criteria. For BES 6001:2008 collate the certification documentation.

At handover stage: collate delivery notes or invoices, and manufacturer’s take back scheme agreement where relevant, for all installed products responding to the criteria and/or obtain a statement of reuse for all relevant products/materials.

At occupancy stage: if bricks and mortar have been changed or added, 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.

Fit-out benchmark & assessment tool

Materials

Issue

M02

ID

115

Rank

SKA Higher Education

Version **1.0 2016**

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Bricks [continued]

Rationale

The aim is to reduce the embodied lifetime environmental impacts of materials. An environmental product declaration (EPD) is a report on measurement of the lifetime environmental impact of a product based on Life Cycle Assessment (LCA). However, at this time there are very few products that have one of these declarations.

Reclaimed brick's impacts were historic plus additional current packaging and transport impacts. Unfired bricks use much less energy in manufacture than other types of bricks. Extruded fired clay bricks and blocks use far less energy than solid bricks and also have recycled content. However, the distance over which bricks are transported needs to be taken into account due to their bulk and weight.

Reclaimed Bricks:

The UK landfills 2 billion bricks per annum and can reclaim and reuse many of them. Lime based mortar permits the easy removal of mortar and reuse of brick.

Guidance

The target for the recycled content of new bricks 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.

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

- If a cubicle is 60% timber and 40% steel, all of the timber must be sourced from one of the following schemes: Grown in Britain/FSC/PEFC or be FSC 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 cubicle contains 80% recycled steel.

Note: this measure is in scope if existing cubicles are repaired rather than replaced with a new cubicle. It is considered more sustainable to repair a cubicle than replace it with a new one. The measure is automatically met because repairs to existing cubicles are classified under 'reuse'.

GreenSpec – a directory of sustainable construction products in the UK: Material Guide.

ISO 14025:2006: *Environmental labels and declarations – Type III environmental declarations – Principles and procedures*.

ISO 14021:2016: *Environmental labels and declarations – Self-declared environmental claims*.

BES 6001 *Responsible Sourcing of Construction Products*.

Fit-out benchmark & assessment tool

Materials

Issue

M02

ID

115

Rank

**SKA Higher
Education
1.0 2016**

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Page 2 of 3

Bricks (continued)

With the government's increasing focus on sustainable development, many construction companies are recognising the need to prove that their buildings are constructed with sustainability in mind. One element of this is the responsible sourcing of products used in their construction and the onus of proof that is increasingly being passed on to the manufacturers of those construction products. The BRE standard BES 6001 has been published to enable construction product manufacturers to ensure and then prove that their products have been made with constituent materials that have been responsibly sourced.

The standard describes a framework for addressing the organisational governance, supply chain management and environmental and social aspects in ensuring the responsible sourcing of construction products. Independent, third party assessment and certification against the requirements of BES 6001 then gives the organisation the ability to prove that an effective system for ensuring responsible sourcing exists and adds credibility to any claims made.

Morton, T., *Feat of clay*, Materials World, January 2006 – this article discusses the use of unfired clay blocks for sustainable construction.

For a growing list of SKA compliant products and materials that hold the **SKA Product Compliant Label** please refer to the [online database](#).

Fit-out benchmark & assessment tool

Materials

Issue

M02

ID

115

Rank

**SKA Higher
Education**

Version **1.0 2016**

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Total recycled materials

Criteria

All the materials that fall within the scope of good practice measures M02 to M29 are:

- reused; or
- meet the requirements for the percentage recycled and recyclable content of those good practice measures.

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.

Recycled content claims must comply with ISO 14021:2016 *Environmental labels and declarations - Self-declared environmental claims* and state knowledge of IAQ emissions.

Scoping

This measure applies to all new materials covered by measures M02–M29 and all materials included on the finishes schedule. This measure is in scope as soon as at least one of the measures M02–M29 is in scope.

Assessment

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

At handover stage: collate delivery notes or invoices responding to the criteria for installed products.

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.

This is an overarching measure that rewards projects where all materials installed in the fit-out are selected with consideration to their environmental credentials.

Fit-out benchmark & assessment tool

Materials

Issue

D21

ID

125

Rank

SKA Higher Education

Version 1.0 2016

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Total recycled materials (continued)

Guidance

See individual GPMs for guidance (M02–M29).

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

The manufacturer must clearly demonstrate and state that the ‘recyclable’ material does not degrade in quality after recycling and can be re-used for a similar application.

The [WRAP Recycled Content Database](#) is a useful reference tool for searching for products with recycled content.

For a growing list of SKA compliant products and materials that hold the [SKA Product Compliant Label](#) please refer to the [online database](#).

ISO 14021:2016 *Environmental labels and declarations - Self-declared environmental claims*.

Construction Products Association – *Guide to understanding the embodied impacts of construction products*.

WRAP recyclability efficiency metric: *Development of options for setting client procurement requirements for recyclability in construction projects*.

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

Fit-out benchmark & assessment tool

Materials

Issue

D21

ID

125

Rank

**SKA Higher
Education**

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Timber

Criteria

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

- is reclaimed;
- where new or recycled content timber is used, is supplied with a Chain of Custody (CoC) from one of the following schemes only:
 - Forest Stewardship Council (FSC);
 - Programme for the Endorsement of Forest Certification (PEFC); or
 - Grown in Britain (GiB).
- project achieves full FSC or PEFC project certification.

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. It also includes all timber found in furniture products, supplied through the main contract or directly procured by the client.

Assessment

At design stage: check specifications explicitly reference at least one of the above criteria. Grown in Britain licenced timber may be a preference in addition to FSC and/or PEFC.

At handover stage: collate delivery notes or invoices responding to the criteria for installed products. All delivery notes or invoices for new or recycled timber and timber products must detail the quantity, type of product purchased and state the Chain of Custody 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, 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.

Fit-out benchmark & assessment tool

Materials

Issue

D20

ID

126

Rank

SKA Higher Education

Version **1.0 2016**

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Timber (continued)

Ideally timber and timber products should be sourced from the nearest forest, as this reduces the CO₂ emissions associated with transport.

The primary uses of timber in a fit-out are likely to be: doors, 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 3 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.

[Forest Stewardship Council \(FSC\)](#).

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

[Grown in Britain \(GiB\)](#).

Fit-out benchmark & assessment tool

Materials

Issue

D20

ID

126

Rank

SKA Higher Education

Version **1.0 2016**

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Materials specification

Criteria

All the materials that fall within the scope of the Materials GPMs in the scheme being assessed meet the requirements of those measures.

Scoping

This measure applies to all new materials covered by the Materials GPMs in the scheme being assessed and all materials included on the finishes schedule. This measure is in scope as soon as at least one of the Materials measures is in scope.

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, 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.

This is an overarching measure that rewards projects where all materials installed in the fit-out are selected with consideration to their environmental credentials.

Guidance

See individual good practice measures for guidance (M02, etc.).

Fit-out benchmark & assessment tool

Materials

Issue

D19

ID

127

Rank

SKA Higher Education

Version **1.0 2016**

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Total materials with EPD

Criteria

70% of the materials that fall within the scope of Materials measures M02 to M29 are:

- supplied with an environmental product declaration (EPD), written in accordance with ISO 14025:2006 standards; or
- supplied with a Cradle to Cradle certificate achieving Silver – Platinum as required within their individual good practice measure criteria.

Scoping

This measure applies to all new materials covered by measures M02–M29. This measure is in scope as soon as at least one of the measures M02–M29 is in scope.

Timber products where timber is the main component are excluded from this measure as timber is currently assessed under the measure D20 Timber.

Assessment

At design stage: check specifications explicitly reference that materials must have environmental product declarations to ISO14025:2006 or a valid Cradle to Cradle certificate as detailed in the criteria.

At handover stage: check installed materials and invoices comply with the criteria. Check that EPD ISO14025 certificates are third party verified and published.

At occupancy stage: if any materials have been changed or added, 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 materials and products that have performed life cycle assessments in order to reduce the embedded lifetime environmental impacts of materials. 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.

This is an overarching measure that rewards projects where all materials installed in the fit-out are selected with consideration to their environmental credentials.

Fit-out benchmark
& assessment tool

Materials

Issue

D83

ID

128

Rank

SKA Higher
Education

Version 1.0 2016

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Total materials with EPD (continued)

Guidance

ISO 14025:2006: *Environmental labels and declarations – Type III environmental declarations – Principles and procedures.*

For a growing list of SKA compliant products and materials that hold the **SKA Product Compliant Label** please refer to the [online database](#).

GreenSpec – a directory of sustainable construction products in the UK.

The **Cradle to Cradle program** lists all the products that have been certified.

Fit-out benchmark & assessment tool

Materials

Issue

D83

ID

128

Rank

**SKA Higher
Education**

Version **1.0 2016**

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Low-GWP insulation

Criteria

The manufacture and installation of all new or reused insulants only uses products that have a Global Warming Potential (GWP) of less than 5.

The criteria apply both to the products that the insulation materials are manufactured from, and any resources, catalysts, materials, recycle and ingredients, such as blowing agents that are used in their manufacture, but may or may not be present in the final product.

Scoping

This measure applies if any new or reused insulants (for thermal, fire, acoustic, void or gap filler applications) are specified or used in the building fabric.

Assessment

At design stage: check that the written specifications/contracts state that all insulants must have a GWP of less than 5. If the product and manufacturer have already been specified, carry out the check as for the handover stage.

At handover stage: collate delivery notes or invoices responding to the criteria for installed products.

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

Rationale

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

Guidance

Reclaimed insulation materials may well be higher than 5 if manufactured before this requirement on GWP ingredients was introduced. Take appropriate care with their reuse and with their disposal.

Minimise cutting by coordinating requirements to available sizes.

Products that do not use a blowing agent and comply with this measure include:

Mineral:

- Mineral fibre:
 - stone (rock) wool, glass wool or slag wool
- Cellular mineral:
 - cellular (foamed) glass
 - calcium silicate
 - aerogel
 - exfoliated vermiculite
 - pumice

Fit-out benchmark & assessment tool

Pollution

Issue

D22

ID

16

Rank

SKA Higher Education

Version 1.0 2016

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Page 1 of 3

Low-GWP insulation [continued]

- aerated concrete
 - autoclaved aerated concrete
 - Lightweight expanded clay aggregate (LECA)
 - Lightweight expanded sewage aggregate (LESA)
 - Mixed mineral:
 - Vacuum Insulated panel (VIP)
 - pumice-lime
 - Animal:
 - sheep's wool
 - Wood and wood derived:
 - wood fibre
 - cork
 - cellulose fibre
 - cellulose flake
 - recycled newspaper, etc.
 - Plant fibre:
 - flax
 - hemp
 - straw
 - cotton, etc.
 - Mixed:
 - aerated hemp-crete
 - hemp-lime
 - paper-crete, etc.
- Products that may use a blowing agent:*
- Fossil derived:
 - Extruded and expanded cellular plastic products:
 - Polyurethane, (PUR)
 - Polyisocyanurate (PIR)
 - Phenolic
 - Expanded Polystyrene (EPS)
 - Extruded Polystyrene (XPS)
 - Expanded Polyethylene (EPE)
 - Synthetic rubber
 - Natural rubber

Fit-out benchmark & assessment tool

Pollution

Issue

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ID

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Rank

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Low-GWP insulation [continued]

Examples of blowing agents that have a GWP of less than 5 are:

- Air
- CO₂ (GWP=1)
- Water Blown (CO₂) (GWP=1)
- Spray Polyurethane Foam (SPF closed cell) (Water blown: CO₂) (GWP=1)
- Spray Polyurethane Foam (SPF open cell) (Water blown: CO₂) (GWP=1)
- Isobutene (GWP=3)
- HFO HydroFluoroOlefins (GWP=4)

GreenSpec – a directory of sustainable construction products in the UK.

Building Materials Compared: Insulation: Oil Derived.

For a growing list of SKA compliant products and materials that hold the **SKA Product Compliant Label** please refer to the [online database](#).

Fit-out benchmark & assessment tool

Pollution

Issue

D22

ID

16

Rank

**SKA Higher
Education**

Version **1.0 2016**

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Low-impact refrigerants

Criteria

The systems using refrigerants have Direct Effect Life Cycle CO₂ equivalent emissions (DELCO₂e) of 1000 kgCO₂e/kW cooling capacity.

The Direct Effect Life Cycle CO₂e emissions (DELCO₂e) per kW of cooling capacity are calculated using the following equation:

$$\frac{(\text{Refrigerant loss operational} + \text{refrigerant loss system retirement}) \times \text{GWP}}{\text{Cooling Capacity (kW)}}$$

Where:

Refrigerant loss operational: $(\text{Ref}_{\text{charge}} \times \text{Sys}_{\text{op-life}} \times (\text{L1} + \text{L2} + \text{S1} + \text{S2})) / 100$

Refrigerant loss system retirement = $\text{Ref}_{\text{charge}} \times ((1 - \text{Ref}_{\text{RecEff}}) / 100)$

Where:

- $\text{Ref}_{\text{charge}}$ = Refrigerant charge
- $\text{Sys}_{\text{op-life}}$ = System operational lifetime (years) - use default value of 10 years
- $\text{Ref}_{\text{RecEff}}$ = Refrigerant Recovery Efficiency factor (%)
- L1 = Annual Leakage Rate (units: % refrigerant charge)
- L2 = Annual Purge Release factor (% refrigerant charge)
- S1 = Annual Service Release (% refrigerant charge)
- S2 = Probability factor for catastrophic failure (% refrigerant charge loss/year)
- GWP = Global Warming Potential of refrigerant
- Cooling capacity (kW)

Scoping

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

Assessment

At design stage: obtain confirmation from the designer that the proposed refrigerant containing systems meet the criteria.

Calculations that demonstrate compliance with the criteria should be conducted in accordance with BS EN 378-1 and be provided for confirmation. If the product and manufacturer have already been specified, carry out the handover stage assessment.

At handover stage: obtain manufacturer's/installer's calculations of DELCO₂e, conducted in accordance with BS EN 378-1, along with manufacturer's literature to support the calculations. Check the manufacturer's literature to determine the refrigerant and check the DELCO₂e calculations in line with BS EN 378.

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

Fit-out benchmark & assessment tool

Pollution

Issue

D23

ID

19

Rank

SKA Higher Education

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Page 1 of 2

Low-impact refrigerants (continued)

Rationale

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

Guidance

BS EN 378-1 – *Refrigerating systems and heat pumps*. Safety and environmental requirements. Basic requirements, definitions, classification and selection criteria.

Guideline Methods of Calculating TEWI, British Refrigeration Association (BRA).

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.

Fit-out benchmark & assessment tool

Pollution

Issue

D23

ID

19

Rank

**SKA Higher
Education**

Version **1.0 2016**

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Limiting plant noise

Criteria

Either a noise impact assessment in compliance with BS 4142:2014 is undertaken or the landlord/developer has previously commissioned a noise impact assessment in compliance with BS 4142:2014.

Either the report shows that new plant will not create a noise level more than 5dB above existing background noise levels or the report provides recommendations for acoustic insulation to ensure that any new installed plant will not create a noise level more than 5dB above existing background noise levels.

The installed plant and/or acoustic insulation meets the requirements of the report.

And

An acoustic assessment carried out by a suitably qualified acoustic consultant holding a recognised acoustic qualification and membership of an appropriate professional body, who demonstrates that plant noise does not raise the internal ambient noise levels or reverberation times above those recommended in BB93, which includes recommendations to reduce noise levels to below or equal to recommended thresholds.

Scoping

This measure applies if new plant is being installed that will generate external noise.

Assessment

At design stage: ensure noise impact and acoustic assessments have been carried out (either as part of the project or previously). Obtain a copy of the reports and check that it meets the criteria. Check the drawings and/or specifications to ensure that the proposed plant and proposed attenuation measures meet the requirements.

At handover stage: confirm with as-built drawings and a site visit that there have been no changes to the building since the impact and acoustic assessments were undertaken. Also check that the installed plant and/or acoustic insulation meets the report recommendations.

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

Rationale

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

Fit-out benchmark & assessment tool

Pollution

Issue

D25

ID

52

Rank

SKA Higher Education

Version **1.0 2016**

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Limiting plant noise (continued)

Guidance

This measure usually applies to HVAC plant, but would also apply to any other installed plant that generates external noise.

Method for rating industrial noise affecting mixed residential and industrial areas, BS 4142:2014, BSI, 2014.

Guidance on sound insulation and noise reduction for buildings, BS 8233:2014, BSI, 2014.

Fit-out benchmark & assessment tool

Pollution

Issue

D25

ID

52

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Page 2 of 2

Refrigerant leak prevention

Criteria

Refrigerant systems must be designed to prevent leaks using these standards:

- BS EN378-1: 2008+A2:2012 *Refrigerating systems and heat pumps: safety and environmental requirements.*
- REAL Zero's guidance:
 - *Designing out leaks: design standards and good practices;*
 - *Guide to good leak testing;* and
 - *Leakage matters: the service and maintenance contractor's responsibilities.*

Scoping

This measure applies where any new refrigerant systems are installed or changes are made to an existing system.

It does not apply to systems:

- with a refrigerant charge of under 3kg; or
- where the refrigerant has a GWP of less than 5.

Assessment

At design stage: check the written specifications/contracts and include the requirements to comply with the criteria.

At handover stage: obtain records to show that all relevant refrigerant systems have been installed and tested in accordance with the criteria. Ensure that indicative examples of where and how the strategy complies with the standards/guidance are provided.

At occupancy stage: check records to ensure that servicing and maintenance is being carried out in accordance with the required British Standard and relevant REAL Zero guidance. Review the occupier's maintenance records to ensure the equipment is being used and maintained correctly and has not been disabled.

Rationale

The aim is to reduce the emission of refrigerants into the atmosphere in the event of a leak. The emission of refrigerants has two principal effects:

- Environmental impact – many refrigerants damage the ozone layer and most also contribute to global warming.
- Higher running costs – leakage of refrigerant reduces efficiency.

Fit-out benchmark & assessment tool

Pollution

Issue

D57

ID

67

Rank

SKA Higher Education

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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: a refrigerant leakage/ charge loss detection system is specified that is not based on the principle of detecting or measuring the concentration of refrigerant in air (e.g. the detection of refrigerant pressure drops, indicating leakage).

Scoping

This measure applies where refrigerant systems with a refrigerant charge of over 3kg are installed. It does not apply where systems using refrigerants with a GWP of less than 5 are being installed.

Assessment

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

At handover stage: collate delivery notes or invoices responding to the criteria for installed products.

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.

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

- an 'indirect' system that monitors parameters in the refrigeration system (such as pressures, temperatures and liquid levels) and calculates whether a leak is present that is not monitored in 'real time'.

Fit-out benchmark & assessment tool

Pollution

Issue

D24

ID

75

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SKA Higher Education

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Refrigerant leak detection (continued)

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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Pollution

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75

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Air quality impact assessment

Criteria

An air quality impact assessment, including a plume dispersal analysis is undertaken where a new fume-cupboard or safety cabinet extract is installed, or a new boiler flue is installed as part of the project. The plume dispersion analysis should be undertaken using recognised modelling software.

The extracts from the fume/safety cabinets or boiler flues are designed to respond to the recommendations in the air quality assessment to minimize air quality impacts.

