



Specification for software to generate the  
Advisory Report using the database of measures and  
payback periods





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Communities and Local Government  
Eland House  
Bressenden Place  
London  
SW1E 5DU  
Telephone: 020 7944 4400  
Website: [www.communities.gov.uk](http://www.communities.gov.uk)

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Communities and Local Government Publications  
PO Box 236  
Wetherby  
West Yorkshire  
LS23 7NB  
Tel: 0300 123 1124  
Fax: 0300 123 1125  
Email: [communities@capita.co.uk](mailto:communities@capita.co.uk)  
Online via the Communities and Local Government website: [www.communities.gov.uk](http://www.communities.gov.uk)

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## 1. Introduction

A number of standard improvement measures or proposals have been listed in the database held on the CIP, together with the figure to be used as the payback period (years) for applying each measure.

The measures or suggestions are grouped into Categories, having the following main headings:

- ALTERNATIVE ENERGY (AE)
- POOLS (P)
- LIGHTING (L)
- CONTROL OF HVAC (CON)
- BUILDING FABRIC (BF)
- HEATING SYSTEMS (HS)
- OPERATION AND MANAGEMENT (OM)
- SMALL POWER (SP)
- LIFTS, ESCALATORS ETC (LE)
- COOLING AND REFRIGERATION (AC)
- DOMESTIC HOT WATER (HW)
- VENTILATION (V)
- CATERING (CA)
- STEAM (S)

### 1.1 General principles of the software

Not all Categories, and not all measures or suggestions within each Category, will be relevant to the building being assessed.

The working function of the Advisory Report software is therefore to:

- obtain the Assessor's responses to a series of questions concerning characteristics of the building and its energy using services
- use these responses to filter out those Categories of measures that are not relevant to the building being assessed
- display the remaining lists of measures to the Assessor, and
- allow the Assessor to carry out a further process of removing measures individually from each of the lists based on the Assessor's own knowledge of their relevance.

These functions are explained in detail in Section 2.

An energy walk-around survey is recommended<sup>1</sup> to gather information relating to the building and its energy systems in order to respond satisfactorily to the series of questions. If an energy walk-around survey has not taken place energy assessors must ensure they have satisfactory knowledge of the building to generate the Advisory Report.

Assessor responses of the style "Yes/No/Don't know" are generally used to determine from the Assessor which Categories of measures will be relevant to the building being assessed. However a number of mandatory questions require a definitive "Yes" or "No" response, or the Advisory Report cannot be produced.

<sup>1</sup> For further guidance see Section 6 of the Communities and Local Government technical guidance document "The Government methodology for the production of Operational Ratings, Display Energy Certificates and Advisory Reports".

The software must check for measures that have been included more than once in the resulting list and remove duplicates, and then sort the remaining measures so that they are presented in three tables:

- “Recommendations with a short payback”, listing those measures with a payback of less than 3 years
- “Recommendations with a medium payback”, listing those measures with a payback of between 3 and 7 years, and
- “Recommendations with a long payback”, listing those measures with a payback of more than 7 years.

The software also presents the Assessor with the opportunity to populate a fourth table of “Other recommendations”, based on the Assessor’s own knowledge of the building and/or based on a valid existing energy report.

The software must sort the measures listed in the three “Recommendations with a short/medium/long payback” tables so that they are arranged in order of payback with the shortest payback period at the top. The Assessor may move individual items further up or down each list, and delete specific measures.

The software allows the Assessor to enter, based on the Assessor’s own experience, the potential impact on carbon dioxide emissions of each measure in each of the four tables.

The four tables of measures, and the potential carbon dioxide impact of each individual measure, are used to populate the tables laid out as defined in the Advisory Report template.

## 2. Specification of software processes

### 2.1 Obtaining the Advisory Report Header information

The software prompts the Assessor to enter the basic administrative data about the building and occupier, the assessment method, and details of the Assessor, to populate the ‘header’ data fields indicated in the Advisory Report (AR) template. These are:

- Report Reference Number
- Building Occupier
- Address
- Building Type
- Administrative Information
- Energy Assessor Details

These data fields are as indicated in the Advisory Report template.

The information may be available from the DEC input file, or may be held over from the software being used to calculate the OR and produce information for the DEC if the Advisory Report software and OR calculation software are linked.

## 2.2 Obtaining the information for Section 1. of the AR: Background

These data fields are as indicated in the Advisory Report template.

The information may be available from the DEC input file, or may be held over from the software being used to calculate the OR and produce information for the DEC if the Advisory Report software and OR calculation software are linked.

## 2.3 Obtaining the information for Section 2 of the AR: Introduction

An energy walk-around survey is recommended to gather information relating to the building and its energy systems. If an energy walk-around survey has not taken place energy assessors must ensure they have satisfactory knowledge of the building to generate the advisory report. The software populates the variable shown in the AR template as either “Physical visit” or “Desk based” depending on the Assessor’s response.

Example Assessor selections are indicated below, with the software proceeding to the next step following the Assessor’s response.

