REFURBISHMENT AND DESIGN PROCEDURE

THIS DOCUMENT SUPPORTS THE COUNCIL'S ENERGY POLICY (ENPOL2013)

Contents

VERSION CONTROL
This document is reviewed annually to ensure it is accurate and up to date.

No.	Version	Date	Initials	Description
1	1.0	27 August 2013	JF	Approved by Transport & Environment Committee

DOCUMENT OWNER - Jenny Fausset, Corporate Governance
jenny.fausset@edinburgh.gov.uk 0131 469 3538

1 APPLICATION

This procedure applies to all elected members, employees and contractors of the City of Edinburgh Council (CEC).

2 BACKGROUND

The City of Edinburgh Council has put this procedure in place to outline the building refurbishment and design elements relating to energy efficiency and emissions reduction within the Council. This procedure provides a clear outline of the aspects of building design and refurbishment actions taken to meet the objectives and targets within the energy management policy (ENPOL2013). The Council already has in place a sustainable design guide which was developed in 2006 and building energy and design is a key chapter.

3 REGULATIONS

The Council conforms to all requirements of the building regulations regarding new build and refurbishment projects and ensure that all agents acting on our behalf do the same. Regulations provide the basic legislative requirements for energy performance. It is often more appropriate to measure standards using benchmarking systems. The Council aims to exceed the regulatory standards.

New regulation such as the Energy Efficiency Directive (http://ec.europa.eu/energy/efficiency/eed/eed_en.htm) will also place an imperative on the Council. The Directive brings forward legally binding measures to step up Member States' efforts to use energy more efficiently. There is to be an exemplary role to be played by the public sector with measures including:

- Progressively reduce the energy consumed in public sector premises by carrying out every year the required renovation works covering at least 3% of their total floor area.

This legislation has just been approved by the European parliament and is set to now be transposed into UK law, coming into force in 2015/2016. There will be more stringent targets in future so designers should ensure that they build flexibility for future use, or for new technologies into their designs.

4 APPROACH TO DESIGN

The Council has a defined approach to design which is laid out in the following sections to ensure energy use is a key consideration.

- Understand the main criteria and drivers for the refurbishment or new build such as a good working environment, improved space utilisation etc.;

- Understand how energy will be used in the building type including a thorough assessment of the equipment and small power that will be installed;
- Understand how the use of the building may change in the future;
- Minimise energy demand through choice of fabric, shape and configuration of a building;
- The importance of insulation and air tightness;
- Efficient building services;
- Whole life assessment;
- Sustainable Procurement;
- Use of renewable technologies where appropriate;
- Consider the operation of the building and post occupancy assessments.

5 ENERGY PEFORMANCE

Within each new building or refurbishment project the Council shall consider energy performance in use of the premises and act to provide the most efficient solutions based on the building requirements.

Energy Performance Indicators such as kWh/m^2/yr (as outlined within the Measurement and Monitoring procedure) are used as energy consumption benchmarks.

Targets will be put in place for all new build and refurbishment projects. As a minimum targets for new builds should include:

- Overall operating energy target (kWh/m^2);
- Heating balance temperature;
- Heating load under design conditions;
- Day lighting;
- Maximum lighting energy;
- Maximum lux levels; and
- Air tightness

Targets for refurbishment projects will depend on the scope of the works. For example, any lighting project should include targets for maximum lighting energy and maximum lux levels.

Guidance on use of these targets is given in Appendix 3 of the Carbon Trust document “Delivering the Future Today: Project Managers Guide”. It should be

specified how these targets will be measured during commissioning and first year of operation.

6 TENDER PROCESS

The performance targets discussed above must be reflected in any contractual arrangements. Any failure to meet a target will be classified as a defect and be required to be rectified during the defect liability period.

It should be specified how these targets will be measured during commissioning and first year of operation.

7 DETAILED TARGETS

Detailed environmental schedules and room data sheets must be developed for each room following the guidance on format and targets in Appendices 9 and 10 of the Carbon Trust document “Delivering the Future Today: Project Managers Guide”.

8 DESIGN BUDGET

The budget must have sufficient allowance for the architect and M&E designers to carry out the necessary modelling and liaison to ensure that the building form, fabric and systems are optimised. This should allow passive features to be maximised and services minimised where appropriate.

9 WHOLE LIFE COSTING / WHOLE LIFE ASSESSMENT

The Council has made a commitment to ensure that whole life costing is conducted within any new build or refurbishment project. The Local Government in Scotland Act (2003) Best value guidance (18) chapter five: Characteristics of best value arrangements states. “That it produces clear recommendations based on factual analysis and consideration of quality, social impact and whole-life costs”.