Scoping

This measure applies to projects where new fume-cupboard or microbiological safety cabinet extract flues are installed, or new boiler flues are installed.

Assessment

At design stage: an air quality impact assessment is prepared, and air dispersion analysis is undertaken on the proposed extract flues, and recommendations made regarding the extract flue design. Design drawings and specifications are provided that reflect the recommendations in the air quality impact assessment.

At handover stage: as-built drawings and site inspections confirm that the installed extract systems meet the design specifications.

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

Rationale

Extracts from laboratories and boilers can contain harmful chemicals that have a detrimental impact on local air quality and the health and wellbeing of building users. Undertaking an air quality impact assessment and designing the extract systems to respond to the recommendations made in the impact assessment will reduce the local environmental risk.

Guidance

Recognised air quality modelling software, such as ADMS or computational fluid dynamic modelling tools should be used to undertake the risk assessment, based on the likely chemical composition of the exhausts being modelled.

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Pollution

Issue

P17

ID

83

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Page 1 of 1

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 5 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 or delivery note 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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Pollution

Issue

D27

ID

122

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Refrigerant recovery (continued)

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; or
- recover and destroy.

Guidance

F gas in refrigeration, air conditioning and fire protection systems, Department for Environment, Food & Rural Affairs, 2014.

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.

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Soft landings: aftercare (fine tuning, seasonal commissioning and POE)

Criteria

All the following are required:

At design stage:

- Ensure a contract/appointment is in place to guarantee the designer and contractor returns to fine-tune systems throughout the first year of occupation.
- The contract/appointment should set a point of contact from the project team once the project is complete. This person is to liaise with the building operators and occupants to ease the handover process and to allow building users and building maintenance staff to ask questions about user controls, etc.

At handover stage:

- The point of contact should carry out 'walkabouts' and stay on site, at least one day a week, for the initial 8 weeks of occupation. For projects valued under £2m to visit site at least one day every two weeks.
- Ensure that the contractor is appointed to validate the operational performance of the building against the design parameters and soft landing performance targets. This should include validating sub-meter readings.

At occupancy stage:

- Carry out fine tuning and review of systems.
- Undertake seasonal/annual commissioning for complex systems (complex systems are defined in D70 Soft landings: commissioning, handover and training).
- The soft landings point of contact should record lessons learnt from the design, construction, operation and handover on behalf of the client to feedback into new projects.
- Carry out a Post Occupancy Evaluation (POE) 12 months after total completion and full occupation. The POE should provide a review of the performance of the building against the soft landings performance targets set at the start of the project. The POE should include:
 - a review of energy use against design benchmarks;
 - an occupant satisfaction survey that covers the building users views of their working environment; and
 - an audit of the building's engineering and architectural systems.

Scoping

This measure is in scope for all projects.

Fit-out benchmark
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Project delivery

Issue

D71

ID

4

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Soft landings: aftercare (fine tuning, seasonal commissioning and POE) (continued)

Assessment

At design stage: a contract or client commitment to ensure there is a point of contact during the initial occupied months and for up to 1 year afterwards for seasonal/annual commissioning.

At handover stage: a soft landings responsibilities schedule or equivalent, that the point of contact from the project team has been nominated and appointed, and the scope of work includes time in the building to answer questions and to carry out 'walkabouts' for the initial 8 weeks of occupation. The frequency of these 'walkabouts' depends on the size and scope of the project. Soft landings responsibilities schedule or equivalent to show that a contractor is appointed to validate sub-meter readings after 2 or 3 months of operation.

At occupancy stage: provide updated commissioning records/ documentation to confirm that the building has been fine-tuned and seasonal commissioning of complex equipment has been undertaken. Provide lessons learnt report to client. Provide POE report/contract for it to be undertaken if the building has not reached at least 75% occupancy at the time of the handover assessment.

Rationale

BSRIA developed guidance on 'soft landings' to expand the commissioning process so that it starts at RIBA stage 2 and continues for 3 years after practical completion. The aim is to shift the focus of good practice from adherence to technical outcomes to performance outcomes, i.e. ensuring that the building benefits the occupants.

After works are completed, aftercare and fine tuning is needed to ensure that the building is performing to its design criteria. This should include, but not be limited to: validation of sub-meter readings, an aftercare point of contact, fine-tuning of systems and annual/season reviews.

Initial queries are often related to use and performance of unfamiliar systems. A point of contact for the users must be available during the initial months. Team members must make themselves available to deal pre-emptively with queries and misunderstandings. Observations, questions and responses will help prevent minor problems developing into longer term chronic irritants for the occupants and client alike. Being present during aftercare provides an opportunity to observe and learn from initial feedback and problem solving. This is beneficial for avoiding issues earlier in the design stage of future projects. The aftercare point of contact must be someone who worked on the project. There is no benefit to be gained from putting aftercare services out to open tender as this will break project team continuity and the feedback loops that are a core part of soft landings.

Systems will need to be fine-tuned during the first 8 weeks of occupation. The first 8 weeks of a building's occupation are critical as systems are settling down into operation, and users are getting to grips with them. This period offers the greatest potential for fine-tuning and alteration. The longer things are left, the more difficult it is to change them.

Fit-out benchmark & assessment tool

Project delivery

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4

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Page 2 of 3

Soft landings: aftercare (fine tuning, seasonal commissioning and POE) (continued)

During these initial weeks the contractor should provide on-site attendance to provide technical guidance and support to the client's facilities management team.

Fine tuning is needed in order to optimise effective and efficient operation and to take account of occupant feedback and changes in weather and occupancy. Therefore to be the most effective, commissioning must be done while the building is in use and after seasonal changes. Seasonal and annual reviews must be carried out. By the second year, the building should have entered stable operation, during which time the energy data should be reviewed and adjustments recommended in a quest to improve energy performance.

After works and commissioning is completed, contractors/designers must write up lessons learnt, to enable this information to be used in the design stage of new projects.

The purpose of POE is to measure performance outcomes and inform the need for any interventions to improve performance. This should be measured and reported in line with the client's performance targets. The results of the POE should be used to inform any interventions or improvements in the second year of aftercare and should include 'lessons learnt' that can be applied to future projects.

The POE should be undertaken 12 months after completion and 75% occupation. This is to enable the building to settle down, for defects and snags to have been resolved in line with the requirements of the main contract, and for the building's systems and occupants to have experienced all the seasons.

Guidance

The Soft Landings Framework: for better briefing, design, handover and building performance in use, BG 54/2014, BSRIA, 2014.

Soft Landings for Schools Case Studies: Feedback from use of the Soft Landings Framework in new schools, BG 9/2010, BSRIA, 2010.

Pitstopping - BSRIA's reality-checking process for soft landings, BG 27/2011, Roderic Bunn, BSRIA, 2011.

How to procure Soft Landings: Specifications and supporting guidance for clients, consultants and contractors, BG 45/2014, BSRIA, 2014.

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Soft landings: design workshops

Criteria

Both of the following workshops are required to happen:

1. Design stage workshop with design team

Aim: to enable the design team to understand how effectively current systems are operating, test whether the new and retained systems are appropriate for the occupants/building maintenance staff and raise any issues about the functionality of the design.

Attendees: the workshop should involve the design team, the contractor (if appointed), an end-user representative, and a representative from building management who will be responsible for operation of the new space.

Agenda:

- Review feedback and lessons learnt from any previous projects, especially relating to sub-metering, controls strategies, selection of equipment, maintenance issues.
- Set roles and responsibilities.
- Set specific and measurable performance targets for lighting and small power energy use.
- Set specific and measurable performance targets for water use, if applicable.
- Test out proposed user interfaces (controls) with occupants and operations staff.

2. Design intent workshop with contractor

Aim: to ensure that the design intent is clearly communicated to the contractor and that the equipment being purchased aligns with the design intent.

Ensure contractor understands their role in the soft landings process and the outcomes that are to be achieved.

Attendees: the workshop should involve a client representative, a building management representative, the contractor and the design team.

Agenda: the workshop should explain and discuss:

- The role of the contractor in the soft landings process.
- The performance targets that have been set.
- The rationale for the selection of energy using equipment.
- The reasons for the controls that have been selected.
- The importance of the proposed sub-metering and BMS/AMT strategy.
- The impact of the fit-out design on other systems and parts of the building.
- The process of commissioning, handover and training.

Scoping

This measure is in scope for all projects.

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Project delivery

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D69

ID

20

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Soft landings: design workshops (continued)

Assessment

At design stage: provide meeting minutes from the design stage workshops that demonstrate that the agenda has been covered and confirmation of the attendees at the workshop. Evidence that during this workshop, specific and measureable performance targets for lighting, small power energy use and water (if applicable) have been set. Any divergence from the design intent should be documented and rationalised.

At handover stage: provide documentation to confirm that the building has the systems in place to achieve the performance targets set out at the design stage.

At occupancy stage: provide documentation to confirm that the performance targets have been met during the first year of occupation.

Rationale

BSRIA developed guidance on ‘soft landings’ to expand the handover process to start at RIBA stage 2 and continue for 3 years after practical completion. The aim is to shift the focus of good practice from adherence to technical outcomes to performance outcomes, i.e. ensuring that the building benefits the occupants.

Early involvement of operational staff in design process such as prospective occupants, staff and facilities management will enable the occupants using and operating the space to understand the design intent and provide feedback on their experiences of previous projects.

Involvement of the contractor once appointed is important to gain their experience from other projects and ensure that the equipment being purchased aligns with the design intent. Complex technologies, especially those that are interdependent, require careful attention if they are to perform as the designer intended, these need to be explained to the clients representatives.

To be most beneficial, the design stage workshop should cover the setting of performance targets for lighting, small power energy use and water use (if applicable). Lighting targets should be in line with SKA rating for reducing lighting energy in use (P10) and water targets in line with SKA rating for reduced water in use (P08). Using feedback of similar buildings energy profiles will help set appropriate and achievable targets. These targets should be specific and measureable against appropriate benchmarks, can take on a variety of forms but should be time based and trackable. The design team should ensure that records of the buildings’ energy performance are accessible by the current facilities team after handover (e.g. simple spreadsheets, rather than information contained in dynamic simulation models).

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Project delivery

Issue

D69

ID

20

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Soft landings: design workshops (continued)

Guidance

The Soft Landings Framework: for better briefing, design, handover and building performance in use, BG 54/2014, BSRIA, 2014.

Soft Landings for Schools Case Studies: Feedback from use of the Soft Landings Framework in new schools, BG 9/2010, BSRIA, 2010.

Pitstopping - BSRIA's reality-checking process for soft landings, BG 27/2011, Roderic Bunn, BSRIA, 2011.

How to procure Soft Landings: Specifications and supporting guidance for clients, consultants and contractors, BG 45/2014, BSRIA, 2014.

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Project delivery

Issue

D69

ID

20

Rank

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Building user guide

Criteria

A building user guide (BUG) for non-technical staff is produced that is:

- Greater than 15 pages.
- Avoids using technical jargon and includes clear illustrations (diagrams/ photographs) to assist comprehension, complementing the required O&M manuals.
- Contains simple and clear information on how to operate each item in the scope of the fit-out on a day-to-day basis.
- The guide should include:
 - a brief explanation of BUG purpose;
 - an explanation of the design intent and the heating/cooling strategies;
 - an overview of the controls/BMS;
 - building energy performance records;
 - energy/water metering, monitoring and targeting strategy;
 - summary of areas, occupancy, WC provisions and fire strategy;
 - building waste, recycling and reuse monitoring record and targeting strategy;
 - principles of material selections and item-specific user operational guidance such as furniture reusing carpet tile recycling and linoleum cleaning;
 - summary of SKA rating scope and score; and
 - reference page to other relevant documents.

A BUG for tenants/occupants is produced that:

- is 1-2 pages (the BUG can be in the form of local signage or an intranet page instead of a written document, if appropriate);
- avoids technical jargon and includes clear illustration to assist comprehension; and
- includes:
 - clear information on all controls relevant to the tenants/occupants (blinds/local heating/lights/etc.);
 - buildings waste and recycling strategy; and
 - energy/water metering, monitoring and targeted strategy.

Scoping

This measure applies to all fit-outs.

Assessment

At design stage: At design stage: 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.

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Project delivery

Issue

D45

ID

26

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Page 1 of 2

Building user guide (continued)

At handover stage: completed BUGs produced for non-tech staff and tenants/occupants.

At occupancy stage: ensure that the BUGs are still accessible to all staff. If the occupancy assessment indicates that changes have been made to the floors being assessed, check that the BUGs reflect these changes.

Rationale

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

The guide should inform all users and operators of the greener practices applied to the space to enable occupants to optimise operational building efficiency.

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 annually or at new staff inductions.

Tenants/occupants will only require day-to-day information on the installed systems in which they have control of, e.g. local heating devices, blinds and lighting. Whereas the non-technical staff will need more information on the heating/cooling strategies and the design intent to be able to adequately design furniture layout, the tenant guide can be simple (1-2 pages) and provided as part of an induction pack and/or on the company extranet.

Guidance

Each client will have a different way of using the BUG and it can be integrated into staff training manuals given out during inductions or be part of a wider A-to-Z staff operation manual.

Building Log Books – a user’s guide, Good Practice Guide 348, Carbon Trust, 2003.

‘Section 4: Providing Information’ from *The Building Regulations 2000, Approved Document Part L2A: Conservation of fuel and power in new buildings other than dwellings* (2013 edition).

Edocuments – an accredited CIBSE building log book developer.

Guide L: Sustainability, CIBSE, 2007.

A BSRIA Guide: Building manuals and building user guides. BG 26/2011. BSRIA 2011.

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Project delivery

Issue

D45

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26

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Page 2 of 2

Soft landings: commissioning, handover and training

Criteria

All the following are required:

At design stage

- For all projects the contractor's commissioning manager should be involved as soon as the contractor is appointed to review the design and should be responsible for planning and implementing the commissioning process.
- For complex projects involving the replacement of one or more mechanical or electric system that would interact or projects with a construction value ≥£2million, commissioning should be overseen by an MEP (Mechanical, Electrical & Public Health) design engineer appointed by the client. The role would include reviewing commissioning results, involvement in spot checks and ensuring that the design intent is being implemented.

At handover stage

- Provide adequate training of staff and occupants prior to handover by:
 - training of operators through their involvement in commissioning and testing;
 - including operators in the final commissioning stage so they understand any defects and characteristics of the system; and
 - non-technical training for prospective occupants and facilities staff on the design intent, including user controls and how best to ensure that comfort conditions are maintained in the space (e.g. not blocking ventilation grilles).
- The technical training should include showing operators how to set up the BMS and controls and allowing them to test out the system. Operators should be involved in the setting up and calibration of the metering and monitoring systems.
- A brief commissioning report should be prepared for the operators that summarises the results of the commissioning exercise. The report should state that any defects that were found have been resolved and that the system has been set up to maximise plant efficiency.

Scoping

This measure is in scope for all projects.

Assessment

At design stage: specification and/or contract that the contractor's commissioning manager has been appointed during the design stage. Where an MEP design engineer is required (as per criteria above), then specifications and/or contracts of their appointment should be provided.

At handover stage: evidence that staff have received training prior to handover, e.g. completed presentation slides or correspondence and summary commissioning report.

Fit-out benchmark & assessment tool

Project delivery

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D70

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Page 1 of 2

Soft landings: commissioning, handover and training (continued)

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

Rationale

BSRIA developed guidance on 'soft landings' to expand the handover process so that it starts at RIBA stage 2 and continues for 3 years after practical completion. The aim is to shift the focus of good practice from adherence to technical outcomes to performance outcomes, i.e. ensuring that the building benefits the occupants.

For aftercare and fine-tuning activities to add value, it is vital that commissioning is done well. Clients must ensure commissioning (including seasonal and continuous commissioning where relevant) has a high status at project inception. Commissioning must be well-defined and planned, adhered to, and protected from time and cost pressures.

Most problems during handover occur due to insufficient understanding by the occupier's staff of technical systems and their user interfaces, soft landings aims to reduce this. Adequately trained staff must be in place before handover and will need proper familiarisation and training about building systems in good time. The methods of communication can range from interactive presentation at various stages of the project, and also include newsletters, videos, webinars, and signage. Building readiness programmes should include everything required so the building is ready for handover such as planning for migration, setting up the BMS and controls (and ensuring the operators know how they work), and the setting up, calibration and cross-checks of the metering and monitoring systems. The contract team should ensure that documentation and training is in place before handover, after which responsibility passes to the building owner and operator.

Many building performance problems are due to poor commissioning and handover. The preparation of a commissioning and handover plan will help reduce this risk. Once completed, a commissioning report needs to be drawn up to indicate that inspection/ commissioning has been completed to ensure that the work complies with building regulations. This should include test results indicating any defects that were found to identify and solve operational fault and maximise plant efficiency. Including operators during final commissioning stages helps them understand defects and how to rectify them. This can be included as part of the training process.

Guidance

The Soft Landings Framework: for better briefing, design, handover and building performance in use, BG 54/2014, BSRIA, 2014.

Soft Landings for Schools Case Studies: Feedback from use of the Soft Landings Framework in new schools, BG 9/2010, BSRIA, 2010.

Pitstopping - BSRIA's reality-checking process for soft landings, BG 27/2011, Roderic Bunn, BSRIA, 2011.

How to procure Soft Landings: Specifications and supporting guidance for clients, consultants and contractors, BG 45/2014, BSRIA, 2014.

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Project delivery

Issue

D70

ID

27

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Page 2 of 2

Furniture storage logistics

Criteria

The fit-out feeds into a campus-wide furniture storage logistics framework, with a view to maximising re-use and minimising disposal to landfill or unnecessary procurement of new furniture. The measure will be achieved if either:

- there is an existing furniture storage logistics framework in place that is used to temporarily store retained furniture or to draw from to supply furniture to the project; or
- when no framework is in place, that a framework is drawn up as a result of the fit-out taking place.

The framework service can be either provided by the client themselves or through an external supplier, and it can also include refurbishment and repair services.

Scoping

In scope if the higher education institution has 10 or more buildings and a total income of greater than £50m per annum. Optionally in scope for smaller projects or institutions.

The measure does not need to be in scope if the material measures for chairs, storage units, workstations and tables and other furniture items are not in scope.

Assessment

At design stage: view the furniture framework agreement or plan and ensure it is in accordance with the criteria (i.e. it sets out a clear strategy and requirements for maximising re-use over recycling). View a signed off inventory of furniture being removed and procured during the fit-out of the assessed space; this should include clear links/ reference to the campus-wide furniture framework.

At handover stage: carry out a site visit and confirm design plans were implemented. Request delivery notes if required to confirm items reused or supplied.

At occupancy stage: carry out a site visit to confirm there has been no significant changes to furniture inventory and continued use of the framework. If there has been additional procurement of furniture, ensure that this has not been at the expense of disposing of existing furniture, which contradicts the furniture framework strategy.

Rationale

The disposal of old furniture and procurement of new furniture in higher education institutions can represent an extremely inefficient use of material resources, and generates huge quantities of needless waste. Much of this is due to the lack of an organised and joined-up process to ensure that existing resources are redistributed effectively, both within and between different sites.