Assessor selection	I have completed a walk-around energy survey.	Process step – move to next question
	I have not completed a walk-around energy survey but do have prior knowledge of the building.	Process step – move to next question

## 2.4 Determining whether the building is a Heritage building

The AR template specifies a paragraph of standard text (within Section 4.b ) to be included in the AR for a Heritage building. The Assessor must therefore establish, and the software must ask the Assessor specifically to confirm, whether or not the building is a Heritage building.

This is a mandatory question, to which the Assessor’s response must be either “Yes” or “No”.

Example Assessor selections are indicated below, with the software proceeding to the next step following the Assessor’s response.

Is the building listed or of special architectural or historic interest?	Yes	<p>The following text should appear as indicated on the Advisory Report – Section 4b:                  “The building has been identified as being: one of special architectural or historical interest, in a conservation area, in a designated area of special character or appearance (e.g. a national park, an AoNB), or of traditional construction. Some of the recommendations provided with this report may not be suitable for such a building, some may need special consents, and other measures may be available. Further information and guidance is available on the English Heritage website <a href="http://www.english-heritage.org.uk/dec">www.english-heritage.org.uk/dec</a>                  Process step – move to next question</p>
	No	<p>Process step – move to next question</p>

**2.5 Confirming whether there is a previous Advisory Report (AR)**

It is necessary to confirm the existence of a previous Advisory Report with the building occupier. If a previous AR has been produced it is suggested that the Assessor checks the occupier’s actions, planned or completed, in response to the existing report.

This is a mandatory question, to which the Assessor’s response must be either “Yes” or “No”.

Example Assessor selections are indicated below, with the software proceeding to the next step following the Assessor’s response.

Is there a previous Advisory Report?	Yes	<p>Prompt to Assessor : check the owners’ actions planned or completed in response to the previous recommendations.                  Process step – move to next question</p>
	No	<p>Process step – move to next question</p>

**2.6 Noting the presence of Separable energy use areas deducted in calculating the Operational Rating and preparing the DEC**

The Assessor should confirm whether any proportion of the site has been discounted or deducted in the preparation of the DEC for allowable separable energy uses.

This is a mandatory question, to which the Assessor’s response must be either “Yes” or “No”.

Example Assessor selections are indicated below, with the software proceeding to the next step following the Assessor’s response.



Has any proportion of the site energy consumption been discounted for allowable separable energy uses i.e. regional data/ server centres, pools, commercial catering etc. (not including those used for composite benchmarks)?	Yes	<p>Prompt to Assessor – A proportion of the building energy consumption has been discounted as attributed to a separable energy use, See Communities and Local Government guidance <i>The Government methodology for the production of Operational Ratings, Display Energy Certificates and Advisory Reports</i>.</p> <p>It is recommended that this separable energy area be investigated separately to identify options to improve energy efficiency.</p>
	No	<p>Process step – move to following questions</p> <p>Process step – move to following questions</p>

## 2.7 Filtering the relevant and non-relevant Categories of measures

The software must present the Assessor with questions that allow the Assessor to select which building features are present, for example heating; cooling; mechanical ventilation; pool. Depending on which features are ticked then certain Categories of measures can be included or excluded from the subsequent filtering procedures. For example where “conventional heating system” is present, then the list of measures relevant to Heating Systems (HS) is included; if cooling is not present, then the list of measures relevant to Refrigeration and Cooling (AC) is excluded.

Categories of measures for Operation & Management (OM), Building Fabric (BF) and Alternative Energy (AE) should not be included in this initial filtering procedure, and should always appear with the lists of measures for ‘manual’ filtering by the Assessor.

Example Assessor selections are indicated below, with the software including or excluding the relevant measures lists depending on the Assessor’s “Yes”, “No” or “Don’t know” response.

HVAC Controls (CON)	Yes/No/Don’t know	Process step: Only if “Yes” then the relevant section is included. The Assessor answers all the tick boxes and if any “Don’t know” answers are selected the Assessor receives a summary of the information he/she must obtain to continue with the report.
Conventional Heating Boilers (HS)	Yes/No/Don’t know	as above
Ventilation (V)	Yes/No/Don’t know	as above
Cooling (AC)	Yes/No/Don’t know	as above
Lighting and lighting controls (L)	Yes/No/Don’t know	as above
DHWS (HW)	Yes/No/Don’t know	as above
Small Power (SP)	Yes/No/Don’t know	as above
Lifts and Escalators (LE)	Yes/No/Don’t know	as above
Swimming Pool (P)	Yes/No/Don’t know	as above
Commercial Catering Facilities (not staff kitchens) (CA)	Yes/No/Don’t know	as above
Steam Boiler Systems (S)	Yes/No/Don’t know	as above
Other services	Yes/No/Don’t know	Process step: Display a note to the Assessor: There is no provision for recommendations relating to “other services”. These can be entered into free-text boxes later in the report.

## 2.8 Filtering the relevant and non-relevant measures within the remaining Categories

A series of questions and potential answers are presented to the Assessor, relating to the relevant Categories of measures, to select those measures that will be carried through to the next (manual) manipulation phase of the software.

Assessor selections are indicated in the table below, with the software including or excluding the recommendations indicated depending on the Assessor’s response to each.

Note that, while most questions can accept “Yes”, “No” or “Don’t know” responses, a small number of questions relate to issues where only a “Yes” or “No” response can be accepted. These are questions D1, D3, E1, E2, G2 and S3 in the following table.