Whole-life costing ensures that decisions are made on the total cost of the building and its component parts over the building lifetime and not only on the initial capital cost. It includes all aspects of project design, construction, commissioning, operation, decommissioning and disposal. The table below taken from the Carbon Trust guidance “Building the Future today” indicates aspects which must be considered (those in bold are deemed essential)

Type	Acquisition/Construction	Operation and maintenance	End of life costs and residual value
New build	**Site costs (purchase, improvement, infrastructure provision)** **Design/Engineering costs** **Regulatory/Planning costs** **Construction and earthworks** **Commissioning costs/fees** **Business use of in-house resources and administration**	The performance over time of each element Costs associated with degraded performance **The likely lifetime of each element** **Maintenance and replacement costs** **Cleaning and minor repairs** Costs associated with loss of amenity due to unavailability or failure **Energy, other utility and carbon costs**	Inspection costs Decommissioning costs Recycling costs Disposal costs
Refurbishment	**Initial survey costs** **Design/Engineering costs** **Regulatory/Planning costs** **Decanting costs** **Decommissioning, recycling and disposal costs of existing equipment and building fabric** **Construction and earthworks** **Commissioning costs/fees** **Business use of in-house resources and administration**	The performance over time of each element Costs associated with degraded performance **The likely lifetime of each element** **Maintenance and replacement costs** **Cleaning and minor repairs** Costs associated with loss of amenity due to unavailability or failure **Energy, other utility and carbon costs**	Inspection costs Decommissioning costs Recycling costs Disposal costs
Lease	**Lease administration costs** **Temporary costs/Decanting costs** **Design/Engineering costs**	**Lease costs** **Costs rechargeable by landlord** **Maintenance and replacement costs** **Cleaning and minor**	**Removal costs** **Reinstatement costs**

	Regulatory/Planning costs **Fit out costs** **Commissioning costs/fees** **Business use of in-house resources and administration**	**repairs** Costs associated with loss of amenity due to unavailability or failure **Energy, other utility and carbon costs**	

The Council's whole-life costing methodology has the following elements:

- All aspects of procurement, construction, operation, maintenance and decommissioning to be included;
- Realistic forecasts of energy and carbon prices must be used; and
- The assessment should last for the expected lifetime of the building or 100 years, whichever is shorter.

A joint Life Cycle Assessment (LCA) and WLC approach can be very useful.

10 PROCUREMENT

The Building Programme Management and Corporate Facilities Management teams work closely with colleagues regarding the procurement of materials. The Council's Sustainable Procurement Policy and the Sustainable Timber Policy are key documents.

Sustainable procurement considers the social, economic and environmental consequences of what is procured through all stages of its life-cycle. This includes considering design, resource extraction and sourcing, manufacturing and production, transportation, service delivery, operation and maintenance, reuse, recycling and disposal. It is also about questioning whether the purchase requires to be made in the first place.

11 VALUE ENGINEERING

The impact of any value engineering on both building energy performance and carbon emissions, and on the whole life costs of the building must be evaluated prior to agreement of such changes.

12 COMMISSIONING

A holistic approach to commissioning should be taken to ensure that the whole building is commissioned, not just individual items of equipment. A commissioning plan should be developed at design stage to ensure that necessary metering and monitoring is installed to allow the required commissioning process to be assessed.

The commissioning process should be agreed at the commencement of the process and shall occur at stages throughout the project as elements of the project are completed, not just at the end of the project.

13 BUILDING INFORMATION MODELLING (BIM)

BIM is the process of generating and managing data about a building, during its life cycle. Typically BIM uses three-dimensional, real-time, dynamic building modelling software to increase productivity in the design and construction stages. It covers geometry, spatial relationships, light analysis, geographic information, quantities and properties of building components. BIM data can be used to illustrate the entire building life cycle, from cradle to cradle; quantities and properties of materials can be extracted easily and the scope of works can be easily defined. Furthermore systems, assemblies and sequences can be shown in a relative scale to each other and relative to the entire project.

BIM systems should be considered by the Council to inform projects. If used by all members of the project team, from early design through to completion, changes can be automatically coordinated across the project and resulting information generated is of high quality. Using a building information model can lead to substantial cost savings, from design and construction through to maintenance.

BIM systems will only be as useful and up to date as the information entered into them. As such, if the Council wishes to use BIM, they shall ensure all parties on the project are aware of this and shall undertake to populate the BIM with all appropriate data.

14 LOG BOOK AND USER GUIDES

It should be ensured that the log book follows the guidance for CIBSE TM31. This should be supplemented with a user guide for the occupant explaining how the building works and how they can influence it. In the case of schools and other buildings with janitors or building managers, a second guide should be produced explaining in clear language how they can control the building. Building user guides should also be developed in accordance with Section 7 of the Building Standards.

15 POST OCCUPANCY SURVEYS

The reassessment of buildings once occupied is a key step in understanding how the effective actions taken in designing or refurbishing the building have been. Reviewing buildings to ensure that they continue to perform as predicted and that they are updated, or adapted, as circumstances change is one area of best practice which the Council intends to develop further, in line with its objectives within its Energy Policy (ENPOL2013).