Fit-out benchmark & assessment tool

Project delivery

Issue

P13

ID

28

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Page 1 of 2

Furniture storage logistics (continued)

The use of furniture redistribution networks or take back schemes should be prioritised to ensure that these valuable assets continue to ‘circulate’, helping to minimise costs, waste and environmental impacts. However, this process can sometimes be more costly than buying in new furniture. To encourage a more economical approach, a campus-wide framework for taking furniture back during fit-outs, storing, reusing or refurbishing it and sending it back to either the same fit-out or to another project or a third sector enterprise should add further value and reduce costs.

The first priority for any fit-out is that any overarching campus-wide frameworks encompass small and large scale fit-outs. Higher education institutions often have a large number of buildings in their estates and so have an opportunity to join projects and departments up in regards to procurement, storage and waste. By joining up to an existing furniture framework the higher education institution is able to share resources, avoid surplus and cut down on waste. Without a campus-wide framework there is a risk that each fit-out is undertaken in isolation, reducing the amount of furniture that can be stored, decanted, re-used or remodelled for a more holistic sustainable approach.

Guidance

Link to a campus-wide furniture storage strategy if one exists, making use of existing storage facilities both in strip out and procurement. Where one does not exist this should act as a prompt to encourage the institution to develop a framework for disposal and procurement of furniture.

Moving away from standard recycling and procurement towards a managed service with a supplier gain share, charitable re-cycling/upcycling, remanufactured furniture and institution based re-use policy. However, optimising space is also a key consideration and any approach needs to be balanced with the need to avoid long-term storage. Using the waste hierarchy is a good starting point, identifying what furniture can be decanted and reused, by completing a furniture inventory (see good practice measure P15 Furniture inventory) or shared with other departments if a change of use is part of the fit-out. In addition this measure encourages the participation in take back schemes, or to reuse via charities and social enterprise projects by donating unwanted furniture and equipment rather than disposing.

There are several logistics and furniture companies that offer take back schemes that can form the basis of furniture framework strategies.

On-campus storage ideally should not exceed 5% of any school or area’s total space. If storage exceeds this percentage, an assessment should be made of solutions and alternatives. Storage should not be housed in windowed offices.

Fit-out benchmark & assessment tool

Project delivery

Issue

P13

ID

28

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Good laboratory design

Criteria

Projects must demonstrate during the design process that they have followed the S-Labs *Good Laboratory Design Principles* or other updated guidance issued by S-Labs, which covers sustainability aspects within the following areas:

- Process.
- Configuration and practices.
- Ventilation and containment.
- Health, safety and wellbeing.
- Equipment and furniture.
- Laboratory services.
- Laboratory operation and management.

Scoping

This measure applies to laboratory and research spaces if they are new, refurbished, or changed as part of the fit-out project.

Assessment

At design stage: review records including plans, specifications, meeting minutes demonstrating that the criteria have been considered and appropriate actions included in design.

At handover stage: confirm at handover, using as-built drawings/ specifications, that the proposed design solutions from the design stage or elsewhere have been implemented for the fit-out.

At occupancy stage: check that the installed features are still available. If the laboratory design or equipment has been changed, repeat the handover stage assessment. If this measure was achieved at handover stage and the laboratory has not been altered, this measure will be achieved by default.

Rationale

The aim of this measure is to introduce designers and specifiers to sustainable laboratory design, with the aim of reducing consumption while also meeting the specific needs of laboratory facilities, and providing positive internal environments.

A typical laboratory can use up to 5 times as much energy and water per square meter as an office building, and can contain high heat emitting equipment. Labs also contain significant non-renewable, hazardous and contagious materials, and create potentially hazardous waste.

Fit-out benchmark & assessment tool

Project delivery

Issue

D82

ID

60

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SKA Higher Education

Version **1.0 2016**

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Good laboratory design (continued)

Research facilities are so energy demanding for a variety of reasons:

- High water consumption and creation of potentially hazardous effluents.
- Use of highly contagious and/or hazardous materials, leading to occupational health and safety issues, and community concern about possible health impacts relating to exhaust gases.
- Creation of contaminated wastes.
- Use of many non-renewable materials.
- Scientists often require 24-hour access.
- Irreplaceable experiments require fail-safe redundant backup systems and uninterrupted power supply (UPS) or emergency power.

In addition, research facilities have intensive ventilation requirements – including ‘once through’ air – and must meet other health and safety codes, which add to energy use.

Guidance

With the introduction of this GPM as a new measure, the criteria should not be overly stringent; it is more important that clients and designers are introduced to the idea that the above principles can reduce resource consumption and bring a positive environment to laboratories, without compromising design requirements. Therefore the SKA assessor should use their judgment to award this measure when the project can provide evidence that a given number of the principles have been considered and have influenced the final design.

The S-Labs document *Good Laboratory Design Principles* aims to stimulate the development of laboratories that have a smaller footprint and inspire sustainability interest and action among users. The following provides further guidance on what should be covered within each principle area:

- Process:
 - Have an effective and inclusive decision process.
 - Ensure that the design properly considers lifetime use of the space.
 - Ensure that there is a good understanding of all relevant regulations and good practice measures and that these are met in practice.
 - Ensure that the design specification and intent is implemented properly.
- Configuration and practices:
 - Ensure adequate and effective space for write up, technical support, logistics, storage and maintenance.
 - Explore opportunities to reconfigure working practices to take advantage of refurbished space.
 - Optimise siting and monitoring of dangerous and/or resource intense activities and equipment.

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Project delivery

Issue

D82

ID

60

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Good laboratory design (continued)

- Ventilation and containment:
 - Ensure safe working conditions in both contained and general laboratory spaces.
 - Ensure that ventilation can be varied in response to user demand.
 - Ensure that ventilation equipment and configurations are as efficient as possible.
- Health, safety and wellbeing:
 - Ensure adequate lighting and maximise daylighting and visibility.
 - Ensure that health and safety is a key influence on project decisions.
- Equipment and furniture:
 - Ensure that all equipment is fit for purpose, right sized and right sited.
 - Ensure that all equipment provides value for money on a lifetime basis.
 - Ensure that all furniture, fixtures and finishes are suitable for laboratory environments.
- Laboratory services:
 - Explore potential for centralised support systems.
 - Minimise waste and manage effectively.
 - Minimise requirements for water usage.
- Laboratory operation and management:
 - Ensure that the future management and operation of the refurbished laboratory is a key influence on project design decisions.
 - Identify and ameliorate threats to business continuity.
 - Identify and properly consider opportunities to improve use and management of chemicals, consumables, materials and samples.
 - Ensure that use of electricity and water can be monitored and managed.

The S-Labs website provides resources such as a tool to audit laboratory energy use, information and guidance on best practice laboratory management, and many useful case studies. *S-Lab Environmental Good Practice Guide for Laboratories*.

Sustainable Laboratory Design, whole building design guide.

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Social value actions

Criteria

A social, economic and environmental plan is put in place prior to start on site and executed. Projects must make quantifiable steps in at least 4 of the below criteria.

The plan will consider as a minimum:

1. The viability of employing apprentices during the project.
2. The viability of taking on work experience students during the project.
3. The proportion of the project spend that will be spent in the local community (see below for definitions of local).
4. The proportion of materials that were sourced from the local community.
5. An approximation of the number of work hours generated in the local community by the project.
6. The viability of offering additional training to operatives or other project stakeholders that will provide added value to the local community.
7. Any additional environmental issues not picked up in other aspects of SKA, e.g. ethical/fair trade food sourcing for project canteen, real time environmental monitoring, carbon offset programmes or any item that CCS formally award as an environmental innovation.

Note: above point 7 – ‘additional environmental issues not picked up in other aspects of SKA’ can only be achievable once, even if multiple additional items have been undertaken.

Defining local

It is likely that the definition of ‘local’ will differ by project and region. For the purposes of this assessment choose the option below that is most relevant to your project and clearly state how this is defined in your social, economic and environmental plan:

1. Local or regional government area. This may be appropriate where you are working on a public sector project.
2. Area from which a large proportion (e.g. 80%) of either project or contractor employees live. This will reflect well on a local company showing its impact on a local economy.
3. More complex areas, for example a two ring band from a central point. This may be relevant where your project spans a number of different regional boundaries.

Scoping

This measure is in scope for all projects over a value of £2m.

For projects with value below £2m this measure is in scope if the client chooses to pursue it.

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Project delivery

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P14

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91

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Social value actions (continued)

Assessment

At design stage: provide a copy of the project's social, economic and environmental plan. The plan must include a commitment from the project team to achieve 4 or more of the criteria.

At handover stage: ensure the copy of the project's social, economic and environmental plan has been kept on site, and where relevant applied with documentary evidence to demonstrate that at least 4 or more of the above criteria have been met (e.g. training records, apprentice contracts).

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

Rationale

The aim is to broaden the wider sustainability aspirations of a project and to assist in complying with the **Social Value Act** where appropriate.

Guidance

See **SKA example social, economic and environmental plan** within *Further resources*.

Social Value Act 2013.

LM3 Online – tool to help calculate your organisation's economic contribution to its community. Costs dependent on size of company/number of projects.

Construction Youth Trust.

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Project delivery

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P14

ID

91

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Consumables inventory

Criteria

Laboratories, engineering, art and IT consumables to be documented in a full inventory prior to the construction phase and encourage the optimisation of consumable resources. This should link to a campus-wide strategy to encourage shared resources and avoid duplicated and surplus consumables being stored for long periods.

In occupation a fully functioning inventory is used to ensure there is an autonomous approach to consumable disposal, storage, reuse and restocking.

Scoping

In scope for any fit-out where consumables are being removed.

At occupancy stage it is in scope for any fit-out where consumables have a function in occupation.

Assessment

At design stage: a full inventory is undertaken by building occupants in consultation with the project team to determine the time frame and process needed to store materials during construction. A full inventory list with product details, condition and proposed destination option to be presented to project team with as many products stored for re-use, sharing or decanting as possible.

At handover stage: carry out a site visit to confirm the full inventory exists and was adhered to with decanted material back in the refurbished space plus the awareness that this functions as a working document.

At occupancy stage: check that an adequate consumables inventory exists that is owned and championed within the work place.

Rationale

In a higher education institution, consumables can form a large part of occupational activities. Encouraging optimal use of consumables can reduce waste, optimise storage facilities and minimise procurement of new items.

Having an adequate amount of stock of consumables is important as it ensures that capital is not tied up unnecessarily, and protects production if problems arise with the supply chain as well as ensuring products do not sit redundant on shelves past their use-by dates.

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Project delivery

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P16

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116

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Page 1 of 2

Consumables inventory (continued)

Guidance

A consumables GPM that requires the provision of a storage facility for consumables in specialist areas such as artist studios, fabric stores and lab items and chemicals. It could start as simple as an online inventory or a paper schedule on the wall.

Keeping records of these will enable users to understand the turnover of items being stockpiled within departments. Ultimately this could act as a benchmark to minimise waste and also ensure items are procured in a structured manner.

Things to be included:

- COSHH.
- Lab Items.
- Engineering and mechanical workshops (wood, metal, electrical items).
- Fabric stores.
- Artist studios.
- IT equipment.

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Project delivery

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P16

ID

116

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Furniture inventory

Criteria

An inventory of all furniture items pre strip-out that categorises and uses the waste hierarchy to dictate what items are to be reused (decanted), shared throughout the campus, re-processed where repairs are needed for re-use, or given to the third sector.

Scoping

In scope if the fit-out is stripping out furniture.

Assessment

At design stage: ensure an inventory of furniture has been undertaken, clear reasoning and evidence of use of waste hierarchy available. Carry out a site visit pre strip-out to confirm that all furniture has been recorded in the inventory.

At handover stage: if the measure was undertaken during the design stage assessment and complied with the criteria, the measure will be achieved.

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

Rationale

To add an incentive measure for re-using furniture, as it is the most sustainable option in the waste and material measures for furniture but currently not a pre-requisite to achieving those measures. By undertaking a pre strip-out inventory of furniture, it is encouraging a joined up thinking approach to fit-outs across higher education where furniture can be reused and shared between departments, particularly where multiple fit-outs/construction phases increase the potential of sharing, storing and decanting throughout the fit-out process.

Guidance

Link to a campus wide furniture storage strategy if one exists, making use of existing storage facilities both in strip out and procurement. Where one does not exist this should act as a prompt to encourage the institution to develop a framework for disposal and procurement of furniture.

Optimising space is a key consideration and ensuring furniture that will never be reused is not sitting in storage indefinitely. Using the waste hierarchy is a good starting point, identifying what furniture can be decanted and reused, or shared with other departments if a change of use is part of the fit-out. In addition this measure encourages the participation in take back schemes, or to reuse via charities and social enterprise projects by donating unwanted furniture and equipment rather than disposing.

On-campus storage ideally should not exceed 5% of any school or area's total space. If storage exceeds this percentage, an assessment should be made of solutions and alternatives. Storage should not be housed in windowed offices.

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Project delivery

Issue

P15

ID

121

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CCS registration

Criteria

When the construction period is 6 weeks or more:

- the site is registered with the Considerate Constructors Scheme (CCS) for site registration and the site achieves a score of at least 35 points out of 50.

When the construction period is less than 6 weeks:

- the contractor is registered with the Considerate Constructors Scheme (CCS) for company registration, and the contractor can demonstrate that over the preceding 12 months it has obtained a company certificate of compliance.

Scoping

This measure applies to all fit-outs.

Assessment

At design stage: check the site or contractor is registered, or there is a contractual commitment to register with the scheme and achieve the target set in the criteria above.

At handover stage: look at the site monitoring reports to confirm the score achieved by the site or check that the contractor is registered with the Considerate Constructors Company Registration Scheme (CCS) and can demonstrate it has obtained a company certificate of compliance over the preceding 12 months.

At occupancy stage: this measure is not assessed. The measure is achieved by default if 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.

Fit-out environmental good practice on site guide, CIRIA, 2016.

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Project delivery

Issue

D44

ID

123

Rank

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Cycle parking

Criteria

Secure, lockable cycle racks are provided in the following quantities:

- One space per 8 student users.
- One space per 10 university staff.

Cycle parking calculations should be based on the maximum number of predicted users of the refurbishment space. Where users are mixed, one space per 8 should be applied.

Scoping

This measure applies to all fit-outs unless it is demonstrated by university cycle parking surveys that there is already sufficient cycle parking within suitable proximity to the scheme. Parking space counts need to have been completed within the last 12 months as demand can change rapidly.

Assessment

At design stage: check specifications and drawings meet the criteria.

At handover stage: check as-built drawings and carry out a site visit for visual confirmation of cycle racks.

At occupancy stage: if cycle racks have been changed or reduced, 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 and students to cycle to work or campus.

Guidance

Ideally cycle spaces should be covered, well-lit and secure. Design guidelines can be found in *Cycle parking* (Sustrans Information Sheet FF37).

Sustrans also produce an information sheet called *Smarter Journeys to Work Toolkit*, which provides additional information.

A number of local councils are also producing guidelines, which recommend one space per 125–350m² of floor space. See Transport for London's *Workplace cycle parking guide*.

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Transport

Issue

D41

ID

53

Rank

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Cyclist lockers

Criteria

One locker is to be provided per 8 student/staff members proposed to occupy the space within the scope of the project. Lockers should feature a 'coded'/keyless locking mechanism. Only reused existing lockers that have a lock and key can be accepted as compliant.

Scoping

This measure applies to all fit-outs that have sufficient core space for lockers, unless it can be demonstrated there is already a sufficient number of cycle lockers within suitable proximity.

For a locker to be considered within suitable proximity, it must be located within the same building or the building adjacent. Lockers should be sized appropriately for the storage of cycling equipment e.g. helmet, shoes, clothing panniers/backpack and cycling equipment.

Assessment

At design stage: check specifications explicitly reference the criteria.

At handover stage: carry out a site visit for visual confirmation of location and number.

At occupancy stage: if lockers have been changed or reduced, 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 and students to cycle to work/campus by providing lockers where they can store clothes and cycle equipment.

Guidance

Workplace Cycle Parking Guide, Transport for London, 2006.

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Transport

Issue

D43

ID

68

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Shower facilities

Criteria

For non-transient occupant numbers up to 100, one shower is provided. For every additional 100 non-transient occupants (or part thereof), another shower is provided. All showers must be available for use by all staff.

Scoping

This measure applies to all refurbishments that have sufficient washroom space, unless it can be demonstrated there is already sufficient washroom facilities within suitable proximity.

This measure is always in scope for the following spaces:

- restaurants, with commercial kitchens;
- sports facilities; and
- other facilities where staff are involved in hot, malodorous, grimy or manual activities.

For washroom facilities to be considered within suitable proximity, they must be located within the same building or the building adjacent. Both male and female students or staff should be able to access.

Assessment

At design stage: check specifications explicitly reference the criteria.

At handover stage: carry out a site visit to check for visual confirmation of location.

At occupancy stage: if showers have been changed or reduced, repeat 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 and students to cycle to work/campus by providing showers, so that they can freshen up after their cycle ride.

Showers are also required for retail spaces where staff need to shower before they leave work because of the nature of their work. Note: this is more of a wellbeing issue than a transport issue, but has been included within this measure as only one assessment of the number of showers is required.

Guidance

Smarter Journeys to Work Toolkit, Sustrans, 2008.

Workplace Cycle Parking Guide, Transport for London, 2006.

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Transport

Issue

D42

ID

76

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Travel plan

Criteria

A building or site specific travel plan must be developed as part of the planning and design stage of the project.

The travel plan must include as a minimum:

- Existing travel infrastructure provided for all building users. (For a partial building fit-out, this can be restricted to the affected building users.)
- Existing travel patterns of all current building users where occupied. (For a partial building fit-out, this can be restricted to the affected building users.)
- Access requirements for building users across all mobility levels. (For a partial building fit-out, this can be restricted to the affected building users.)
- Consideration of any local government or community travel policies.
- Specific targets and measures to encourage sustainable, low carbon forms of transport.
- Specific targets and measures to reduce the need for travel.
- Targets for monitoring and reporting carbon emissions from transport.
- Physical and behavioural measures.
- Responsibilities assigned for implementing travel plan measures.
- A commitment to review the travel plan at least once every 5 years.

Scoping

This measure applies to all fit-outs, except where there is an existing campus or building wide travel plan applicable to the fit-out (see D79 Campus and/or building wide travel plan).

Where the fit-out is of an entire building all the minimum criteria apply.

Where the fit-out includes only a partial fit-out of a building, the existing infrastructure, travel patterns and requirements only need to be for those affected by the fit-out. However, the development of a travel plan would be an opportunity to review the travel plan for the entire building and all its occupants and it is suggested as good practice to be in scope.

Assessment

At design stage: confirmation that a building specific travel plan has been, or will be, developed and that travel plan measures will be reflected in the fit-out design. Check specifications or drawings that show travel plan measures will be reflected in the fit-out design.

At handover stage: a copy of the building specific travel plan is provided and confirmation that it will be implemented by the occupiers (or facilities management where occupier unknown).

Fit-out benchmark & assessment tool

Wellbeing

Issue

D78

ID

96

Rank

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Travel plan (continued)

At occupancy stage: review the effectiveness of the travel plan and propose solutions to update if necessary. Provide examples of measures to demonstrate that the campus or building wide travel plan has been implemented and is supported by both the occupiers and facilities management during building operation.

Rationale

Emissions from transport (business travel, and staff and student commuting) accounted for 35% of the university sector's carbon baseline in 2006.