Question number	Question	Answer	Recommendation	Payback period
<b>Section B</b>				
<b>Operation and management (OM)</b>				
B1	Is energy managed effectively: for example is there good evidence that responsibility for energy is allocated to specific person(s), building users are encouraged to save energy, and monitoring and targeting is in place?	Yes (there is evidence that energy is managed effectively)	Process step – move to next question	
		No	It is recommended that energy management techniques are be introduced. These could include efforts to gain building users' commitment to save energy, allocating responsibility for energy to a specific person (champion), setting targets and monitoring.	1 year
		Don't know	It is recommended that energy management techniques are be introduced. These could include efforts to gain building users' commitment to save energy, allocating responsibility for energy to a specific person (champion), setting targets and monitoring.	1 year
B2	Are sufficient meters in place to produce a specific and reasonably accurate Operational Rating?	Yes	Process step – move to next question	
		No	The current metering provisions do not enable production of a specific and reasonably accurate Operational Rating for this building. It is recommended that meters be installed and a regime of recording data be put in place. CIBSE TM 39 gives guidance on this.	>7 years
		Don't know	The Energy Assessor has been obliged to accept lower accuracy in producing the Operational Rating for this building because of insufficient energy metering provisions. It is recommended that meters be installed and a regime of recording data be put in place. CIBSE TM 39 gives guidance on this.	>7 years

**Section C  
Building Fabric (BF)**

C1	Is the condition of the building fabric regularly inspected for energy efficiency?	Yes	Process step – move to next question	
		No	Consider implementing regular inspections of the building fabric to check on the condition of insulation and sealing measures and removal of accidental ventilation paths.	3 – 7 years
		Don't know	Consider implementing regular inspections of the building fabric to check on the condition of insulation and sealing measures and removal of accidental ventilation paths.	3 – 7 years
C2	Any specific fabric measures in this menu that you feel apply to this building?	Drop down menu	Process step: The Assessor must have the option of 'ticking' and including any combination, including all or none, of the following measures	(As below)
			Consider engaging experts to review the condition of the building fabric and propose measures to improve energy performance. This might include building pressure tests for air tightness and thermography tests for insulation continuity.	6 years
			Consider how building fabric air tightness could be improved, for example sealing, draught stripping and closing off unused ventilation openings, chimneys etc.	2 years
			Consider adjusting existing or installing new automatic external door closers or adopting revolving door solutions.	1.25 years
			Consider constructing draught lobbies to reduce unwanted air infiltration.	18 years
			Consider installing automatic closers to loading bay goods doors or shutters.	2.5 years
			Consider installing flexible plastic curtains across loading bay doors.	6.1 years
			Consider using expandable entrance collars to connect the back of delivery vehicles to limit heat loss from loading areas.	6.1 years
			Consider fitting existing air curtains with energy saving controls such as door interlocks and occupancy time switches.	1.3 years
			Consider installing high speed shutter doors to loading bays.	2.5 years
Consider introducing/improving cavity wall insulation	4.5 years			

Consider introducing/improving wall insulation (internal lining) to solid single skin structures.	6.5 years
Consider introducing or improving loft insulation	3 years
Consider introducing or improving insulation of flat roofs	25 years
Consider introducing or improving ground or exposed floor insulation.	15 years
Consider replacing or improving glazing.	15 years
Consider fitting secondary glazing and/or under glaze sky lights where appropriate.	4.6 years
Consider applying reflective coating to windows and/or fit shading devices to reduce unwanted solar gain.	4.19 years

**Section D  
Control of HVAC (CON)**

D1	Have the HVAC control settings been checked by suitably qualified persons to match <u>current</u> occupancy patterns?	Yes	Process step – move to next question	
		No	Engage experts to review the HVAC control systems settings and propose alterations and/or upgrades and adjust to suit current occupancy patterns.	1.22 years
D2	Have the HVAC time and temperature settings been checked by suitably qualified persons in the past 12 months?	Yes	Process step – move to next question	
		No	Consider introducing a system of regular checks of Heating, Ventilation and Air Conditioning (HVAC) time and temperature settings and provisions to prevent unauthorised adjustment.	Low/No cost
		Don't know	Consider introducing a system of regular checks of Heating, Ventilation and Air Conditioning (HVAC) time and temperature settings and provisions to prevent unauthorised adjustment.	Low/No cost
D3	Are the HVAC controls (including Building Energy Management Systems) operated by suitably qualified staff?	Yes	Process step – move to next question	
		No	Review staffing arrangements and set up formal systems for delegating authority for Building Energy Management System alterations and/or temporary overrides.	Low/No cost

Section D Control of HVAC (CON) (continued)				
D4	Are there any specific HVAC controls measures in this menu that you feel apply to this building?	Drop down menu	Process step: The Assessor must have the option of 'ticking' and including any combination, including all or none, of the following measures	(As below)
			Consider fitting zone controls to reduce over and under heating where structure, orientation, occupation or emitters have different characteristics.	3 years
			Consider installing timer controls to energy consuming plant and equipment and adjust to suit current building occupancy	0.83 years
			Consider installing weather compensator controls on heating and cooling systems.	0 years
			Consider introducing variable speed drives (VSD) for fans, pumps and compressors.	2.75 years
			Seek to minimise simultaneous operation of heating and cooling systems.	0 years
			Consider upgrading major time controls to include optimum start/ stop.	3 years
			Consider installing interlocks between heating systems and loading bay or vehicle access doors.	4 years