The aim is to encourage all building users to take sustainable transport options when travelling to or from a university building in the local area.

Travel plans will sometimes be required for large developments as part of the planning process. However, these may not always require all the good practice measures indicated in the criteria. In addition, the principles of implementing a long-term strategy for encouraging sustainable travel will also benefit smaller developments.

This measure recognises that some university buildings will be located off campus and therefore will require a separate travel plan.

Guidance

Travel Plans - Travel plans, transport assessments and statements in decision-taking, Planning Practice Guidance, Department for Communities & Local Government, 6 March 2014.

Carbon reduction target and strategy for higher education in England, Higher Education Funding Council for England (HEFCE), September 2010.

Measuring Scope 3 emissions – transport: a guide to good practice, HEFCE, January 2012.

Fit-out benchmark & assessment tool

Wellbeing

Issue

D78

ID

96

Rank

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Campus and/or building wide travel plan

Criteria

A campus wide travel plan must be developed as part of the planning and design stage of the project.

Or, where there is an existing campus travel plan currently in use, this must be updated to reflect the new fit-out and minimum criteria below. This may be an update to the whole travel plan, or provided as an addendum. The addendum must include any site-specific changes to the below items where different to the main campus travel plan.

The travel plan must include as a minimum:

- Existing travel infrastructure provided for all building users.
- Existing travel patterns of all current building users where occupied.
- Access requirements for building users across all mobility levels.
- Consideration of any local government or community travel policies.
- Specific targets and measures to encourage sustainable, low carbon forms of transport.
- Specific targets and measures to reduce the need for travel.
- Physical and behavioural measures.
- Responsibilities assigned for implementing travel plan measures.
- A commitment to review the travel plan at least once every 5 years.

Scoping

This measure applies to all fit-outs located on a campus development.

This measure is not in scope where there is an existing campus or building wide travel plan in place that is applicable to the building users (including the minimum content above).

Where a building is located off campus, or a site specific building travel plan is being developed, this measure will not be in scope (see D78 Travel plan).

Assessment

At design stage: confirmation that a campus wide travel plan has been, or will be, developed as part of the planning and design stages. Check specifications or drawings that show travel plan measures will be reflected in the fit-out design.

At handover stage: a copy of the campus or building wide travel plan that is applicable to the building users and confirmation that it will be implemented by the occupiers (or facilities management where occupier unknown).

At occupancy stage: review the effectiveness of the travel plan and propose solutions to update if necessary. Provide examples of measures to demonstrate that the campus or building wide travel plan has been implemented and is supported by both the occupiers and facilities management during building operation.

Fit-out benchmark & assessment tool

Transport

Issue

D79

ID

97

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Page 1 of 2

Campus and/or building wide travel plan (continued)

Rationale

Emissions from transport (business travel, and staff and student commuting) accounted for 35% of the university sector's carbon baseline in 2006.

The aim is to encourage all building users to take sustainable transport options when travelling to or from a university building in the local area.

Travel plans will sometimes be required for large developments as part of the planning process. However these may not always require all the good practice measures indicated in the criteria. In addition, the principles of implementing a long-term strategy for encouraging sustainable travel will also benefit smaller developments.

This measure recognises the dynamic nature of campus developments and that many universities have existing travel plans. Travel plan measures are therefore outlined in the criteria to encourage good practice implementation of travel plans across the sector.

Guidance

Travel Plans - Travel plans, transport assessments and statements in decision-taking, Planning Practice Guidance, Department for Communities & Local Government, 6 March 2014.

Carbon reduction target and strategy for higher education in England, Higher Education Funding Council for England (HEFCE), September 2010.

Measuring Scope 3 emissions – transport: a guide to good practice, HEFCE, January 2012.

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Transport

Issue

D79

ID

97

Rank

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Construction phase CO₂ emissions

Criteria

A site-specific construction travel plan is produced that identifies ways to reduce vehicle movements and must consider the criteria suggested below:

- Design of appropriate service facilities and off-street loading where practical.
- Procurement of goods and services including feasibility of sourcing items locally or from the same supplier and procuring off-site manufactured items for larger components.
- Commitment by operators to follow best practice measures e.g. signed up to the FORS scheme, use fuel efficient vehicles, or low carbon modes of delivery (e.g. rail and train).
- Operational efficiency demonstrating pro-active management of deliveries to reduce the number of vehicle deliveries.
- Waste management options for segregating, storing and removing waste including feasibility of using a Construction Consolidation Centre.
- Targets and monitoring are determined at the start of the project and reviewed throughout construction.

The principal contractor must also monitor site transport, including deliveries of materials and plant to site, and movement of waste from site. The following should be recorded and displayed on site:

- vehicle distance to and from site;
- types of vehicle used; and
- the calculated CO₂ emissions.

Scoping

This measure applies for all fit-outs.

Assessment

At design stage: review the site specific construction travel plan and confirm it covers all relevant measures prior to commencement onsite.

At handover stage: confirm at handover that the recommendations to reduce vehicle movements on site have been carried out and that all vehicle movements are being monitored with spreadsheet outputs and photographic evidence on site notice boards.

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

Fit-out benchmark & assessment tool

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D59

ID

124

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Construction phase CO₂ emissions (continued)

Rationale

According to the Strategic Forum for Construction (SFfC), transport associated with construction materials accounted around 30% of total emissions from the construction industry in England in 2010.

The Department for Business Innovation and Skills (BIS) in their 2025 vision for the construction industry target a third in reduction of delivery costs, faster delivery times and to halve greenhouse gas emissions from transporting construction materials.

Reducing transport associated with site deliveries, collections and labour will support this aim, in addition reducing environmental impacts, cost and assisting inner city/town site management. Transport issues can only be addressed if they are accounted for from inception, including the design team and supply chain.

Guidance

To convert transport to CO₂, refer to:

2014 Government GHG Conversion Factors for Company Reporting, DECC.

The Carbon Trust, *Conversion factors guide 2014* update.

Further reading:

Low Carbon Routemap for the UK Built Environment (p61), Green Construction Board.

Construction Site Transport: *The Next Big Thing*, 2003, BRE and DTI.

Fleet Operator Recognition Scheme - FORS is a method of recognising fleet operations that comply with the requirements of the FORS standard. The FORS standard is based upon lawfulness, safety, efficiency, and environmental protection.

Using Construction Consolidation Centres to reduce construction waste and carbon emissions, WRAP.

Construction Logistics Plans Guidance, Transport for London.

Construction 2015: strategy, Department for Business, Innovation and Skills, 2013.

How to save money and CO₂ emissions through effective logistics, Green Construction Board.

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D59

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124

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Pre-refurbishment audit

Criteria

An experienced member(s) of the design team (or other competent person) is to carry out a pre-refurbishment audit to identify opportunities for retaining and reusing existing materials from the proposed refurbishment. The audit must cover the key refurbishment waste streams including:

- Gypsum (including plasterboard) (also see D12).
- Ceiling systems (also see D13).
- Floor finishes (also see D14).
- Workstations and tables (also see D15).
- Specialist workbenches (also see D75).
- Chairs (also see D16).
- Storage units (also see D17).
- Other loose furniture (also see D18).
- Doors (also see D48).
- Mechanical and electrical services (also see D68).
- Raised access floors (also see D74).
- Relocatable solid and glazed partitions (also see M08 and M09).

And

Include a measure of the actual number of items/m²/volume/tonnage of material along with an estimate of the waste quantities if all material were discarded.

Scoping

This measure applies to all projects.

Assessment

At design stage: a completed pre-refurbishment audit covering the key refurbishment waste streams outlined above, carried out early in the design process (i.e. during Concept Design stage, equivalent to RIBA stage 2) by an experienced designer or other competent person, which identifies opportunities for retaining and reusing existing materials. Evidence that these opportunities for retaining and reusing materials have been incorporated into the design, or given reasons for their exclusion.

At handover stage: evidence that the opportunities for retaining and reusing materials incorporated into the design have been incorporated into the completed building.

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

Fit-out benchmark & assessment tool

Waste

Issue

D72

ID

13

Rank

SKA Higher Education

Version 1.0 2016

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Pre-refurbishment audit (continued)

Rationale

The aim is to identify opportunities for retaining and reusing materials to reduce overall waste production, which is highly wasteful in terms of energy and resource use.

Guidance

WRAP *Designing Out Waste* guide.

Fit-out environmental good practice on site guide (RP1011), CIRIA, 2016.

Fit-out benchmark & assessment tool

Waste

Issue

D72

ID

13

Rank

**SKA Higher
Education**

Version **1.0 2016**

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Designing out waste

Criteria

The design team must:

- identify opportunities individually and collectively to design out waste in the fit-out;
- hold a designing out waste workshop to develop findings, review opportunities from the pre-refurbishment audit, concentrating on the key SKA waste categories; and
- record the design solutions pursued in reducing material consumption and waste within the resource management plan (RMP).

The team must provide a record of drawings, specifications and discussion notes/minutes from the designing out waste workshop(s) that demonstrate design solutions reducing material consumption and wastage.

Scoping

This measure applies to all fit-outs.

Assessment

At design stage: review the output of the records detailing design solutions followed to reduce material consumption and wastage. Ensure the design decisions are recorded in the RMP.

At handover stage: confirm at handover, using as-built drawings/ specifications, that the proposed design solutions from the workshops or elsewhere have been implemented for the fit-out.

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

Rationale

The construction industry is the UK's largest consumer of natural resources, using over 400 million tonnes of material per annum. The construction industry is also responsible for sending around 11.6 million tonnes of construction, demolition and excavation waste to landfill annually, without any form of recovery or reuse (2012 figures). More efficient use of materials would be a major contribution in reducing the environmental impact of construction, including reducing demand for landfill and the depletion of finite natural resources. It would also contribute to the economic efficiency of the sector and of the UK as a whole.

Fit-out benchmark & assessment tool

Waste

Issue

D60

ID

17

Rank

SKA Higher Education
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Designing out waste (continued)

Guidance

This measure is in scope for all fit-outs as it includes a review of the supply chain and packaging used by material suppliers.

Designing out Waste: a design team guide for buildings, WRAP.

WRAP: [Design detailing sheets](#) – useful guides on door, tiling and plumbing design approaches among others.

The joint government and industry Green Construction Board looks widely at green property and green construction issues, and incorporates priority activities of the Strategy for Sustainable Construction. The Board's actions and work are accomplished through a number of working groups, one of which is the Greening the Industry Group. It in turn had several workstreams including a Waste Subgroup, which analysed waste data sources to produce an annual figure for the amount of construction, demolition and excavation waste sent to landfill between 2008 and 2012. It also produced a waste reduction action plan applicable to the wider construction industry. Refer to its [online resources](#) for the latest available information.

Fit-out benchmark & assessment tool

Waste

Issue

D60

ID

17

Rank

**SKA Higher
Education**

Version **1.0 2016**

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Reduce gypsum waste

Criteria

For all newly installed plasterboard:

- achieve a maximum wastage rate of 15%.

For all gypsum waste (plasterboard and gypsum plaster from demolition and installation):

- segregated on site for disposal via specialist waste company or manufacturer's take back scheme.

Scoping

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

Assessment

At design stage: reuse requirement to be included in specifications or in the resource management plan. 15% target for newly installed plasterboard also included in the resource management plan, along with expectations for the end disposal route for all gypsum waste.

At handover stage: check that the wastage rate is achieved; the calculation to show installed plasterboard m², compared against the total plasterboard delivered to site or the total plasterboard waste disposed during the installation phase. Check that waste segregation has been undertaken by reviewing the waste transfer notes showing plasterboard only.

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

Rationale

The aim is to reduce the amount of gypsum waste produced and sent to landfill, which is highly wasteful in terms of energy and resource use, and can cause health and safety issues with the production of hydrogen sulphide gas. Designing out waste in the design stage through effective use and planning out of boards can reduce significantly the quantity of unusable off-cuts.

Guidance

Gypsum Products Development Association.

Fit-out benchmark & assessment tool

Waste

Issue

D12

ID

18

Rank

SKA Higher Education

Version 1.0 2016

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Page 1 of 1

Resource management plan (RMP)

Criteria

A resource management plan (RMP) is prepared prior to site works beginning. The format of the RMP includes and allows for the projected and actual re-use and waste stream volumes or tonnages that will be individually tracked by the SKA assessment. The RMP should have appended a schedule of all items to be re-used or removed from site that are covered by the WEEE (Waste Electrical and Electronic Equipment) regulations.

- At least 95% of non-hazardous material removed from the project (both construction and demolition) is diverted from landfill or re-used within the project (where waste is removed by **non-PAS 402 certified** waste contractor).
- At least 85% of non-hazardous material removed from the project (both construction and demolition) is diverted from landfill or re-used within the project (where waste is removed by a **PAS 402 certified** waste contractor).

The diversion from landfill targets above include reuse (which also incorporates refurbishment and remanufacture), and waste recycling and energy recovery. The reuse volumes/tonnages will need to be calculated based on the item's anticipated waste volume/tonnages.

Scoping

This measure applies to all fit-outs.

Assessment

At design stage: review the RMP and check it demonstrates that the relevant diversion from landfill rate is anticipated and contains the items in the guidance document. If a PAS 402 waste contractor is to be used, a copy of their PAS 402 certificate should be provided.

At handover stage: review the RMP and check that the plan demonstrates the relevant diversion from landfill have been achieved. If a PAS 402 waste contractor has been used, include a copy of their PAS402 certificate, their final report of diversion from landfill, and other evidence on the re-use of materials on site not managed by the waste collector (photos, site note confirming witnessing the reuse).

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

Rationale

Although it is no longer a legal requirement for an RMP to be produced on construction projects in the UK, it is still considered good practice. This measure is to ensure organisations have a good understanding of the waste they are producing, a plan to manage the material and lastly to encourage a culture of viewing waste as a resource.

Fit-out benchmark & assessment tool

Waste

Issue

D09

ID

21

Rank

SKA Higher Education

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Page 1 of 2

Resource management plan (RMP) [continued]

Guidance

PAS 402 is an externally verified certification that waste contractors can achieve. It provides a methodology for waste contractors to follow, allowing clear and accurate demonstration against key areas of delivery including landfill diversion and material recovery.

By using a PAS 402 certified waste contractor, the client, main contractor and SKA assessor can be confident in the waste arising figures and recycling figures that are reported through their use of the prescribed methodology.

Waste Management Plan for England, December 2013.

BRE Waste Management Tools and Training.

WRAP – reducing waste.

Fit-out benchmark & assessment tool

Waste

Issue

D09

ID

21

Rank

**SKA Higher
Education**

Version **1.0 2016**

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Reduce floor finishes waste

Criteria

At least 80% of all the removed carpet and soft floor finishes are:

- reused either on or off site; or
- recycled through a closed loop scheme (e.g. manufacturers take back scheme).

At least 50% of all the removed vinyl based finishes are:

- recycled through a closed loop scheme (e.g. manufacturers take back scheme).

At least 80% of all the removed timber flooring is:

- reused either on the same site or another evidenced use off site.

Remaining percentage to be 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 any existing floor finishes forms part of the fit-out contract or if new flooring is being installed.

The measure also applies if a floor finish is retained through significant refurbishment and is clearly identified as part of the project scope of works; for example timber floors may need to be sanded down to enable re-use.

Assessment

At design stage: reuse, recycling and/or diversion from landfill requirement to be included in specifications or in the resource management plan and, where applicable at this stage, the criteria have been included within the design.

At handover stage: check evidence of sending for reuse, either on site by a visual check, or off site delivery/collection note (e.g. donation to charity or materials reuse centre). Confirm that the minimum percentage of the criteria is achieved. Percentage calculation is based on the actual m2 waste sent for closed-loop recycling, plus/or actual m2 of reused materials, divided by m2 of in scope material in the pre-refurbishment audit x 100. Where material is sent for recycling, a waste transfer note to be provided.

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

Fit-out benchmark & assessment tool

Waste

Issue

D14

ID

30

Rank

SKA Higher Education

Version 1.0 2016

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Reduce floor finishes waste (continued)

Rationale

The [Flooring Resource Efficiency Plan](#) published in 2010 stated that:

'...almost 600,000 tonnes of flooring is disposed of each year, of which less than 2% is recycled. A small quantity is incinerated but the vast majority, over 90%, goes to landfill. Most is carpet and the manufacturer's disposal costs are estimated to be in excess of £1 million per year. Total cost to the industry supply chain (including local authorities) is believed to be in excess of £45 million. Reducing this waste will be of considerable economic benefit to the industry, as well as reducing the impact on the environment.'

Guidance

The sustainable options for removing floor finishes are:

- reuse, either on or offsite;
- return (lease); or
- recycle.

The [Flooring Resource Efficiency Plan](#) identifies the actions needed to reduce flooring waste and to improve resource efficiency. It confirms the main routes for disposal and details established organisations set up to reuse/recycle flooring products. See also the WRAP [Carpet Reuse Guidance](#). There are now a number of materials reuse centres around the country, e.g. [Recipro](#).

There are now established national networks available to main contractors to return carpet tiles and vinyl floor finishes back into production:

- [Carpet Recycling UK](#) lists waste transfer stations that are able to return redundant carpet tiles back in to production.
- [Recofloor](#) offers the same solution for vinyl flooring.

There are also manufacturer take back schemes available. To see who is engaged in take back schemes refer to the Flooring Sustainability Partnership report.

[Recipro](#) – offers services to organisations with surplus resources.

[Freecycle](#).

Fit-out benchmark & assessment tool

Waste

Issue

D14

ID

30

Rank

**SKA Higher
Education**

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Reduce specialist workbench waste

Criteria

At least 50% of all removed specialist workbenches are:

- reused either on or off site.

Remaining percentage of removed specialist workbenches to be 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. Repair and/or refurbishment of the product or component parts is permitted.

Scoping

This measure applies if the removal of existing specialist workbenches forms part of the fit-out contract, including if undertaken as a client direct activity.

Assessment

At design stage: confirm the reuse, recycling and/or diversion from landfill criteria are included in the specification documents and/or the resource management plan, and where applicable at this stage, the criteria have been included within the design.

At handover stage: evidence of sending for reuse, either on site by a visual check, or off site delivery/collection note (e.g. donation to charity or materials reuse centre). Percentage based on actual items reused, divided by actual items of in scope material in the pre-refurbishment audit x 100.

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

Rationale

The aim is to reduce furniture waste production, which is highly wasteful in terms of energy and resource use.

Guidance

Reuse can be broken down into 3 key areas:

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

There are a number of organisations that specialise in the redeployment of furniture:

- London Re-use.
- Education for All.
- Emmaus.
- Wastewatch.

Fit-out benchmark & assessment tool

Waste

Issue

D75

ID

31

Rank

SKA Higher Education

Version 1.0 2016

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Page 1 of 1

Reduce chairs waste

Criteria

At least 80% of all removed chairs are:

- reused either on or off site; or
- recycled through a closed loop scheme (e.g. manufacturer's take back scheme).

Remaining 20% of removed chairs to be 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.

The measure also applies if a product/material is retained through significant refurbishment and is clearly identified as part of the project scope of works.

Assessment

At design stage: reuse, recycling and/or diversion from landfill requirement to be included in specifications or in the resource management plan and, where applicable at this stage, the criteria have been included within the design.

At handover stage: check evidence of sending for reuse, either on site by a visual check, or off site delivery/collection note (e.g. donation to charity or materials reuse centre). Confirm that the minimum percentage of the criteria is achieved. Percentage calculation is based on the actual number of items sent for closed-loop recycling, plus/or actual number of reused items, divided by items in scope in the pre-refurbishment audit x 100. Where items are sent for recycling, a waste transfer note is to be provided.

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

Rationale

The aim is to reduce furniture waste production, which is highly wasteful in terms of energy and resource use.

Fit-out benchmark & assessment tool

Waste

Issue

D16

ID

34

Rank

SKA Higher Education

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Page 1 of 2

Reduce chairs waste (continued)

Guidance

Reuse can be broken down into 3 key areas:

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

There are a number of organisations that specialise in the redeployment of office furniture:

- [Greenworks](#).
- [Education for All](#).
- [Emmaus](#).
- [Wastewatch](#).

Savings from waste minimisation in furniture manufacturing, WRAP, 2001.

Fit-out benchmark & assessment tool

Waste

Issue

D16

ID

34

Rank

**SKA Higher
Education**

Version **1.0 2016**

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Reduce workstations and tables waste

Criteria

At least 80% of all removed workstations and tables are:

- reused either on or off site; or
- recycled through a closed loop scheme (e.g. manufacturer's take back scheme).

Remaining 20% of removed workstations and tables to be 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.

The measure also applies if a product/material is retained through significant refurbishment and is clearly identified as part of the project scope of works.

Assessment

At design stage: reuse, recycling and/or diversion from landfill requirement to be included in specifications or in the resource management plan and, where applicable at this stage, the criteria have been included within the design.

At handover stage: check evidence of sending for reuse, either on site by a visual check, or off site delivery/collection note (e.g. donation to charity or materials reuse centre). Confirm that the minimum percentage of the criteria is achieved. Percentage calculation is based on the actual number of items sent for closed-loop recycling, plus/or actual number of reused items, divided by items in scope in the pre-refurbishment audit x 100. Where items are sent for recycling, a waste transfer note is to be provided.

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

Rationale

The aim is to reduce furniture waste production, which is highly wasteful in terms of energy and resource use.

Fit-out benchmark & assessment tool

Waste

Issue

D15

ID

40

Rank

SKA Higher Education

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Reduce workstations and tables waste (continued)

Guidance

Reuse can be broken down into 3 key areas:

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

There are a number of organisations that specialise in the redeployment of office furniture:

- [Greenworks](#).
- [Education for All](#).
- [Emmaus](#).
- [Wastewatch](#).

Savings from waste minimisation in furniture manufacturing, WRAP, 2001.

Fit-out benchmark & assessment tool

Waste

Issue

D15

ID

40

Rank

**SKA Higher
Education**

Version **1.0 2016**

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Reduce storage unit waste

Criteria

At least 80% of all removed office storage units are:

- reused either on or off site; or
- recycled through a closed loop scheme (e.g. manufacturer's take back scheme).

Remaining 20% of removed chairs to be 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, including if undertaken as a client direct activity.

The measure also applies if a product/material is retained through significant refurbishment and is clearly identified as part of the project scope of works.

Assessment

At design stage: reuse, recycling and/or diversion from landfill requirement to be included in specifications or in the resource management plan and, where applicable at this stage, the criteria have been included within the design.

At handover stage: check evidence of sending for reuse, either on site by a visual check, or off site delivery/collection note (e.g. donation to charity or materials reuse centre). Confirm that the minimum percentage of the criteria is achieved. Percentage calculation is based on the actual number of items sent for closed-loop recycling, plus/or actual number of reused items, divided by items in scope in the pre-refurbishment audit x 100. Where items are sent for recycling, a waste transfer note is to be provided.

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

Rationale

The aim is to reduce furniture waste production, which is highly wasteful in terms of energy and resource use.

Fit-out benchmark & assessment tool

Waste

Issue

D17

ID

41

Rank

SKA Higher Education

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Page 1 of 2

Reduce storage unit waste (continued)

Guidance

Redeployment can be broken down into 3 key areas:

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

There are a number of organisations that specialise in the redeployment of office furniture:

- [Greenworks](#).
- [Education for All](#).
- [Emmaus](#).
- [Wastewatch](#).

Savings from waste minimisation in furniture manufacturing, WRAP, 2001.

Fit-out benchmark & assessment tool

Waste

Issue

D17

ID

41

Rank

**SKA Higher
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Reduce door waste

Criteria

At least 50% of all removed doors are:

- reused either on or off site.

Remaining percentage to be 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. Repair and/or refurbishment of the product or component parts is permitted.

Scoping

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

The measure also applies if the material/product is retained through significant refurbishment and is clearly identified as part of the project scope of works.

Assessment

confirm the reuse, recycling and/or diversion from landfill criteria are included in the specification documents and/or the resource management plan, and where applicable at this stage, the criteria have been included within the design.

check evidence of sending for reuse, either on site by a visual check, or off site delivery/collection note (e.g. donation to charity or materials reuse centre). Confirm that the minimum percentage of the criteria is achieved. Percentage based on number of door leaves reused, divided by number of door leaves in scope in the pre-refurbishment audit x 100. Where material is sent for recycling, a waste transfer note to be provided.

this measure is not assessed. The measure is achieved by default if achieved at handover stage.

Rationale

The aim is to reduce door waste production, which is highly wasteful in terms of energy and resource use.

Fit-out benchmark & assessment tool

Waste

Issue

D48

ID

42

Rank

SKA Higher Education

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Reduce door waste (continued)

Guidance

Redeployment can be broken down into 3 key areas:

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

Where doors have a fire or acoustic performance, specialist advice should be sought and recorded; especially in the case of meeting the Regulatory Reform (Fire Safety) Order 2005 (RRO).

There are a number of organisations that specialise in the resale of construction materials, e.g. [Recipro](#).

Fit-out benchmark & assessment tool

Waste

Issue

D48

ID

42

Rank

**SKA Higher
Education**

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Page 2 of 2

Reduce ceiling systems waste

Criteria

At least 50% of the removed ceiling system(s) is:

- reused on or off site; or
- recycled through a closed loop scheme (e.g. manufacturer's take back scheme).

Remaining percentage is to be 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.

The measure also applies if a ceiling is retained through significant refurbishment and is clearly identified as part of the project scope of works; for example metal tiles may need to be repainted to enable re-use.

Assessment

At design stage: reuse, recycling and/or diversion from landfill requirement to be included in specifications or in the resource management plan and, where applicable at this stage, the criteria have been included within the design.

At handover stage: check evidence of sending for reuse, either on site by a visual check, or off site delivery/collection note (e.g. donation to charity or materials reuse centre). Confirm that the minimum percentage of the criteria is achieved. Percentage calculation is based on the actual m2 waste sent for closed-loop recycling, plus/or actual m2 of reused materials, divided by m2 of in scope material in the pre-refurbishment audit x 100. Where material is sent for recycling, a waste transfer note to be provided.

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

Rationale

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

Fit-out benchmark & assessment tool

Waste

Issue

D13

ID

43

Rank

SKA Higher Education

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Page 1 of 2

Reduce ceiling systems waste (continued)

Guidance

It is recognised that there are issues with returning older mineral products back into the mix to make new tiles. Bio-soluble wool was introduced in 2000, but mineral fibre product produced before this cannot be recycled at the present time. However, this measure covers all ceilings that are stripped out. If the project cannot achieve this measure because non-recyclable mineral wool tiles are being stripped out, the project should look to achieve the other waste measures.

For more information on reducing mineral ceiling tile waste see [Mineral wool ceiling tiles: A resource efficiency action plan](#).

[Recipro](#) – offers services to organisations with surplus resources.

[Freecycle](#).

Fit-out benchmark & assessment tool

Waste

Issue

D13

ID

43

Rank

**SKA Higher
Education**

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Reduce shopfitting display equipment waste

Criteria

At least 80% of all removed shopfitting display equipment is:

- reused either on or off site; or
- recycled through a closed loop scheme (e.g. manufacturer's take back scheme).

Remaining 20% of shopfitting display equipment is to be 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 any shopfitting display equipment outlined below forms part of the fit-out contract:

- free standing displays (gondolas, open shelves, display cabinets and display cases); and
- parasite displays, hanging off other displays; or shelf and counter displays.

Any electrical and electronic equipment is excluded.

Assessment

At design stage: confirm the reuse, recycling and/or diversion from landfill criteria are included in the specification documents and/or the resource management plan, and where applicable at this stage, the criteria have been included within the design.

At handover stage: check evidence of sending for reuse, either on site by a visual check, or off site delivery/collection note (e.g. donation to charity or materials reuse centre). Confirm that the minimum percentage of the criteria is achieved. Percentage calculation is based on the actual items/volumes/tonnage waste sent for closed-loop recycling, plus/or actual items/volumes/tonnage of reused materials, divided by items/volumes/tonnage of in scope material in the pre-refurbishment audit x 100. Where material is sent for recycling, a waste transfer note to be provided.

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

Rationale

The aim is to reduce shopfitting display equipment waste production, which is highly wasteful in terms of energy and resource use. Often shopfitting display equipment is over engineered for the lifespan of use; retailers commonly update their shopfitting display equipment every 3–5 years (BRE LIST). Electrical and electronic display equipment is excluded.

Fit-out benchmark & assessment tool

Waste

Issue

D61

ID

59

Rank

SKA Higher Education

Version 1.0 2016

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Reduce shopfitting display equipment waste (continued)

Guidance

Re-use can be broken down into 3 key areas:

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

There are a number of organisations that specialise in the resale of construction materials, e.g. [Recipro](#).

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

BRE Press: Information Paper, IP 1/11. *LIST (low impact shopfitting tool) for designing greener shopfitting display equipment*, March, 2011.

Fit-out benchmark & assessment tool

Waste

Issue

D61

ID

59

Rank

**SKA Higher
Education**

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Recyclable waste storage space

Criteria

An operational waste management strategy has been developed in accordance with the departmental/occupational need and provides a dedicated space for storage and is in line with any existing campus wide waste strategy.

Space is provided for the storage of recyclable waste generated by the occupant's operations, based on the waste management strategy's recommendations. This space should:

- be adequately sized in line with the operational activities of the occupant and waste collection frequencies, ensuring it can cover peak occupancy levels;
- be accessible to both building occupants and waste collectors;
- be clearly marked as an area for recycled waste;
- have a used battery bin available for occupant use where batteries are supplied (i.e. union shop); and
- the size of segregated bins should be consistent with the volumes of operational waste streams generated.

Scoping

This measure applies to all fit-outs.

Assessment

At design stage: review the waste management strategy document to check that the recyclable waste storage space has been sized in line with the occupant's business and waste collection frequency. Provide evidence to identify that consultation with specialist user groups and waste outputs has also occurred where required.

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 for visual confirmation that the area exists and has appropriate signage and sizing.

At occupancy stage: carry out a site visit for visual confirmation that the area exists and is in regular use. It does not have to be the same space as long as the volumes set out at the design stage are being collected at the occupancy stage. Note that if the design doesn't provide enough space, the occupancy measures – P05 Reduce total waste in use and P06 Increase recycling of waste in use – will be difficult to achieve.

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Waste

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51

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Recyclable waste storage space (continued)

Rationale

Higher education institutions generate large amounts of paper, cardboard, plastic material (often used for packaging), glass, metal and food waste as part of their operation and much of this can be recycled. To make recycling schemes more economic, the material needs to be collected quickly and efficiently. This means provision of enough space with appropriate fire protection for storage and access for collection. A dedicated storage space should be provided for waste and separated into spaces for different material types to increase recycling operational waste rates.

Guidance

The amount of storage space required for recyclable waste is dependent on the occupant's nature of business. Therefore an occupational waste management strategy is required at the design stage to demonstrate that the space provision is consistent with the volume of operational waste streams generated.

For offices, laboratories and workshops, this space could be central or provided on the floor adjacent to workstations. Restaurants, cafes and food facilities will require a vessel to compost organic waste or adequate space for storing segregated food waste for collection by an external company to be taken for composting.

Non-food areas producing high volumes of packaging, cardboard, etc. will require a compactor or baler to compress waste.

CIBSE Guide L – Sustainability (2007) provides the following guidance on 'preparing a waste management strategy':

- Predict waste arisings: examples of typical waste arisings are provided in BS 5906(64) and chapter 4 of CIBSE Guide G.
- Consider relevant legislation: see CIBSE Guide G and BS 5906.
- Consider the composition of waste: chapter 4 of CIBSE Guide G provides information on the breakdown of types of waste arisings.
- Predict potential reduction in waste arisings: through waste reduction schemes, reuse, recycling, etc.
- Determine feasibility of recovery options such as composting and energy from waste.
- Calculate the storage, containment and equipment requirements for effective waste management. The following should be considered: volume and composition of waste, frequency of collection and degree of waste segregation required.

CIBSE Guide G – Public health engineering – part 4 – Waste management systems (5 of 13), 2004.

Segregation of waste should be dependent on the major waste streams generated by all the spaces in scope. CIBSE Guide G provides recommendations for solid waste disposal equipment:

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Recyclable waste storage space (continued)

- Shopping centres – use multiple located static compactor and containers plus wheeled 1 100-litre containers.
- Supermarkets – use static compactor and containers.
- Department stores – use static compactor and containers.
- Restaurants – use catering compactors.

Envirowise – intelligent drainage and environmental solutions.

WRAP – the waste and resource action programme.

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Reduce total waste in use

Criteria

Annual total waste generated by the space is less than the figures outlined below: Where there are campus wide waste collection points, use data available at the lowest possible level relevant to the fit-out, i.e. if waste data is not available exclusively for the area of the fit-out, use data for the building where appropriate. If waste data is only available from a general waste collection point which serves a number of buildings, the occupants of the fit-out will need to put in place a system to be able to record waste produced over a full 365 day period. This will be assessed in line with the criteria below. See guidance below for possible methods of solving this.

Type of building	Basis	Mass of waste per year (kg)
Office	Per staff member	80
Libraries	Per staff member	80
Laboratories	Per staff member	80

Type of building	Basis	Volume of waste per year (m ³)
Restaurant	Per cover (dining space)	3.9
Fast food outlet	Per cover (dining space)	3.9
Fast food outlet	Per sale	0.26
Shop unit	Per m ² sales area	0.39
Small	Per m ² sales area	0.52
Large	Per m ² sales area	0.78

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 of waste disposal for the last year to determine the total mass (kg) or volume (m³) of the waste arising from the occupation of the office or retail unit (whether sent to landfill or otherwise diverted from landfill).

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P05

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Reduce total waste in use (continued)

- For office space: divide this by the number of full time equivalent staff.
- For retail space: divide this by the appropriate figure detailed in the table above – either m² of sales area, per-cover of dining space or per sale.

Where the area falls under a specific category not in the table the assessor can exclude items such as clinical/biological waste and make the calculation based on office thresholds.

Note: the majority of waste in labs will be controlled under regulations around COSHH and hazardous waste. Labs will require standard waste bins but a lot of this can be re-used so the benchmark should be similar as for offices in the absence of specific benchmark figures. Restaurants and food outlets are covered through the above.

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 is passed onto the building end user, 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 fit-out space.

Guidance

If waste is sent to a general collection point that serves a number of buildings there are numerous ways in which waste produced specifically in the fit-out area can be measured. Bin bags can be colour tagged to indicate which building the waste was produced in or the cleaning team can be tasked with recording the amount of waste they are taking out of the building in question. Alternatively, an agreement could be made with the waste contractor to weigh specific waste from a specific bin and/or the occupants could be tasked with recording their own waste data.

Green Impact

Link up to campus wide policy – clear visuals and segregated bins, food waste anaerobic digestions.

A number of additional considerations can be made to reduce waste in the office:

- Appropriate signage on bins to adequately reflect waste streams in the department – in line with campus wide waste strategy.
- Food bins provided in kitchens.
- Removal of under desk bins.
- Use of **WarpIt** for large items.
- Stamp resale to charities.
- Use of rechargeable batteries.

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Waste

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P05

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Reduce total waste in use (continued)

- Use of non-bottled water and re-usable cups.
- Link to consumables inventory – reduce surplus chemicals.
- Printer cartridges – charities collect and raise money through re-using these, or send back to suppliers.
- Double sided printing as automatic.
- Monitoring – measuring waste can help to reduce it.
- Sharing of documentation.
- Clear use of waste hierarchy.
- Reducing junk mail – contact the sender and request being taken of mailing lists if throwing away over and over again.
- Reusing envelopes.
- Identify and reduce high use of packaging.
- Build in take back schemes where applicable.

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 of mass and volume 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 7 'Waste Management Systems' of *Public Health and Plumbing Engineering, Guide G*, CIBSE, 2014.

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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Waste

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P05

ID

69

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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 with the exception of chemical/biological samples that cannot be recycled.

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 of waste disposal for the last year to determine whether more than 80% by mass (kg) of the waste arising from the occupation of the office or retail space was reused, recycled or composted.

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 is passed onto the building end user, increasing the cost of disposing of waste.

This measure has the same scope as P05 Reduce total waste in use 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 Waste and Resource Action Programme (WRAP) indicate that 60–80% of office waste is paper, and so recycling rather than incineration is the environmentally-preferable option. Recycling is also the preferred option for other office waste streams.

Guidance

The occupier should have an agreement with a firm that has a waste carrier's license. 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 of mass and volume 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.

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P06

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70

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Page 1 of 1

Reduce packaging waste

Criteria

Returnable reusable packaging to be used by at least 5 product manufacturers/distributors supplying the project.

Scoping

This measure applies to all new products delivered to site.

Assessment

At design stage: a statement in the contract documents requiring confirmation from the manufacturer/distributor that the packaging is designed to be reused and will be reused for other materials. Reusable packaging requirement included in specification or resource management plan.

At handover stage: evidence of reusable packaging being used (e.g. photographs) and of sending the packaging back to product manufacturer/distributor (or third party logistics company) for reuse (e.g. site delivery/ collection note). Packaging must be designed for reuse.

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

Rationale

Up to 25% of construction waste (by volume) consists of packaging. The aim is to reduce packaging waste production, which is highly wasteful in terms of energy and resource use.

Guidance

The [WRAP Reusable packaging in construction briefing note](#) describes some of the common reusable packaging solutions, which include:

- timber or plastic pallets;
- folding box pallets / crates;
- stillages; and
- cable drums.

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D73

ID

89

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Reduce raised access floor waste

Criteria

At least 50% of all removed raised access floor panels are:

- reused either on or off site; or
- recycled through a closed loop scheme (e.g. manufacturer's take back scheme).

Remaining percentage to be 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. Repair and/or refurbishment of the product or component parts is permitted.

Scoping

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

Assessment

At design stage: confirm the reuse, recycling and/or diversion from landfill criteria are included in the specification documents and/or the resource management plan, and where applicable at this stage, the criteria have been included within the design.

At handover stage: check evidence of sending for reuse, either on site by a visual check, or off site delivery/collection note (e.g. donation to charity or materials reuse centre). Confirm that the minimum percentage of the criteria is achieved. Percentage calculation is based on the actual m²/volumes/tonnage waste sent for closed-loop recycling, plus/or actual m²/volumes/tonnage of reused materials, divided by m²/volumes/tonnage of in scope material in the pre-refurbishment audit x 100. Where material is sent for recycling, a waste transfer note to be provided.