Section E Heating systems (HS)				
E1	Has a boiler plant energy performance inspection been carried out in the past 12 months?	Yes	Process step – move to next question	
		No	Boiler plant should be regularly tested and adjusted by experts for operating efficiency.	Low/No cost
E2	Is there a system in place that ensures regular (annual) expert checks are made on the heating systems for operating efficiency?	Yes	Process step – move to next question	
		No	Engage experts to review overall heating strategy and propose an investment programme for upgrading and/or switching to alternative solutions.	>7 years
E3	Is the heating plant in good condition i.e. free from any leaking, fouling, corrosion and is it suitably insulated?	Yes	Process step – move to next question	

		No	Engage experts to survey the condition of the heating systems and propose remedial works.	3 years
		Don't know	Engage experts to survey the condition of the heating systems and propose remedial works.	3 years
E4	Is the seasonal efficiency of the boiler plant less than 65%? [Note that this question is asked only if the answer to E1 is "Yes", i.e. a boiler energy performance inspection has been carried out and therefore this information is available.]	Yes (Assessor picks appropriate measure from the list options)	List option 1: Engage experts to review overall heating strategy and propose an investment programme for upgrading and/or switching to alternative solutions.	>7 years
			List option 2: Consider replacing heating boiler plant with a condensing type	6.5 years
			List option 3: Consider replacing heating boiler plant with high-efficiency type	5.5 years
		No	Process step – move to next question	
E5	Is the heating system more than 15 years old? [Note that this question is only asked where question E4 has not been asked, or where the answer to E4 is "Yes".]	Yes	Engage experts to review overall heating strategy and propose an investment programme for upgrading and/or switching to alternative solutions.	>7 years
		No	Process step – move to next question	
		Don't know	Engage experts to review overall heating strategy and propose an investment programme for upgrading and/or switching to alternative solutions.	>7 years

**Section F  
Ventilation (V)**

F1a	Is a natural ventilation strategy/system installed in all or part of the building?	Yes/No/Don't know	Process step: Where response is "Yes" or "Don't know" include Section F (i) "Natural Ventilation" within this Category and move to question (F1b). Where response is "No" do not include Section F(i) and move to question (F1b).
F1b	Is a mixed mode ventilation strategy/system installed in all or part of the building?	Yes/No/Don't know	Process step: Where response is "Yes" or "Don't know" . include Section F (ii) "Natural Ventilation" within this Category and move to question (F1c). Where response is "No" do not include Section F(ii) and move to question (F1c).
F1c	Is a mechanical ventilation strategy/system installed in all or part of the building?	Yes/No/Don't know	Process step: Where response is "Yes" or "Don't know" include Section F (iii) "Natural Ventilation" within this Category. Where response is "No" do not include Section F(iii).

<b>i – Natural Ventilation</b>				
F2	Are any obstructions or partitions preventing free cross flow of air?	Yes	Ensure natural ventilation flow is operating as designed i.e. ensure window, vents and grilles are operable and free from obstructions and partitions do not prevent cross flow.	Low/No cost
		No	Process step – move to next question	
		Don't know	Engage experts to review overall ventilation strategy and propose an investment programme for upgrading and/or switching to alternative solutions to improve effectiveness and energy efficiency.	>7 years
F3	Are there areas of the building where stratification can occur, for example atria and high ceilings?	Yes	If stratification occurs consider re-circulating the air during heating.	1.5 years
		No	Process step – move to next question	
		Don't know	Engage experts to review overall ventilation strategy and propose an investment programme for upgrading and/or switching to alternative solutions to improve effectiveness and energy efficiency.	>7 years
F4	Is the building adequately cooled?	Yes	Process step – move to next question	
		No	Engage experts to review overall ventilation strategy and propose an investment programme for upgrading and/or switching to alternative solutions to improve effectiveness and energy efficiency.	>7 years
		Don't know	Engage experts to review overall ventilation strategy and propose an investment programme for upgrading and/or switching to alternative solutions to improve effectiveness and energy efficiency.	>7 years
<b>ii – Mixed Mode</b>				
F5	Are any obstructions or partitions preventing free cross flow of air?	Yes	Ensure natural ventilation flow is operating as designed i.e. ensure window, vents and grilles are operable and free from obstructions and partitions do not prevent cross flow.	Low/No cost
		No	Process step – move to next question	
		Don't know	Engage experts to review overall ventilation strategy and propose an investment programme for upgrading and/or switching to alternative solutions to improve effectiveness and energy efficiency.	>7 years