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

Rationale

The aim is to reduce raised access floor waste production, which is highly wasteful in terms of energy and resource use.

Guidance

Reuse can be broken down into 3 key areas:

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

There are a number of organisations that specialise in the resale of construction materials, e.g. [Recipro](#).

Fit-out benchmark & assessment tool

Waste

Issue

D74

ID

90

Rank

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Page 1 of 1

Reduce other loose furniture waste

Criteria

At least 50% of all other removed loose furniture items (i.e. those items not covered by measures D15, D16, D17) are:

- reused either on or off site; or
- recycled through a closed loop scheme (e.g. manufacturer's take back scheme).

Remainder of removed other loose furniture to be 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.

The measure also applies if a product/material is retained through significant refurbishment and is clearly identified as part of the project scope of works.

Assessment

At design stage: reuse, recycling and/or diversion from landfill requirement to be included in specifications or in the resource management plan and, where applicable at this stage, the criteria have been included within the design.

At handover stage: check evidence of sending for reuse, either on site by a visual check, or off site delivery/collection note (e.g. donation to charity or materials reuse centre). Confirm that the minimum percentage of the criteria is achieved. Percentage calculation is based on the actual number of items sent for closed-loop recycling, plus/or actual number of reused items, divided by items in scope in the pre-refurbishment audit x 100. Where items are sent for recycling, a waste transfer note is to be provided.

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

Rationale

The aim is to reduce furniture waste production, which is highly wasteful in terms of energy and resource use.

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Waste

Issue

D18

ID

101

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Reduce other loose furniture waste (continued)

Guidance

Reuse can be broken down into 3 key areas:

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

There are a number of organisations that specialise in the redeployment of office furniture:

- [Greenworks](#).
- [Education for All](#).
- [Emmaus](#).
- [Wastewatch](#).

Savings from waste minimisation in furniture manufacturing, WRAP, 2001.

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D18

ID

101

Rank

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Reduce mechanical and electrical services waste

Criteria

Condition survey to be carried out on all M&E (mechanical and electrical) equipment prior to concept design to determine what could be reused.

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 mechanical and electrical services forms part of the fit-out contract or if new mechanical and electrical services are being installed.

Assessment

At design stage: obtain the survey or confirm the intention that a condition survey is to be carried out on all M&E equipment prior to concept design (generally at the same time as the pre-demolition audit) to determine what could be reused. Survey to be carried out by a competent person who is a member of a recognised industry body (e.g. CIBSE, BISRIA, EIC).

At handover stage: where M&E reuse has been identified in the specification, ensure it has been complied with the requirement. Obtain copy of survey undertaken for this project.

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

Rationale

The aim is to reduce the volume of M&E waste produced, which is highly wasteful in terms of energy and resource use.

Guidance

The types of materials covered by this good practice measure include those noted below, but this list should not be considered exhaustive:

- duct work;
- supply and refrigeration pipework (copper, plastic);
- waste pipework & traps (plastics, cast iron, steel);
- flexihoses (water supply) and flexidrops (sprinkler system);
- valves and manifolds that do not require an electrical supply to operate;
- sprinkler heads;
- taps;

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D68

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Reduce mechanical and electrical services waste (continued)

- power cables;
- armoured cables;
- data cables;
- conduits (metal, plastic);
- ceiling grills;
- intake and extract louvers;
- acoustic intake louvers;
- acoustic dampers (fire dampers require an electrical supply to work so would be covered by the WEEE regulations);
- cable trays and hangers;
- modular plant supports (Big Foot or similar proprietary support systems); and
- acoustic enclosures for external plant.

There are a number of organisations that specialise in the resale of construction materials, e.g. [Recipro](#).

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D68

ID

102

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Reduce water in use

Criteria

Water use is less than 0.55m³/m²/year or less than 4m³/person/year for office spaces, libraries, dry labs and any other non-lab-based fit-out types.

For labs where there is a significant water requirement, operational measures are in place to reduce water consumption, and it is possible to measure the percentage reduction against pre-fit-out performance, or a similar or notional building.

Scoping

For non-lab fit-outs this measure applies to occupancy stage assessments if washrooms (in tenant or landlord areas) have been installed or changed. If any of the good practice measures E12–E18 were in scope at the handover stage assessment, this measure is in scope.

Lab criteria apply to wet labs only.

Assessment

This measure can only be assessed after a minimum of one year's occupation as the water 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: 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). For non-lab spaces, calculate the water use based either on net lettable floor area or number of full time equivalent employees.

The calculation is as follows:

$$\text{Annual water use by floor area} \frac{\text{m}^3}{\text{m}^2 \text{ year}} = \frac{\text{Annual water consumption (m}^3\text{)}}{\text{floor area (m}^2\text{)}}$$

$$\text{Annual water use by employee} \frac{\text{m}^3}{\text{person year}} = \frac{\text{Annual water consumption (m}^3\text{)}}{\text{number of full time equivalent employees}}$$

For lab spaces, ensure that water saving initiatives/equipment are in place and calculate the percentage reduction in water use as a result.

Fit-out benchmark & assessment tool

Water

Issue

P08

ID

2

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Reduce water in use [continued]

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, the impact of these measures should be reflected in reduced annual water consumption.

As there is such variety in lab function across higher education and a lack of accurate benchmarks available, the emphasis on reducing water use in labs shifts to a clear operational strategy to reduce water consumption and evidence that a water meter is being used to measure and improve performance.

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 (therefore finishing within the first 2 years of occupation).

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 to measure the benefit of them. As the assessment can be completed at any time during the first 2 years of occupation, the client has time to install the meters required.

In labs, experience shows that water use can be minimised by using one or more of the following (S-Lab Briefing 5):

- Using closed loop rather than continuous flow cooling.
- Monitoring consumption to detect leaks and to identify improvement opportunities.
- 'Rightsizing' water-using equipment for tasks and using with as high loadings as possible.
- Only buying water efficient devices (with a 'top up' fund to assist if these have a higher first cost).
- Using purified water appropriately and sparingly, and producing it by reverse osmosis (RO) wherever possible.
- Creating awareness among users.

Performance targets can be found in *Water key performance indicators for offices and hotels*, CIRIA.

A blueprint to Safeguard Europe's Water Resources – EU plan to water efficiency.

Water key performance indicators for offices and hotels, CIRIA.

Sustainable laboratories for Universities and Colleges, HEEPI.

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Water

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P08

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Efficient taps

Criteria

Flow rate on taps used for hand washing is limited to 4 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) or has an EU Water Efficiency Label.

The tap should be one of the following:

- automatic shut-off taps;
- electronic taps;
- low flow screw-down/lever taps; or
- spray taps

Where auto-shut off or electronic taps are specified these should be restricted to no more than 20 seconds flow in line with, and be on, the Water Technology List for automatic shut-off taps.

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 or EU Water Efficiency Label list. If the model and manufacturer have already been specified, 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 or EU Water Efficiency Label list.

At occupancy stage: if taps have been changed or added, 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.

Fit-out benchmark & assessment tool

Water

Issue

E14

ID

9

Rank

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Efficient taps (continued)

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. Products should ideally 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. The EU Water Efficiency Label is supported by Defra and Waterwise and provides another indication of water efficiency. These both provide more reliable evidence that the product meets the requirements declaration than just a manufacturer's declaration, which places the onus on the assessor to ensure the criteria are met.

A blueprint to Safeguard Europe's Water Resources EU plan to water efficiency.

Water Technology List: Efficient Taps.

Fit-out benchmark & assessment tool

Water

Issue

E14

ID

9

Rank

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Education

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Existing lower flush WCs

Criteria

Existing WCs are retrofitted with flushing devices that provide a 20% reduction in flush volume (see guidance) and meet the Water Technology List (WTL) criteria either by (in order of preference):

- being listed on the WTL;
- having an EU Water Efficiency Label that indicates performance that meets/exceeds the WTL criteria; or
- meeting/exceeding the WTL criteria based on specifications provided by the manufacturer.

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 or EU Water Efficiency Label list. If the model and manufacturer have already been specified, carry out the handover stage assessment.

At handover stage: collate delivery notes or invoices responding to the criteria for installed products and obtain the name of the equipment manufacturer and the model number; check the model is listed on the WTL or EU Water Efficiency Label list.

At occupancy stage: if flushing devices have been changed or added, 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 interior spaces. Retrofit WC flushing devices are fitted to existing cisterns or WC suites to enable a reduction in the volume of water per flush.

Fit-out benchmark & assessment tool

Water

Issue

E23

ID

24

Rank

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Existing lower flush WCs (continued)

Guidance

The Inland Revenue uses a [Water Technology List](#) of systems that are eligible for 100% Enhanced Capital Allowances. It includes a list of manufacturers of water efficient systems.

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.

The EU Water Efficiency Label is supported by Defra and Waterwise and provides another indication of water efficiency.

These both provide more reliable evidence that the product meets the requirements than just a manufacturer's declaration, which places the onus on the assessor to ensure the criteria are met.

[A blueprint to Safeguard Europe's Water Resources EU plan to water efficiency.](#)

[Water Technology List: Existing lower flush WCs.](#)

Fit-out benchmark & assessment tool

Water

Issue

E23

ID

24

Rank

SKA Higher
Education

Version **1.0 2016**

If you would like to comment on this measure please email support@skarating.org

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New low flush WCs

Criteria

WCs have an effective flush volume of 4.5 litres or less and are on the Water Technology List (WTL) or have an EU Water Efficiency Label.

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 or EU Water Efficiency Label list. If the model and manufacturer have already been specified, 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 or EU Water Efficiency Label list.

At occupancy stage: if WCs have been changed or added, 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.

Guidance

The Inland Revenue uses a [Water Technology List](#) of systems that are eligible for 100% Enhanced Capital Allowances (ECAs). It includes a list of manufacturers of water efficient systems.

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.

Fit-out benchmark & assessment tool

Water

Issue

E12

ID

25

Rank

SKA Higher Education
Version 1.0 2016

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Showers

Criteria

Flow rate to showers is limited to 8 litres/minute up to a pressure of 5 bar (+/- 0.2 bar) and the flow controller fittings meet the [Water Technology List \(WTL\)](#) criteria either by (in order of preference):

- being listed on the WTL;
- having an EU Water Efficiency Label that indicates performance meets/exceeds the WTL criteria; or
- meeting/exceeding the WTL criteria based on specifications provided by the manufacturer.

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. Laboratory decontamination showers are not within the scope of this measure.

Assessment

At design stage: check written specifications/contracts state this equipment must be sourced from the WTL or EU Water Efficiency Label list. If the model and manufacturer have already been specified, carry out the handover stage assessment.

At handover stage: collate delivery notes or invoices responding to the criteria for installed products and obtain the name of the equipment manufacturer and the model number; check the model is listed on the WTL or EU Water Efficiency Label list.

At occupancy stage: if showers have been changed or added, 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.

Fit-out benchmark & assessment tool

Water

Issue

E16

ID

47

Rank

SKA Higher Education

Version 1.0 2016

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Showers [continued]

Guidance

The Inland Revenue uses a Water Technology List of systems that are eligible for 100% Enhanced Capital Allowances. It includes a list of manufacturers of water efficient systems.

Products should ideally 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.

The EU Water Efficiency Label is supported by Defra and Waterwise and provides another indication of water efficiency. These both provide more reliable evidence that the product meets the requirements declaration than just a manufacturer's declaration, which places the onus on the assessor to ensure the criteria are met.

A blueprint to Safeguard Europe's Water Resources EU plan to water efficiency.

Water Technology List: Efficient Showers.

Fit-out benchmark & assessment tool

Water

Issue

E16

ID

47

Rank

**SKA Higher
Education**

Version **1.0 2016**

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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) or comply with the WTL criteria. The shut-off system only needs to be applied to the cold water supply to taps, WCs and urinals.

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 or proved to comply with the WTL criteria. If the model and manufacturer have already been specified, carry out the handover stage assessment.

At handover stage: collate delivery notes or invoices responding to the criteria for installed products and obtain the name of the equipment manufacturer and the model number; check the model is listed on the WTL or meets the WTL criteria.

At occupancy stage: if the sanitary supply shut-off system has been changed or added, 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.

Fit-out benchmark & assessment tool

Water

Issue

E19

ID

54

Rank

SKA Higher
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Version 1.0 2016

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Sanitary supply shut-off [continued]

Guidance

The Inland Revenue uses a [Water Technology List](#) of systems that are eligible for 100% Enhanced 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' under [product search](#).

Products should ideally 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 than just a manufacturer's declaration, which places the onus on the assessor to ensure the criteria are met.

A blueprint to Safeguard Europe's Water Resources EU plan to water efficiency.

[Water Technology List: Sanitary supply shut-off.](#)

Fit-out benchmark & assessment tool

Water

Issue

E19

ID

54

Rank

SKA Higher
Education

Version **1.0 2016**

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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). Alternatively, the Building Management System (BMS) can be programmed to monitor water consumption and report consumption outside of appropriate limits and raise an alarm. The alarm threshold should be adjustable based on actual consumption monitoring.

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, carry out the handover stage assessment. If the BMS is being used, the BMS specification should be reviewed to ensure that it can monitor consumption and will raise an alarm when consumption is outside of pre-set thresholds.

At handover stage: collate delivery notes or invoices responding to the criteria for installed products and obtain the name of the equipment manufacturer and the model number; check the model is on the WTL. If the BMS is to be utilised, review the as-built description of controls for the BMS or witness the BMS undertaking the required functions.

At occupancy stage: if the detection system has been changed or added, 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 interior spaces 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.

Fit-out benchmark & assessment tool

Water

Issue

E20

ID

92

Rank

SKA Higher Education

Version 1.0 2016

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Leakage detection devices (continued)

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% Enhanced Capital Allowances. It includes a list of manufacturers of water efficient systems.

Products should ideally 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 than just a manufacturer's declaration, which places the onus on the assessor to ensure the criteria are met.

[A blueprint to Safeguard Europe's Water Resources EU plan to water efficiency.](#)

[Water Technology List: Leakage detection devices.](#)

Fit-out benchmark & assessment tool

Water

Issue

E20

ID

92

Rank

SKA Higher
Education

Version **1.0 2016**

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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 meets the **Water Technology List (WTL)** criteria either by (in order of preference):

- being listed on the WTL;
- having an EU Water Efficiency Label that indicates performance that meets/exceeds the WTL criteria; or
- meeting/exceeding the WTL criteria based on specifications provided by the manufacturer.

And:

At project completion ensure the tenant/occupant has taken a meter reading to support measure P08 Reduce water in use required in the occupancy assessment.

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 meets the WTL criteria and that it is a pulsed water meter. If the model and manufacturer have already been specified, carry out the handover stage assessment.

At handover stage: collate delivery notes or invoices responding to the criteria for installed products and obtain the name of the equipment manufacturer and the model number; check the model is listed on the WTL, has an EU Water Efficiency Label, or otherwise meets the WTL criteria, and the meter is capable of transmitting information on water use to a central data logger for water management purposes.

Obtain written confirmation that proves the client has the meter readings upon occupation.

At occupancy stage: if the water meter has been changed or added, 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 interior spaces 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.

Fit-out benchmark & assessment tool

Water

Issue

E17

ID

117

Rank

SKA Higher Education
Version 1.0 2016

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Water meter (continued)

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.

Products should ideally 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.

The EU Water Efficiency Label is supported by Defra and Waterwise and provides another indication of water efficiency.

These both provide more reliable evidence that the product meets the requirements than just a manufacturer's declaration, which places the onus on the assessor to ensure the criteria are met.

A blueprint to Safeguard Europe's Water Resources EU plan to water efficiency.

[Water Technology List: Meters.](#)

Fit-out benchmark & assessment tool

Water

Issue

E17

ID

117

Rank

**SKA Higher
Education**

Version **1.0 2016**

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Water sub-meters

Criteria

- water sub-meters are installed to specific activity areas within the fit-out space or to individual water consuming plant;
- the sub-meter is capable of transmitting information on water use to a central data logger for water management purposes; and
- the meter is on the Water Technology List (WTL).

Scoping

This measure applies where:

- the water demand of an individual piece of water-consuming equipment is greater than 10% of the total water demand of the fit-out space; or
- The project has more than one water consuming activity area, such as an office space and/or laboratory, catering, medical facilities, sport facilities, agricultural facilities.

Assessment

At design stage: check written specifications/contracts state this equipment must be sourced from the WTL, and that it specifies a pulsed water meter. If the model and manufacturer have already been specified, carry out the handover stage assessment. Check that the appropriate areas and plant have water sub-meters specified.

At handover stage: collate delivery notes or invoices responding to the criteria for installed products and obtain the name of the equipment manufacturer and the model number; check the model is listed on the WTL and the sub-meter is capable of transmitting information on water use to a central data logger for water management purposes. Check that all the water sub-meters specified at design stage have been installed.

At occupancy stage: if the water sub-meter has been changed or added, repeat the handover stage assessment. Check that daily meter readings have been taken from these water sub-meters, and that the results are reviewed on a regular basis by senior management.

Rationale

The aim is to reduce water use within specific areas by providing feedback to occupiers. Reviewing daily consumption presents the opportunity to identify areas where occupant behaviour could be modified to reduce water use.

Fit-out benchmark & assessment tool

Water

Issue

E27

ID

118

Rank

SKA Higher Education
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Page 1 of 2

Water sub-meters (continued)

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.

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, beyond just a manufacturer's declaration.

Building Energy Metering. CIBSE TM39 (2009).

[Enhanced Capital Allowances \(ECAs\) Technologies covered by the ECA water scheme.](#)

[British Council of Shopping Centres Sustainability Charter – Water](#), BCSC.
[Water Technology List: Water sub-meters.](#)

Fit-out benchmark & assessment tool

Water

Issue

E27

ID

118

Rank

SKA Higher
Education

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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. Meter readings are taken at a frequency appropriate (at least once a fortnight) to the project programme with at least 5 measurements taken over the whole duration.

At the end of the project, total project delivery water usage in m³ is to be added to the project evidence box on the SKA online tool.

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, keep records of water use, and at the end of the project upload data to SKA tool.

At handover stage: review the records of water usage and the assessor should add the water usage to the project information tab on the SKA online tool.

At occupancy stage: this measure is not assessed. The measure is achieved by default if 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 Green Construction Board](#) and its recommended guidance.

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 Innovation & Skills (BIS, formerly DTI/BERR). These include benchmarks for water use.

[Fit-out environmental good practice on site guide](#), CIRIA, 2016.

Fit-out benchmark & assessment tool

Water

Issue

P07

ID

131

Rank

SKA Higher Education
1.0 2016

Version

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Water management software

Criteria

Dedicated 'water use' management software is used for analysing and reporting on water use data. That software is either on the Water Technology List (WTL) or meets/exceeds the WTL criteria; or the Building Management System (BMS) has the capacity to monitor and report water consumption.

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 or meet/exceed the WTL criteria. If the model and manufacturer have already been specified, carry out the handover stage assessment. If water consumption monitoring is being undertaken by the BMS, review the BMS specification to ensure the system has the capacity to monitor and report water consumption.

At handover stage: collate delivery notes or invoices responding to the criteria for installed products and obtain the name of the equipment manufacturer and the model number; check the model is on the WTL or meets/exceeds the WTL criteria. If the BMS is to be utilised, review the as-built description of controls for the BMS or witness the BMS undertaking the required functions.