F6	Are there areas of the building where stratification can occur, for example atria and high ceilings?	Yes	If stratification occurs consider re-circulating the warm air during heating mode.	1.5 years
		No	Process step – move to next question	
		Don't know	Engage experts to review overall ventilation strategy and propose an investment programme for upgrading and/or switching to alternative solutions to improve effectiveness and energy efficiency.	>7 years
F7	Is the building adequately cooled?	Yes	Process step – move to next question	
		No –	If natural ventilation does not provide adequate cooling during the day, consider introducing external air at night to cool the internal space.	0.31 years
		Don't know	Engage experts to review overall ventilation strategy and propose an investment programme for upgrading and/or switching to alternative solutions to improve effectiveness and energy efficiency.	>7 years
F8	Are the mixed mode changeover controls appropriately set and are adjustments delegated to a suitably qualified person?	Yes	Process step – move to next question	
		No –	Engage experts to review overall ventilation strategy and propose an investment programme for upgrading and/or switching to alternative solutions to improve effectiveness and energy efficiency.	>7 years
		Don't know	Engage experts to review overall ventilation strategy and propose an investment programme for upgrading and/or switching to alternative solutions to improve effectiveness and energy efficiency.	>7 years
F9	Do the building occupiers understand the various modes of ventilation and cooling operation?	Yes	Process step – move to next question	
		No	Ensure building occupants understand when the various cooling modes of the mixed mode ventilation system are in operation to avoid windows being opened when mechanical cooling is on.	Low/No cost
		Don't know	Ensure building occupants understand when the various ventilation modes of the mixed mode system are in operation to avoid windows being opened when mechanical cooling is on.	Low/No cost

iii – Mechanical				
F10	Have the mechanical ventilation systems been assessed against current needs?	Yes	Process step – move to next question	
		No	Engage experts to review overall ventilation strategy and propose an investment programme for upgrading and/or switching to alternative solutions to improve effectiveness and energy efficiency.	>7 years
		Don't know	Engage experts to review overall ventilation strategy and propose an investment programme for upgrading and/or switching to alternative solutions to improve effectiveness and energy efficiency.	>7 years
F11	Is the building humidity controlled?	Yes	Consider whether the humidity control system is essential and/or consider re-setting to more efficient parameters where close control is not critical.	0 years
		No	Process step – move to next question	
		Don't know	Engage experts to review overall ventilation strategy and propose an investment programme for upgrading and/or switching to alternative solutions to improve effectiveness and energy efficiency.	>7 years
F12	Is there a servicing and maintenance plan in place that addresses ventilation energy efficiency?	Yes	Process step – move to next question	
		No	Engage experts to propose and set up a ventilation servicing and maintenance regime and implement it.	0.99 years
		Don't know	Engage experts to propose and set up a ventilation servicing and maintenance regime and implement it.	0.99 years
F13	Do the mechanical ventilation systems have variable volume controls?	Yes	Process step – move to next question	
		No	Consider with experts whether it would be worthwhile installing variable speed fans and volume control devices to the ventilation system.	6.8 years
		Don't know	Consider with experts whether it would be worthwhile installing variable speed fans and volume control devices to the ventilation system.	6.8 years

**Section G****Air conditioning systems**

G1	Has an air conditioning energy performance inspection been carried out in the past 5 years?	Yes	Review the air conditioning energy performance report and seek to implement any outstanding recommendations for action.	Low/No cost
		No	Engage experts to assess the air conditioning systems in accordance with CIBSE TM 44. (This could be an appropriate opportunity to engage an accredited energy Assessor to undertake an inspection in compliance with the EPC Regulations SI 2007/991 as amended.)	Low/No cost
		Don't know	Engage experts to assess the air conditioning systems in accordance with CIBSE TM 44. (This could be an appropriate opportunity to engage an accredited energy Assessor to undertake an inspection in compliance with the EPC Regulations SI 2007/991 as amended.)	Low/No cost
G2	Is there a servicing and maintenance plan in place that addresses air conditioning energy efficiency?	Yes	process step – move to next question	
		No	Engage experts to propose and set up an air conditioning servicing and maintenance regime and implement it.	Low/No cost
G3	Are the air conditioning systems in good condition i.e. free from any leaking, fouling, corrosion, blockages and is it suitably insulated?	Yes	Process step – move to next question	
		No	Engage experts to survey the air conditioning systems and propose remedial works to improve condition and operating efficiency.	1.77 years
		Don't know	Engage experts to survey the air conditioning systems and propose remedial works to improve condition and operating efficiency.	1.77 years
G4	Are the air conditioning systems more than 10 years old?	No	Process step – move to next question	
		Yes	Engage experts to review overall air conditioning strategy and propose an investment programme for upgrading and/or switching to alternative solutions.	9.00 years
		Don't know	Engage experts to review overall air conditioning strategy and propose an investment programme for upgrading and/or switching to alternative solutions.	9.00 years

G5	Are the air conditioning systems' heat rejection equipment (condensers) clean and positioned in un-obstructed surroundings away from other heat sources?	Yes	Process step – move to next question	
		No	Engage experts to assess condensers' location and cleansing regime and propose recommendations to improve effectiveness and energy efficiency.	3.61 years
		Don't know	Engage experts to assess condensers' location and cleansing regime and propose recommendations to improve effectiveness and energy efficiency.	3.61 years