At occupancy stage: if water management software has been changed or added, 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 interior spaces 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.

Fit-out benchmark
& assessment tool

Water

Issue

E18

ID

119

Rank

SKA Higher
Education
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Version

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Water management software (continued)

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.

Products should ideally 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 than just a manufacturer's declaration, which places the onus on the assessor to ensure the criteria are met.

Water Technology List: Water management software.

A blueprint to Safeguard Europe's Water Resources EU plan to water efficiency.

Fit-out benchmark & assessment tool

Water

Issue

E18

ID

119

Rank

**SKA Higher
Education**

Version **1.0 2016**

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Thermal comfort assessment

Criteria

Thermal comfort modelling to CIBSE AM11 standard has been carried out at the design stage; the results of this modelling are used to select a service strategy that aligns CIBSE Guide A (see guidance below).

Projects valued under £500K, if unable to undertake the above modelling, are required to:

- provide an overlay of the furniture and mechanical plans;
- provide written evidence in the form of meeting notes to demonstrate discussion has taken place with the client regarding occupant comfort; and
- provide a list of the solutions and actions to be taken following the client review.

The issues that must be discussed as a minimum are: locations of cold/hot spots (from HVAC equipment locations and downdrafts), radiant temperatures and overheating near windows and atria.

Scoping

This measure applies if HVAC systems are being installed, partly modified or replaced, or modifications to the façade or windows will be undertaken.

Assessment

At design stage: review a modelling report to check occupant comfort has been considered in the selection of the most appropriate service strategy or review plans and notes of occupant comfort being discussed with the client.

At handover stage: check the applied service strategy follows the modelling or review report and that occupant comfort has been considered.

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

Rationale

Thermal comfort is an important criterion for occupant wellbeing and is typically the issue that produces greatest occupant dissatisfaction. Where occupants can control indoor air temperature and there is dissatisfaction, energy efficiency targets are missed due to strategies being overridden. 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.

Changes to glazing can have dramatic effects on thermal comfort by increasing or decreasing solar gains, downdrafts, and radiant temperatures, therefore any modifications to glazing design should also be assessed for its impact on internal conditions.

Fit-out benchmark & assessment tool

Wellbeing

Issue

D28

ID

7

Rank

SKA Higher Education

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Thermal comfort assessment [continued]

Guidance

AM11 Building Performance Modelling 2015, CIBSE Applications Manual AM11, CIBSE, 2015.

Environmental design (8th edition), Guide A, CIBSE, 2015.

**Fit-out benchmark
& assessment tool**

Wellbeing

Issue

D28

ID

7

Rank

**SKA Higher
Education**

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Page 2 of 2

Lighting design

Criteria

The lighting levels should be in accordance with BS EN 12464-1: 2012, the *SLL Code for Lighting* and *CIBSE Lighting Guides* for the specific area.

Additionally the following shall be evidenced as being considered in the lighting design:

- Surface reflectance as per *SLL Code for Lighting Parameters* (2012) for ceilings, walls and floor respectively as a minimum. This is to ensure surface reflectance is kept at a standard level:
 - ceiling: 0.7 to 0.9;
 - walls: 0.5 to 0.8; and
 - floor: 0.2 to 0.4.
- Uniformity.
- Colour temperature.
- Colour rendering.
- Vertical illuminance of teaching spaces.
- Highlight at least 3 different aspects of the lighting design that specifically focused on wellbeing of occupants. This includes and is not limited to:
 - up-lighting at least 30% of the environment;
 - lighting scenes;
 - mood lighting;
 - local controllability of illuminance levels;
 - architectural fittings;
 - engagement with end-user on the lighting design;
 - engagement with architects and interior designers; and
 - task lighting.

Scoping

This measure applies to all occupied areas.

Assessment

At design stage: review specification documents/clauses to confirm that lighting levels are designed to meet those specified in the BS and SLL Code for Lighting, and provide evidence that measures have been considered by the project team and appropriate action is taken.

At handover stage: carry out a site visit, review as-built drawings or check invoices for visual confirmation that 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 achieved at handover stage.

Fit-out benchmark & assessment tool

Wellbeing

Issue

D30

ID

10

Rank

SKA Higher Education

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Lighting design (continued)

Rationale

The visual comfort is affected by the levels of illumination on the working surfaces and in the working space.

Different lux levels are required for different 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

Lighting accounts for a great proportion of annual electricity consumption. It is, therefore, important to ensure that lighting installations are as energy efficient as practicable, yet it is necessary to design the installation in a way that it meets all the user's needs for the space under consideration. The essential considerations necessary for good lighting design include:

- Visual function: the lighting installation aids tasks to be carried out in the environment in question, and safe circulation.
- Visual amenity.
- Integration with the overall space.
- Energy efficiency.
- Maintenance.
- Life cycle cost of the installation, including capital and operational figures.

The SLL Code for Lighting, London, CIBSE, 2012.

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

Lighting technology overview, CTV021, Carbon Trust, 2007.

SLL Lighting Guide 4: Sports, London, CIBSE, 2006.

SLL Lighting Guide 5: Lighting for Education, London, CIBSE, 2011.

Lighting Guide 07: Offices 2015, CIBSE, 2015.

SLL Lighting Guide 11: Surface Reflectance and Colour, London, CIBSE, 2001.

Health, Wellbeing & Productivity in Offices: The next chapter for green building. A report by the World Green Building Council, 2014.

Fit-out benchmark & assessment tool

Wellbeing

Issue

D30

ID

10

Rank

**SKA Higher
Education**

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Acoustic design

Criteria

A 2 tier approach to this GPM is required, depending on the spaces being designed and in scope:

- A. Teaching spaces including: lecture theatres, classrooms, study spaces and laboratories if they include a teaching space.
- B. Other spaces such as offices, exhibition areas, circulation routes, canteens, etc.

If one or both type of spaces is in scope, the relevant criteria below must be applied:

- A. An acoustician who is a corporate member (or higher) of the Institute of Acoustics or whose company holds membership of the Association of Noise Consultants is part of the design team, and the criteria from the current standard BB93 are used as design targets.
- B. An acoustician who is a corporate member (or higher) of the Institute of Acoustics or whose company holds membership of the Association of Noise Consultants is part of the design team and the criteria from the current BB93, or FIS Guide to Office Acoustics 2015, are used as design targets.

On projects of value under £500K, should the project team not be able to proceed with the above good practices, it is to demonstrate how the acoustic quality of the spaces in scope respond to occupant comfort through the space planning, material finishes selected and user behaviour controls provided.

Scoping

This measure applies to all fit-outs and refurbishment projects and those areas within them that include at least one of the following: lecture theatres, classrooms, study and breakout spaces, laboratories, offices, circulation routes, public event areas and canteens.

Assessment

At design stage: confirm that an acoustician is appointed and that they are a corporate member (or higher) of the Institute of Acoustics, or whose company holds membership of the Association of Noise Consultants, and that the design proposals for the acoustic quality of the space meet the recommended standards in all areas in scope.

If the project value is below £500K, review evidence such as drawings and reports outlining the considerations and actions the team has undertaken as requested in the criteria.

At handover stage: demonstrate by on site tests carried out (or supervised by) an acoustician who is a corporate member (or higher) of the Institute of Acoustics or whose company holds membership of the Association of Noise Consultants, that the acoustic quality criteria have been achieved.

Fit-out benchmark & assessment tool

Wellbeing

Issue

D29

ID

11

Rank

SKA Higher Education

Version 1.0 2016

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Acoustic design (continued)

For projects under £500K, collate site photos or plans confirming that the actions to improve the acoustic quality of spaces have been undertaken as proposed.

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

Rationale

The approach to this GPM is to ensure that all students are able to work and learn in spaces that are designed for active listening, communication or concentrated study.

Effective teaching and learning is impacted by too much noise, meaning students can't hear, caused in the main by the use of hard surfaces and a lack of soft absorptive products to reduce the reverberation time in the spaces.

The government produced a Building Bulletin (BB93) that sets targets for reverberation, background sound and room to room attenuation across a facility to address this, and all schools are subject to achieving the targets set within it. BB93 is not applicable to HE, though its targets are just as relevant.

Guidance

FIS guide to office acoustics, FIS, 2015.

Acoustic design of schools: performance standards BB93.

ANC good practice guide, 2014.

Guidance on sound insulation and noise reduction for buildings, BS 8233:2014, BSI, 2014.

Fit-out benchmark & assessment tool

Wellbeing

Issue

D29

ID

11

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SKA Higher
Education

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Ventilation rates

Criteria

Ventilation rate is at least as good as the rates shown below for each of the spaces:

Building/room type	Suggested air supply rate
Office space	12 litres per person per second
Retail space	5 litres per person per second
Changing/fitting rooms	10 air changes per hour
Toilets	5 air changes per hour
Corridor	10 litres per person per second
Gymnasium	10 litres per person per second
Laboratory	10 litres per person per second
Lecture halls	10 litres per person per second
Seminar rooms	10 litres per person per second
Teaching spaces	10 litres per person per second

For laboratory areas the air flow measures criteria of E30 Fume cupboard selection and operation can be used if applicable to the space use and facilities.

Scoping

This measure applies to mechanically ventilated 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 spaces if the windows are being changed.

Assessment

At design stage: check specifications state the designed ventilation rate.

At handover stage: review testing and commissioning report to confirm ventilation rates comply with the criteria.

At occupancy stage: check reports show that during the first year of occupation the ventilation system has been tested to ensure that the actual ventilation rates meet the designed ventilation rates.

Rationale

Maintaining adequate fresh air within these spaces is important to the health and productivity of the occupants.

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Wellbeing

Issue

D33

ID

12

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Ventilation rates (continued)

Guidance

Effects of Ventilation on Academic Performance, Derek Clements-Croome, Reading University, CIBSE, details the results of a study of CO₂ levels on student productivity.

BCO Guide to Specification, British Council for Offices, 2009.

B2 Ventilation, Guide B, CIBSE, 2016.

Environmental Design, Guide A, CIBSE 2015.

Sustainable Intelligent Buildings for Better Health, Comfort and Well-Being, Derek Clements-Croome, Reading University, 2014.

Built for living understanding behaviour and the built environment through engineering and design, Royal Academy of Engineering, 2015.

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Issue

D33

ID

12

Rank

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Outside views

Criteria

All workstations intended for non-transient workers are within seven metres of external windows or 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

The measure applies to areas where workstations will be used, in areas where these will be installed or their arrangement modified.

Workstations are defined where users are undertaking study or office based tasks at a desk or worktop, in art studios (excluding specialist media rooms) workshops and laboratories. It does not apply to areas such as specialist storage rooms or corridors.

Assessment

At design stage: check plans to ensure internal layouts are in accordance with the criteria.

At handover stage: carry out a site visit for visual confirmation of internal layouts.

At occupancy stage: if internal layouts have changed, 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 high quality workspaces 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, 2014 and *BCO Guide to fit-out*, 2011, British Council for Offices.

Health, Wellbeing & Productivity in Offices: The next chapter for green building. A report by the World Green Building Council, 2014.

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Issue

D39

ID

29

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Page 1 of 1

Breakout space

Criteria

Breakout space for staff

- An adequately sized (0.15m² per desk space) dedicated breakout space is provided for staff. This has to be a separate space from the working area – separated by either a door or enclosed completely from direct contact with the working areas so that sound and visual contact do not prohibit activities in both areas.
- Furniture to provide a different posture than that typically held by staff in their work areas and assist relaxation of both the body and the mind.
- The general interior design should provide where possible elements of biophilia in either the form of shapes being organic or/and with the addition of a significant quantity of greenery and good views out.
- If there is no dedicated staff kitchen or general catering facility within the building, a hot beverage and light food-preparing provision must be made and is to include as a minimum a storage and washing area, hot/cold drinking water and an adequately sized fridge.

All the criteria must be met, although creative approaches are encouraged as long as the objectives of the measure are achieved.

Breakout space for students

A breakout space for students is generally well provided for in buildings such as libraries and study areas, common rooms, cafes and bars. Where no breakout space is already provided in standalone buildings used by students, breakout spaces should be provided as above.

Scoping

This measure is in scope for all assessments where a dedicated breakout space for staff or students does not already exist. If one already exists, this measure is not in scope for that provision and if both exist then not in scope at all.

Assessment

At design stage: obtain evidence from the client about the anticipated number of staff that will be on a break at any one time. Review drawings and review specifications to confirm that the criteria have been met in the breakout space.

At handover stage: carry out a site visit for visual confirmation of that a breakout room has been provided and the criteria are the same as agreed at design stage.

At occupancy stage: check that a designated breakout space and all provisions is still available. Check with the client that the actual number of staff on a break at any one time is the same or fewer than determined at design stage. If the number has increased then check that additional provisions have been provided in the breakout space to reflect the increase in staff numbers.

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Issue

D62

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50

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Page 1 of 2

Breakout space (continued)

Rationale

A rest area provided for staff and should be designed to maximise staff well-being when they are taking a break from working. It provides an opportunity for staff to interact on a social level that can lead to healthier workplace relationships and work satisfaction. Providing an opportunity to reduce high blood pressure can also reduce sickness, and increase productivity and general wellbeing.

Guidance

When a staff breakout space has already been provided for staff, for example on another floor that is not part of the fit-out project and is convenient for staff to access, this measure is not in scope. This is to ensure that the project is not assessing something that already exists.

Good day lighting and views out are beneficial to people's health. In retail, sales space frequently does not have natural day lighting, so ideally the breakout space should have views out and good day lighting. The design team should aim to ensure that the layout of the workplace/retail space enables the breakout space to be provided with a window. Good practice standards are:

- an average daylight factor of 5%;
- a view of the sky from all spaces within the room; and
- a view out to enable eyes to refocus: there should be at least 10m between the window and any other building.

The requirements for day lighting and a view out have not been set as criteria for the initial release of this measure, as it is recognised that it can be difficult to provide access to a window in some locations and especially retail breakout spaces.

Acoustic separation between the breakout space and other working/retail spaces is also beneficial to staff wellbeing. This is addressed by measure D29 Acoustic design.

Providing seating with different postures to that of task-based seating is important. Occupants should feel that the staff breakout space provides an alternative to more formal, rigid office furniture, in which they would spend most of their day. This change and the provision of reclined and more comfortable furniture helps promote relaxation and meditation.

Lighting Guide 10: Daylighting - A Guide for Designers: Lighting for the Built Environment, CIBSE, 2014.

A short handbook on *Measuring Well-being* is produced by the Centre for Well-being at nef.

The Emotional Content of Physical Space, Farschi & Fisher, 2000, University of Reading.

Health, Wellbeing and Productivity in Offices: The Next Chapter for Green Building, World Green Building Council.

Health, wellbeing and productivity in retail, UK Green Building Council, 2016.

Well-being at Work, a review of the literature, New Economics Foundation.

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Wellbeing

Issue

D62

ID

50

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Page 2 of 2

Personal storage

Criteria

The following criteria must all be achieved:

Personal storage space is incorporated into the fit-out space in line with the needs of the building users:

- For agile working open offices: 1 locker per building user based on peak occupancy.
- For static workers: either 1 locker or lockable pedestal for each permanent member of staff.
- For learning spaces (libraries, labs, write up areas, breakout spaces, communal offices): a minimum of one private locker for every 3 users based on peak occupancy.
- facilities must be accessible to all staff and students, as relevant to each space type, with access control to avoid use by those who are not members of the institution.

As a minimum, storage must be of sufficient size to accommodate a small rucksack, laptop and/or A4 folders.

Note: where measure D43 Cyclist lockers is in scope, specified or existing, these can contribute towards reaching the numbers in the criteria above.

Scoping

In scope unless personal storage facilities are demonstrated to be of no benefit to staff and/or students using the building; for example in transient spaces that are unlikely to be occupied by individuals for more than 30 minutes.

Not in scope if compliant facilities already exist within easy access of the assessed area (i.e. no more than 50 meters from the boundary of the assessed space). Note that facilities in other areas must be assessed on the basis of ALL users of the combined areas that they serve.

Assessment

At design stage: check layout drawings and furniture details to ensure that the storage space, number of units and dimensions have been sized in line with the requirements set out above.

At handover stage: carry out a site visit for visual confirmation that the area exists and has appropriate accessibility, number of units and sizing.

At occupancy stage: if achieved at handover stage, carry out a site visit for visual confirmation that the area exists and is in regular use. If the measure was not achieved at handover stage but has been targeted in occupancy and meets the criteria, the measure will be achieved at this stage.

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Wellbeing

Issue

D76

ID

74

Rank

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Personal storage (continued)

Rationale

Provision of personal storage space is a key consideration for the efficient operation of workplaces, as well as the health and wellbeing of building occupants. Higher education institutions in particular have staff and students who often have irregular working patterns and benefit from being able to store belongings temporarily. Flexible/agile working practices and shared transient work spaces necessitate the need for storage to avoid clutter and prevent the need to carry around personal items.

Personal storage space can provide convenient and secure places to store valuable or bulky items that the occupant does not wish to keep in close proximity to their working space. This has the potential to make the area tidier and safer as this will present less trip hazards. In addition, having a personal storage space can improve staff morale as they have the convenience of being able to leave things overnight or during long periods out of the office – which saves people carrying heavy items such as laptops to and from work each day. It can also reduce wear and tear of such items, reducing replacement equipment costs. Productivity can be increased by reducing mess and time spent searching for documents. Lastly, lockers provide an additional element of security, particularly in open plan or transient work areas where there can be significant in and out movement.

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Wellbeing

Issue

D76

ID

74

Rank

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Biophillic design

Criteria

Projects should achieve a minimum 3 of the following 6 criteria:

1. Daylighting and views out:
 - D39 Outside Views is achieved; or
 - all workstations intended for non-transient workers are within seven metres of internal biophillic features such as green walls, water features, or vegetative scenes, and these features can be viewed from within 65 degrees rotation from the normal working position at those workstations; or
 - all occupied areas have access to natural daylight.
2. Fresh air:
 - D33 Ventilation rates is achieved; and
 - D40 CO₂ monitors is achieved; or
 - D64 VOC monitors is achieved.
3. Lighting:
 - Lighting design utilizes the principles of varying intensities of light and shadow that change over time to create conditions that occur in nature.
4. Internal finishes, fittings and furniture utilize symbolic references to contoured, patterned, textured or numerical arrangements that persist in nature.
5. Refuge/prospect: all work and break areas are planned so that users sit with their backs at 2m maximum from a wall or low level screen and can view the point of entry and circulation into or through the space.
6. D62 Breakout space is achieved.

Scoping

This measure applies to all fit-outs, other than where the fit-out includes only laboratory, storage, and specialist spaces.

Assessment

At design stage: documents including plans and specifications demonstrate that the targeted criteria features are included in the design.

At handover stage: carry out a site visit for visual confirmation that the features have been provided, and are the same as planned at design stage.

At occupancy stage: check that the installed features are still available.

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Wellbeing

Issue

D77

ID

77

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Biophillic design (continued)

Rationale

Biophilia is the effect that describes the link between humans and nature, implying that as organisms that evolved in nature, we need it to sustain our physical and emotional health. The aim of this measure is to introduce some of these ideas into the design of occupied fit-out spaces.