**Section H  
Lighting (L)**

H1	Is lighting maintenance, cleaning and lamp replacement planned and carried out regularly?	Yes	Process step – move to next question	
		No	Consider implementing a programme of planned lighting systems maintenance to maintain effectiveness and energy efficiency.	Low/No cost
		Don't know	Consider implementing a programme of planned lighting systems maintenance to maintain effectiveness and energy efficiency.	Low /No cost
H2	Are windows and skylights cleaned regularly and kept free of obstruction to maximise use of natural lighting?	Yes	Process step – move to next question	
		No	Clean windows and roof lights to maximise daylight entering building and reduce the need for artificial lighting	Low/No cost
		Don't know	Clean windows and roof lights to maximise daylight entering building and reduce the need for artificial lighting	Low/No cost
H3	Has the building lighting strategy been reviewed by experts which shows it matches current needs using minimum energy?	Yes	Process step – move to next question	
		No	Engage experts to review the building lighting strategies and propose alterations and/or upgrades to daylighting provisions, luminaries and their control systems and develop an implementation plan.	>7 years
		Don't know	Engage experts to review the building lighting strategies and propose alterations and/or upgrades to daylighting provisions, luminaries and their control systems and develop an implementation plan.	>7 years

## Section J Hot Water Service systems (HWS)

J1	Are electrically heated HWS cylinders or electric point of use heaters fitted with time controls?	N/A	Process step – move to next question	
		Yes	Process step – move to next question	
		No	Consider fitting 24hour/7day time controls onto electric HWS cylinders	1.44 years
		Don't know	Consider fitting 24hour/7day time controls onto electric HWS cylinders	1.44 years
J2	Are the HWS systems in good condition e.g. free from any leaking, fouling, corrosion and suitably insulated?	Yes	Process step – move to next question	
		No	Engage experts to survey the condition of the HWS systems and propose remedial and upgrading works to improve condition and operating efficiency.	0 years
		Don't know	Engage experts to survey the condition of the HWS systems and propose remedial and upgrading works to improve condition and operating efficiency.	0 years
J3	Are water saving measures fitted to hot taps/showers etc (e.g. flow restrictors, diffusers)?	Yes	Process step – move to next question	
		No	Engage experts to propose specific measures to reduce hot water wastage and plan to carry this out.	4.5 years
		Don't know	Engage experts to propose specific measures to reduce hot water wastage and plan to carry this out.	4.5 years
J4	Have the HWS systems been assessed as effectively and efficiently matching current demands?	Yes	Process step – move to next question	
		No	Engage experts to review the HWS systems provisions and propose remedial works, upgrades and/or alternative provisions to improve effectiveness and efficiency and plan for implementation.	>7 years
		Don't know	Engage experts to review the HWS systems provisions and propose remedial works, upgrades and/or alternative provisions to improve effectiveness and efficiency and plan for implementation.	>7 years

**Section K  
Occupiers' energy consuming equipment**

K1	Are occupiers encouraged to economise on the use of energy consuming equipment such as business and industrial machinery?	Yes	Process step – move to next question	
		No	Consider engaging with building users to economise equipment energy consumption with targets, guidance on their achievement and incentives.	Low/No cost
		Don't know	Consider engaging with building users to economise equipment energy consumption with targets, guidance on their achievement and incentives.	Low/No cost
K2	Are power saving options on IT equipment effectively utilised?	N/A	Process step – move to next question	
		Yes	Process step – move to next question	
		No	Enable power save settings and power down management on computers and associated equipment.	0 years
K3	Are items of equipment used within the building that would benefit from automated controls?	Yes	Consider installing automated controls and monitoring systems to electrical equipment and portable appliances to minimise electricity waste.	0.5 years
		No	process step – move to next question	
		Don't know	Consider installing automated controls and monitoring systems to electrical equipment and portable appliances to minimise electricity waste.	0.5 years
K4	Is a policy in place that ensures energy efficient equipment is procured, for example 'Energy Star' rated items?	Yes	Process step – move to next question	
		No	Consider with experts implementation of an energy efficient equipment procurement regime that will upgrade existing equipment and renew in a planned cost-effective programme.	3.03 years
		Don't know	Consider with experts implementation of an energy efficient equipment procurement regime that will upgrade existing equipment and renew in a planned cost-effective programme.	3.03 years

**Section L  
Lifts and escalators (LE)**

L1	Are lift and escalator systems fitted with energy meters?	Yes	Process step – move to next question	
		No	Consider a programme of fitting energy meters to lifts and escalators as part of the serving and maintenance regime.	Low/No cost

		Don't know	Consider a programme of fitting energy meters to lifts and escalators as part of the serving and maintenance regime.	Low/No cost
L2	Have lift and escalator systems been reviewed by experts for match with current occupiers' needs?	Yes	Process step – move to next question	
		No	Consider engaging experts to review current lift and escalator provisions and propose upgrades, replacements or alternative solutions that improve service effectiveness and energy efficiency.	3.27 years
		Don't know	Consider engaging experts to review current lift and escalator provisions and propose upgrades, replacements or alternative solutions that improve service effectiveness and energy efficiency.	3.27 years
L3	Are stairs open and an attractive alternative to lifts and escalators?	Yes	Process step – move to next question	
		No	Consider with building users ways in which people can be encouraged to use lifts and escalators less.	0.3 years
		Don't know	Consider with building users ways in which people can be encouraged to use lifts and escalators less.	0.3 years