The returns and effect on humans has been recorded in many studies that explore examples of how access to nature, at a low up-front cost, can provide very healthy returns. Research has shown the advantage of a biophillic approach towards improved stress recovery rates, lower blood pressure, improved cognitive functions, enhanced mental stamina and focus, decreased violence and criminal activity, elevated moods, and increased learning rates. These can be quantified through measurable indicators such as: illness and absenteeism; staff retention; job performance (mental stress/fatigue); healing rates; classroom learning rates; retail sales; violence statistics.

Guidance

Views of what constitutes natural, nature, wild, or beautiful greatly vary, and their interpretation into the internal environment cannot be explicitly defined, and are not limited just to plants and scenery. The importance of daylight, forms, shapes and textures that echo those found in nature, and 'territory' should also be addressed within this measure.

With the introduction of this GPM as a new measure it is more important that clients and designers are introduced to the idea that the above principles can bring a positive benefit to their working environment and its occupants. Therefore the SKA assessor should use their judgment to award this measure when the project can provide evidence that a given number of the principles have been considered and have influenced the final design.

Kellert, SR. (2005) *Building for Life: Understanding and Designing the Human-Nature Connection*, Washington, DC: Island Press.

Happiness is greater in natural environments, Mappiness.org, 2013.

Health, Wellbeing & Productivity in Offices: The next chapter for green building, World Green Building Council, 2014.

Health, wellbeing and productivity in retail, UK Green Building Council, 2016.

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Wellbeing

Issue

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ID

77

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Daylight glare control

Criteria

For office, meeting, lab and all general teaching spaces all of 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 with the coverings drawn closed;
- fabric screens, where specified, have a visual light transmittance (VLT) of less than 10% (excluding occasions that require blackout blinds); and
- have solar protective coating (SPC) or Energy Solar Protective Coating (ESP).

For spaces where visual display units (VDU) e.g. PC suites, library PCs, retail tills, ATMS are used one of the following criteria must be met:

- the VDU must be positioned so that light from the window does not fall on it or cause reflections;
- the VDU must be fitted with an anti-glare screen; or
- the workspace must be provided with a screen that the staff can position to shield the VDU from the source of glare.

Scoping

Office, classroom, all workshop teaching and laboratory spaces: this measure applies if window coverings are specified or installed.

Retail and exhibition/display spaces: this measure applies if VDUs are installed within 6m of an external window or adjacent to roof lights or sunpipes.

This measure is in scope whether procured by a client direct or part of main build works contract.

Assessment

At design stage: check specifications and manufacturer's literature and policies for compliance with criteria and check the plans indicate all required locations.

At handover stage: collate delivery notes or invoices responding to the criteria for installed products and carry out a site visit for visual confirmation of locations.

At occupancy stage: if window coverings have been changed or added to, repeat the handover stage assessment. If this measure was achieved at handover stage and the window coverings have not been changed or added to, this measure will be achieved by default. For retail and exhibition/display areas, check that each VDU still has the appropriate glare control.

Fit-out benchmark & assessment tool

Wellbeing

Issue

D31

ID

78

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Daylight glare control (continued)

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.

In a retail environment, where there are few VDUs and where it may not be appropriate cover to the windows, the provision of individual glare control for each VDU is acceptable.

Guidance

Window coverings

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 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.

Retail/Display space

This measure is only in scope where VDUs are installed in a space where daylight falls; in practice this is the space that is less than 6m from the window. If the window has been boxed in as part of the fit-out, this measure is not in scope. Where the retail space is within a larger building and the

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Wellbeing

Issue

D31

ID

78

Rank

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Page 2 of 3

Daylight glare control (continued)

windows open onto the covered landlord space this measure will not be in scope.

Bespoke joinery can be used to create a screen that prevents glare.

For useful papers on daylight and window treatments see [Daylight Dividends](#).

Where manual blinds are in use that causes lighting energy consumption to increase, user behaviour management needs to be considered so lights are not left on when blinds are down and no one is in the room.

Roller blinds with Solar Protective Coating (SPC) or Energy Solar Protective Coating (ESP) reduce solar heat gain to improve staff comfort, concentration and productivity, while eliminating the harmful UV radiation. While providing solar and UV protection, they allow some natural light through.

Reducing the solar heat gain in the office gives staff a comfortable and productive workplace, eliminating the fatigue and loss of concentration caused by high temperatures and solar glare.

Solar protective fabric can give **11% to 15% in annual energy savings** by reducing the air conditioning.

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Wellbeing

Issue

D31

ID

78

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Occupant HVAC control

Criteria

Faculty staff have the ability to adjust the temperature of different areas within the space via either local controls (e.g. thermostats, A/C room controls or radiator valves) or via access to the BMS. For areas where occupants have permanent workstations, local occupant controls are installed to enable occupants to adjust the temperature of different areas within the space.

Scoping

This measure applies only to those services (heating, ventilation and/or air conditioning) that have been installed as part of the fit-out, or modified and/or extended as part of an existing system. If no changes have been made to existing services, this measure should not form part of the assessment.

Specialist areas that have specific temperature requirements are excluded from scope.

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 for visual confirmation of occupant controls.

At occupancy stage: if controls have been changed or added, 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 & Kell's Heating and Air Conditioning of Buildings (11th edition), Elsevier.

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Wellbeing

Issue

D32

ID

82

Rank

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Page 1 of 1

CO₂ monitors

Criteria

CO₂ sensors are installed in all occupied spaces to control the mechanical ventilation, or automatic openable windows, to ensure that ventilation is increased when CO₂ concentrations rise above 1000 parts per million (ppm).

Where a BMS is in place or being installed as part of the fit-out, then the CO₂ sensors should be linked to the BMS to provide an automated recording and analysing system.

For smaller spaces that do not have a BMS or are naturally ventilated, a more basic system where sensors have to be manually monitored will be acceptable.

For all systems, records should be kept that show CO₂ levels have been recorded at least on a weekly basis, or more frequently if possible.

Scoping

This measure applies to occupied spaces, defined as interior spaces that are occupied by any person for 30 minutes or more at a time. This includes offices, meeting rooms and spaces where teaching and study will occur such as lecture halls, study rooms, computer labs, etc.

Higher education specialist spaces such as labs, maintenance workshops that may have specific ventilation requirements to be an assessor and project based decision. Any areas adjacent to chemical storage areas that may or may not be occupied that are at risk of air seepage should be included in scope.

Assessment

At design stage: review specifications and contracts to confirm that CO₂ sensors are specified.

At handover stage: check the specified equipment was installed by reviewing as-built drawings or checking invoices. Also check the tenant procedures for monitoring CO₂ levels are included within the building user guide and carry out a site visit.

At occupancy stage: review reports and check that during the first year of occupation the CO₂ monitoring system has been tested to ensure that it has been operating correctly.

Review records to ensure that CO₂ levels have been recorded on a regular basis, and adequate responses were made when levels exceeded those advised.

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Wellbeing

Issue

D40

ID

81

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CO₂ monitors (continued)

Rationale

This good practice measure addresses indoor air quality and is related to D64 VOC monitors.

Air change rates impact the level of CO₂ and have a direct relationship with indoor air quality and airborne transmission of respiratory infections and on productivity of staff. Control of airflow rates can be achieved through CO₂ sensors to establish a minimum rate.

Research has shown that CO₂ levels exceeding 1000ppm reduce reaction times and memory of pupils, both contributing to poor concentration.

Guidance

B2 Ventilation, Guide B, CIBSE, 2016.

Health, Wellbeing & Productivity in Offices. A report by the World Green Building Council.

Effects of Ventilation on Academic Performance, Derek Clements-Croome, Reading University, CIBSE, details the results of a study of CO₂ levels on student productivity.

Is CO₂ an Indoor Pollutant? Higher Levels of CO₂ May Diminish Decision Making Performance. A study by Ernest Orlando Lawrence Berkeley National Laboratory, March 2013.

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Wellbeing

Issue

D40

ID

81

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Cleaning of existing air supply ductwork

Criteria

The existing air supply ductwork or floor voids where used for displacement ventilation systems, is cleaned as part of the fit-out.

Cleaning is carried out in accordance with BS EN 15780:2011 – *Ventilation for buildings. Ductwork. Cleanliness of ventilation systems* and *Guide to Good Practice TR/19 - Internal Cleanliness of Ventilation Systems*, 2013.

A cleaning report shall be prepared and signed. The report shall include as a minimum:

- Details of the building and ventilation system:
 - the address, name, or other unique identifier of the property;
 - the owner or manager of the building; and
 - the date of the inspection, cleaning and evaluation.
- List of the documents provided, including documentation of the product certificates and manufacturer’s or supplier’s cleaning instructions, whenever available.
- Physical descriptions of the systems subject to inspection and cleaning inventory of equipment.
- Methods and equipment used for cleaning, and assessment before and after cleaning (visual or measured).
- Recommendations (including recommended time for next assessment and cleaning).

Scoping

This measure applies if there is an existing HVAC system that is not being replaced.

This measure will not be in scope:

- if the fit-out encompasses only a few floors in a building with a central HVAC system for the whole of the building. 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; or
- if, following initial inspection, the ductwork is deemed to be clean. This is to ensure that energy is not wasted if the ductwork has been cleaned recently.

Assessment

At design stage: check specification or obtain confirmation that a specialist ductwork cleaning firm will be employed to carry out cleaning in accordance with relevant standard.

At handover stage: ductwork cleaning report confirming completion of cleaning to relevant standard and including the items highlighted in the above criteria section.

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Issue

D36

ID

98

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Page 1 of 2

Cleaning of existing air supply ductwork (continued)

At occupancy stage: if the handover stage report highlighted recommendations or re-assessment or additional cleaning within the occupancy stage assessment period, reports are provided to assessor. If no actions are highlighted in the handover report to be undertaken during the occupancy stage period, the measure is achieved by default.

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

Guide to Good Practice – Internal Cleanliness of Ventilation Systems, TR19, Building & Engineering Services Association (B&ES), 2013.

BS EN 15780 *Ventilation for Buildings - Ductwork - Cleanliness of Ventilation Systems*, 2011.

FM World – *Ventilation for Buildings* – Ductwork, 2013.

Ducting and weaving: New standard ends confusion, Andrew Steel, Airmec, 2012.

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Wellbeing

Issue

D36

ID

98

Rank

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Education

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Specialist and printer copier equipment area ventilation

Criteria

Dedicated local extract vents for printing and photocopying rooms/areas, specialist computer suites, specialist equipment areas or areas housing equipment with the potential to produce ozone (O3) are provided.

Scoping

This measure applies if the installation of office or specialist equipment is part of the fit-out contract or if separate printer or specialist equipment rooms are defined as part of the fit-out.

Printers/reproductive equipment included in scope are defined as volume laser printers able to reproduce >2000 sheets per day.

This measure is not in scope for specialist equipment areas that include local extract vents as a legal obligation, e.g. fume cupboards.

Assessment

At design stage: check the drawings show the locations of printer areas/ photocopying rooms/areas, computer suites, specialist equipment areas or areas housing equipment with the potential to produce ozone (O3) and positions of the relevant dedicated local extract vents.

At handover stage: carry out a site visit for visual confirmation of printer areas, photocopying rooms/areas, computer suites, specialist equipment areas or areas housing equipment with the potential to produce ozone (O3) and positions of the relevant dedicated local extract vents.

At occupancy stage: if the location of the printer areas or the local extract vents has changed, 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 and other such equipment often found in University buildings give off a number of toxic gases, the main one being ozone. Ozone is unstable and usually decomposes rapidly.

However, if the area around such equipment is not well ventilated, 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

Ozone: Health hazards and precautionary measures, guidance note EH38, HSE, 2014.

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D35

ID

99

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Page 1 of 1

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. Where specialised areas such as laboratories or healthcare have a regulatory requirement they are excluded from scope.

Assessment

At design stage: check specification documents/clauses state the fine filters will be installed.

At handover stage: check invoices to confirm the compliant filters were installed.

At occupancy stage: this measure is not assessed. The measure is achieved by default if 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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Low VOC finishes

Criteria

All products used in the fit-out have low or zero VOC emissions.

The definition of 'low' VOC emissions is product dependent and is based on compliance with one of the standards below:

The product has been awarded one of the following labels:

- EMICODE – Levels 1 or 2.
- Blue Angel.
- M1.
- Eurofins Indoor Air comfort GOLD standard.
- Green Label Plus Classification.
- Natureplus.

Or

The product has been tested to the following British Standards, and has passed:

- Varnishes: BS EN 13300:2001.
- Wood panels: EN 13986:2004.
- Timber structures: EN 14080:2005.
- Wood flooring: EN 14342:2005.
- Floor coverings: EN 14041:2004.
- Suspended ceiling tiles: EN 13964:2004.
- Flooring adhesives: EN 13999-1:2007.
- Adhesives for hanging flexible wall coverings: BS 3046:1981.
- Wall-coverings: EN 233:1999, EN 234:1997, EN 259:2001, EN 266:1992.

These products should all meet the requirement for formaldehyde E1 as tested to standard BS EN 717-1:2004.

Scoping

This measure is in scope where one or more of the following products have been installed in the fit-out:

- varnishes;
- wood panels, timber structures, wood flooring;
- resilient, textile and laminated floor coverings;
- flooring and wall adhesives;
- wall coverings;
- suspended ceiling tiles;
- joinery; or
- furniture.

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D63

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107

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Page 1 of 2

Low VOC finishes (continued)

Assessment

At design stage: review specifications to ensure conformance with criteria, and that specified products have been tested to the required standards or have been awarded one of the approved product labels above.

At handover stage: collate delivery notes or invoices responding to the criteria for installed products.

At occupancy stage: if new products have been installed, repeat the handover stage assessment, if this measure was achieved at handover stage and no new products have been installed, this measure will be achieved by default.

Rationale

This good practice measure addresses indoor air quality. Volatile Organic Compounds (VOCs) are organic chemicals that evaporate from liquid or solid form at room temperature and enter the atmosphere. A common example is formaldehyde that has a boiling point of -19°C. While not all VOCs are harmful to health many of the ones used in construction products can cause harm when people are exposed for extended periods of time in an enclosed space. The best way to control exposure to pollutants is not to install products that give off gas VOCs.

Guidance

A number of European countries have introduced labelling schemes to show the VOC emissions from of various products used within the indoor environment.

- **EMICODE** is a German label for adhesives, sealants, parquet varnishes and other construction products.
- **Blue Angel** is a German label for wooden products, adhesives and flooring.
- **M1** is a Finnish label.
- **Eurofins** is a label operated by Eurofins, a testing company. The 'gold' standard demonstrates compliance with all European VOC labels.

The UK has a set of standards for testing various construction products. One of the test requirements for these products is to test the formaldehyde emission levels. The standards for adhesives (EN 13999-1:2007, and BS 3046:1981) also cover other VOCs.

[Indoor Air Quality UK.](#)

[Health Product Declaration Collaborative \(HPDC\).](#)

[EC Subgroup on EU-LCI Values.](#)

Health, Wellbeing & Productivity in Offices: The next chapter for green building. A report by the World Green Building Council, 2014.

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107

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VOC monitors

Criteria

Install a system for monitoring and recording volatile organic compound (VOC) concentrations in fit-out spaces that are occupied by any person for 30 minutes or more at a time.

To encourage projects to target this measure, the number and concentration of VOC monitors to be installed is defined by the risk of VOC emissions in that space:

- **High risk areas:** these are defined as interior spaces (or occupied rooms adjacent to) such as laboratories, maintenance rooms, or any other space in which chemicals will be used, or where there is a high concentration of newly installed furniture, fittings of finishings in confined spaces comparative to the room size, with no openable windows. Individual VOC sensor should be installed in each room.
- **Normal risk:** all other spaces. The number of VOC monitors to be installed should provide sufficient data to act as a guide for that type of space. For example, one VOC sensor could be installed in one open plan office space that is indicative of the fit-out of that type of space.

Where a BMS is in place or being installed as part of the fit-out, then the VOC sensors should be linked to the BMS to provide an automated recording and analysing system.

For smaller spaces that do not have a BMS, a more basic system where sensors have to be manually monitored would be acceptable.

For both systems, records should be kept that show VOC levels have been recorded at least on a weekly basis, or more frequently if possible.

Scoping

This measure is applicable to spaces that are regularly occupied by people, so includes office spaces, shops, kitchens, restaurants and breakout spaces, but not store rooms or corridors.

In the higher education sector this will include all spaces other than corridors, plant rooms, and storage rooms. Higher education spaces such as labs, workshops (not necessarily teaching, but service or research areas and maintenance spaces) may have specific ventilation requirements. Any areas adjacent to chemical storage areas at risk of air seepage should be included.

Assessment

At design stage: review specifications and contracts to confirm that VOC sensors are specified in all the required spaces.

At handover stage: check the specified equipment was installed by reviewing as-built drawings or checking invoices. Check that the tenant procedures for monitoring VOC levels are included within the building user guide and carry out a site visit.

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VOC monitors (continued)

At occupancy stage: review reports and check that during the first year of occupation the VOC monitoring system has been tested to ensure that it has been operating correctly. Review the tenant's records to ensure that VOC levels have been recorded on a regular basis.

Rationale

This good practice measure addresses indoor air quality and is related to D40 CO₂ monitors. They are known to have health effects and if sustained over a long period of time can cause sick building syndrome. Installing monitoring systems will raise awareness of the VOC levels in each interior space and encourage the occupier to undertake corrective actions to reduce VOC polluting episodes.

Volatile organic compounds are organic chemicals that evaporate from liquid or solid form at room temperature and enter the atmosphere. A common example is formaldehyde, which has a boiling point of -19°C. While not all VOCs are harmful to health, many of the ones used in construction products, furnishings and finishes can cause harm when people are exposed for extended periods of time in an enclosed space.

Guidance

B2 Ventilation, Guide B, CIBSE, 2016.

B3 Refrigeration and Air Conditioning, Guide B, CIBSE, 2016.

Health, Wellbeing & Productivity in Offices, World Green Building Council.

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Issue

D64

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Fit-out VOC monitoring

Criteria

During the fit-out process, monitor volatile organic compound (VOC) concentrations in the fit-out space. Records are kept and the site manager regularly reviews the VOC levels. Meter readings are taken at a frequency appropriate (at least once a fortnight) to the project programme with at least 5 measurements taken.

Scoping

This measure applies to all fit-outs.

Assessment

At design stage: obtain commitment from the design team that the fit-out contractor will monitor and keep records of VOC levels on site.

At handover stage: review the records of VOC levels during the fit-out process.

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

Rationale

This good practice measure addresses indoor air quality and is related to D40 CO₂ monitors. Volatile organic compounds (VOCs) such as benzene, formaldehyde and naphthalene are emitted by products. They are known to have health effects and, if present over a long period of time, can cause sick building syndrome.

New products and finishes emit the highest levels of VOCs so this measure is aimed at raising awareness of VOC levels during the fit-out process.

Guidance

B2 Ventilation, Guide B, CIBSE, 2016.

B3 Refrigeration and Air Conditioning, Guide B, CIBSE, 2016.

Health, Wellbeing & Productivity in Offices: The next chapter for green building. A report by the World Green Building Council, 2014.

Health, wellbeing and productivity in retail, UK Green Building Council, 2016.

Fit-out environmental good practice on site guide, CIRIA, 2016.

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