### Section M Alternative energy (AE)

M1	Please select any measures in this menu that you feel apply to this building?	Drop down menu	Process step: The Assessor must have the option of 'ticking' and including any combination, including all or none, of the following measures	(As below)
			Consider installing building mounted wind turbine(s)	13.24 years
			Consider installing wind turbine(s) within the curtilage of the site	15 years
			Consider installing building mounted solar water heating	22.83 years
			Consider installing building mounted photovoltaic electricity generating panels.	54.35 years
			Consider heating the building using biomass boiler(s)	9.92 years
			Consider installing a ground source heat pump.	11.77 years
			Consider installing a Hydro-electric generator	7.4 years
			Consider a Combined Heating and Power (CHP) system as an alternative to conventional boilers.	8.5 years

			Consider a small scale Tri-Generation system as an alternative to conventional separate boiler and chiller systems.	15.9 years
M2	Is the building primarily heated by a fuel other than gas?	Yes	Consider switching to a less carbon intensive fuel.	12 years
		No	Process step – move to next question	
		Don't know	Consider switching to a less carbon intensive fuel.	12 years

**Section N  
Pools (P)**

N1	Is the pool complex fitted with energy meters?	Yes	Process step – move to next question	
		No	Consider a programme of fitting energy meters to the pool complex as part of the serving and maintenance regime.	Low/No cost
		Don't know	Consider a programme of fitting energy meters to the pool complex as part of the serving and maintenance regime.	Low/No cost
N2	Is the pool hall and ancillary wet rooms sealed with air-locked doors or similar?	Yes	Process step – move to next question	
		No	Consider with experts how the pool complex air tightness can be improved, for example sealed better and fitted with air lock or revolving doors.	3 – 7 years
		Don't know	Consider with experts how the pool complex air tightness can be improved, for example sealed better and fitted with air lock or revolving doors.	3 – 7 years
N3	Is the swimming pool fitted with covers?	Yes	Process step – move to next question	
		No	Consider fitting covers to the swimming pool and utilise whenever possible	2.5 years
		Don't know	Consider with experts how the pool systems energy efficiency could be improved and develop an implementation plan.	3 – 7 years
N4	Where pool covers exist are they used correctly and on a regular basis? [Note that this question is only asked where the answer to N3 is "Yes".]	Yes	Process step – move to next question	
		No	Ensure pool covers are in place whenever possible	0
		Don't know	Consider with experts how the pool systems energy efficiency could be improved and develop an implementation plan.	3 – 7 years



N5	Is the pool hall ventilation system fitted with humidity controls?	Yes	Process step – move to next question	
		No	Consider with experts the benefits of installing humidity control to pool hall ventilation.	39.85 years
		Don't know	Consider with experts the benefits of installing humidity control to pool hall ventilation.	39.85 years
N6	Are heat recovery devices installed to pool water and pool hall heating systems?	Yes	Process step – move to next question	
		No	Consider with experts the benefits of installing a heat recovery system to pool water and pool hall heating.	4 years
		Don't know	Consider with experts the benefits of installing a heat recovery system to pool water and pool hall heating.	4 years

### Section O Catering (CA)

O1	Are the kitchen facilities fitted with energy meters?	Yes	Process step – move to next question	
		No	Consider a programme of fitting energy meters to kitchen facilities as part of the serving and maintenance regime.	Low/No cost
		Don't know	Consider a programme of fitting energy meters to kitchen facilities as part of the serving and maintenance regime.	Low/No cost
O2	Is a kitchen energy efficiency plan in place?	Yes	Process step – move to next question	
		No	Consider with chefs and kitchens managers implementing an energy efficiency plan including maintenance and servicing provisions and operational targets, monitoring and incentives.	Low/No cost
		Don't know	Consider with chefs and kitchens managers implementing an energy efficiency plan including maintenance and servicing provisions and operational targets, monitoring and incentives.	Low/No cost
O3	Are catering staff trained in measures to reduce energy waste?	Yes	Process step – move to next question	
		No	Consider with chefs and kitchen managers implementing a training programme and monitoring systems with incentives.	Low/No cost
		Don't know	Consider with chefs and kitchen managers how a training programme and monitoring systems with incentives could be implemented.	Low/No cost

O5	Does utilisation of large pieces of equipment vary throughout the day i.e. ovens or dishwashers operated at less than maximum capacity?	No	Process step – move to next question	
		Yes	Ensure catering equipment such as large ovens and dishwashers are utilised at maximum capacity, and/or install smaller capacity appliances to increase operational flexibility.	0 years
		Don't know	Ensure catering equipment such as large ovens and dishwashers are utilised at maximum capacity, and/or install smaller capacity appliances to increase operational flexibility.	0 years
O6	Are the catering appliances in good condition?	Yes	Process step – move to next question	
		No	Consider replacing catering equipment that is old or in poor condition with more energy efficient alternatives.	3 – 7 years
		Don't know	Consider replacing catering equipment that is old or in poor condition with more energy efficient alternatives.	3 – 7 years
O7	Are refrigerators thermally isolated from other pieces of equipment such as ovens and dishwashers?	Yes	Process step – move to next question	
		No	Consider how catering refrigerators can be relocated away or thermally isolated from sources of heat such as ovens, dishwashers etc.	0 years
		Don't know	Consider how catering refrigerators can be relocated away or thermally isolated from sources of heat such as ovens, dishwashers etc.	0 years
O8	Are refrigerators fitted with heat recovery?	Yes	Process step – move to next question	
		No	Consider installing heat recovery to catering refrigeration condensers in order to aid with HWS generation or to heat room air.	1.45 years
		Don't know	Consider installing heat recovery to catering refrigeration condensers in order to aid with HWS generation or to heat room air.	1.45 years

**Section P  
Steam (S)**

S1	Is there a real need for process steam?	Yes	Process step – move to next question	
		No	Consider with experts the benefits of switching from process steam to an alternative heating energy supply system.	>7 years

		Don't know	Consider with experts the benefits of switching from process steam to an alternative heating energy supply system.	>7 years
S2	Has a steam boiler energy performance inspection been carried out in the past 12 months?	Yes	Prompt to Assessor: You should make all reasonable attempts to locate and utilise the steam boiler inspection reports and consider possibilities for improvement.	
		No	Consider with experts opportunities for improving the effectiveness of the steam heating service and plan to implement.	Low/No cost
		Don't know	Consider with experts opportunities for improving the effectiveness of the steam heating service and plan to implement.	Low/No cost
S3	Is there a strategic plan for regularly checking that the steam boiler plant is operating efficiently?	Yes	Process step – move to next question	
		No	Implement a regime of regular inspection, testing, servicing, maintenance and re-commissioning of the steam plant aimed at improving effectiveness and energy efficiency	Low/No cost
S4	Is the steam plant in good condition i.e. free from any leaking, fouling, corrosion and is it suitably insulated?	Yes	Process step – move to next question	
		No	Engage experts to survey the steam systems and propose remedial works to improve condition and operational efficiency	0.4 years
		Don't know	Engage experts to survey the steam systems and propose remedial works to improve condition and operational efficiency	0.4 years
S5	Is heat recovery utilised on the steam generation plant?	Yes	Process step – move to next question	
		No – process step – select recommendation from list.	Consider maximising hot condensate return to the boiler furnace.	1 year
			Consider recovering heat from the boiler exhaust gases.	2.75 years
			Consider installing heat recovery to steam boiler blowdown.	5 years
		Don't know	Implement a regime of regular inspection, testing, servicing, maintenance and re-commissioning of the steam plant aimed at improving effectiveness and energy efficiency	Low/No cost

## 2.9 Preparing the lists of measures with short, medium and long payback periods for inclusion in the AR

The software should check the resulting list of all the measures generated by the previous steps and automatically remove any duplicates of measures.

The software should list all the measures remaining from the previous steps into three separate lists, each ordered by payback period, with the shortest payback period at the top. The lists should comprise:

- “Short payback” measures, which are those with payback periods below 3 years
- “Medium payback” measures, with payback periods between 3 and 7 years, and
- “Long payback” measures, with payback periods over 7 years.

Within each list, the software should identify to the Assessor those measures that will be included in the AR, in the correct order, as well as displaying the remaining measures. Within each of these full listings the Assessor should be provided with a facility to move individual items further up or down the list, and to delete specific measures from the list, using the Assessor’s own experience of the relevance of the measures to the building being assessed, or judgement of their value in the individual circumstances of the building being assessed. The measures that are to be included in the AR should be identified as:

- The measures to be included in the list of “Short payback” measures on the AR comprise the first (top) 15 recommendations remaining in that list.
- The measures to be included in the list of “Medium payback” measures on the AR comprise the first (top) 10 recommendations remaining in that list.
- The measures to be included in the list of “Long payback” measures on the AR comprise the first (top) 5 recommendations remaining in that list.

When the Assessor has finished removing, adding or adjusting the ranking of the measures in each list, the top measures from each list (as specified above) are retained for printing on the AR.

## 2.10 Adding Assessor judgements of the carbon dioxide impact of each measure

Each of the three lists must be displayed to the Assessor and a facility provided for the Assessor to input the potential of each measure to reduce carbon dioxide emissions, in the form “LOW”, “MEDIUM” or “HIGH”.

The Assessor may also be provided with the facility to input, as an option, a free text input briefly explaining the rationale for, or any qualification on, the judgement of carbon dioxide impact of each measure. These inputs do not appear on the AR, but may be retained as part of the AR file

The information to be presented on each table in the AR is the measure and, where this has been provided by the Assessor, its potential impact (format as shown in the AR Template).

### **2.11 Preparing the list of additional (Assessor input) recommendations for inclusion in the AR**

The Assessor must be provided with the facility to input, as free text, up to 10 additional measures and their respective potential carbon dioxide impacts (HIGH, MEDIUM or LOW), to be reproduced in the AR table of "Other recommendations".

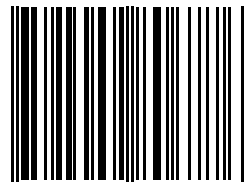
These measures must be based on a valid existing energy report, and the Assessor must be provided with the facility to input a free text reference to the report.

### **2.12 Preparing the Advisory Report**

The software should prepare the Advisory Report containing the Assessor inputs and the tables of measures and other standard text as defined in the AR Template.

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