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# Green Public Procurement Criteria for the design, construction and management of Office buildings

*(Draft) criteria proposal*

Nicholas Dodd, Elena Garbarino, Oliver Wolf  
(JRC-IPTS)

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Institute for Prospective Technological Studies

**Contact information**

Nicholas Dodd  
Address: Edificio Expo. c/ Inca Garcilaso, 3. E-41092 Seville (Spain)  
E-mail: [jrc-ipts-office-buildings@ec.europa.eu](mailto:jrc-ipts-office-buildings@ec.europa.eu)  
Tel.: +34 954 488 728  
Fax: +34 954 488 300

<https://ec.europa.eu/jrc>  
<http://ipts.jrc.ec.europa.eu>

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# 1 INTRODUCTION

Green Public Procurement (GPP) is a voluntary instrument. This document provides the EU GPP criteria developed for the product group "office buildings". It is supported by a Guidance document that provides orientation on how to effectively integrate these GPP criteria into the procurement process. An accompanying Technical Background Report provides further details on the reasons for selecting these criteria and references for further information.

The criteria are divided into Selection Criteria, Technical Specifications, Award Criteria and Contract Performance Clauses. For each set of criteria there is a choice between two ambition levels:

- The *Core criteria* are those suitable for use by any contracting authority across the Member States and address the key environmental impacts. They are designed to be used with minimum additional verification effort or cost increases.
- The *Comprehensive criteria* are for those who wish to purchase the best products available on the market. These may require additional verification effort or a slight increase in cost compared to other products with the same functionality.

## 1.1 Definition and Scope

This GPP criteria set addresses the procurement process for office buildings, including their design, site preparation, construction, servicing and ongoing management. For the purposes of the criteria, the product group "Office buildings" shall comprise buildings where mainly administrative, bureaucratic and clerical activities are carried out. An office buildings is, moreover, defined as being:

*"A building which contains administrative, financial, technical or bureaucratic activities as core representative activities. The office area must make up a significant majority of the total building's gross area. The building may also comprise other type of spaces, like meeting rooms, training classrooms, staff facilities, or technical rooms".*

Buildings constituting offices will fall under the specific planning use classes within Member States. The definition of "significant" can vary by Member State, but is generally within a range of 50-80% of the building. The GPP criteria do not cover parking areas that are located outside of the building's physical footprint or curtilage. Major renovations of office buildings are also addressed within the scope of the criteria. Such renovations are defined by the Energy Performance of Buildings Directive 2010/31/EU as instances where:

*a) the total cost of the renovation relating to the building envelope or the technical building systems is higher than 25 % of the value of the building, excluding the value of the land upon which the building is situated; or*

*(b) more than 25 % of the surface of the building envelope undergoes renovation.*

This criteria set contains recommendations that apply to both the renovation of existing buildings and the construction of new buildings. The criteria are structured in order to broadly reflect the distinct sequence of procurement activities that tend to form part of a project:

- Preliminary scoping and feasibility;
- Detailed design and applications for permits;
- Strip-out, demolition and site preparation works;
- Construction of the building or major renovation works;
- Installation of energy systems and the supply of energy services;
- Completion and handover;
- Facilities management.

Energy services are defined according to Directive 2006/32/EC on energy end-use efficiency and energy services as:

*The physical benefit, utility or good derived from a combination of energy with energy efficient technology and/or with action, which may include the operations, maintenance and control necessary to deliver the service, which is delivered on the basis of a contract and in normal circumstances has proven to lead to verifiable and measurable or estimable energy efficiency improvement and/or primary energy savings.*

For the purpose of the GPP criteria of office buildings the procurement of energy services is primarily concerned with the provision of the supply of low or zero carbon emission energy to an office building by, as defined by Directive 2006/32/EC, energy service companies (ESCO's) or energy performance contracting (EPC).

Facilities management is defined according to EN 15221 <sup>1</sup> as:

*'[the] integration of processes within an organisation to maintain and develop the agreed services which support and improve the effectiveness of its primary activities'*

For the purpose of these criteria 'primary activities' refer to operation of the office building with main area of relevance within EN 15221 being 'Space & Infrastructure' which encompasses the activities relating to the management of accommodation, workplaces, technical infrastructure and ICT systems.

For each of these activities, environmental criteria are proposed. The criteria address the most significant environmental impacts related to office buildings which are related to greenhouse gas emissions from energy consumption during the use of the building and resource use to manufacture construction materials. These are in turn influenced by the management, lifespan and fitness for use of the building. Other factors that influence the lifespan and use of the building, such as the creation of a healthy internal environment, are therefore also addressed.

In general, the criteria focus on an office building as a system rather than individual components. It should be noted that separate GPP criteria are available that can be used for the procurement of various building components. Components of relevance for which there exist EU GPP criteria <sup>2</sup> include:

- Thermal insulation,
- Internal wall panels,
- Combined Heat and Power (CHP) systems,
- Hydronic water heating systems,
- Indoor lighting,
- Taps and showerheads,
- Toilets and urinals,
- Hard Floor coverings.

## **1.2 Applicability of the Green Public Procurement criteria for office buildings**

Designing and procuring an office building with a reduced environmental impact, whether it be new-build or a major renovation, is a complex process. The process of constructing a new office building or carrying out a major office renovation consists of a distinct sequence of procurement activities with related contracts. This sequence of procurement can have a significant influence on the outcome. This is because each type of contract brings with it distinct interactions between the procurer, the building design team, the contractors

<sup>1</sup> EN 15221 series, *Facility management*, October 2006 version

<sup>2</sup> See [http://ec.europa.eu/environment/gpp/eu\\_gpp\\_criteria\\_en.htm](http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm)

and the future occupants and facilities managers. Moreover, they each have advantages and disadvantages in seeking to procure an improved environmental performance.

Depending on the procurement route adopted, some of these contracts may be awarded to the same contractor but in most cases they are let separately. Some contracts may be integrated in a design and build (DB) or a design, build and operate (DBO) arrangement, with the detailed design process, the main construction contract, the installation or provision of energy services and even facilities management all potentially co-ordinated by one contractor.

It is therefore important to identify the main points in the sequence of procurement activities where GPP criteria should be integrated. To this end these criteria are accompanied by a guidance document which provides general advice on how and when GPP criteria can be integrated into this process. It also suggests, based on experience from different projects across the EU, how the procurement sequence could be managed in order to achieve the best results.

Depending on the ambition level of the project and the experience of the contracting authority, not all of the GPP criteria included in this criteria set will be relevant. Moreover, depending on the preferred procurement sequence criteria may be best addressed at specific stages. Some activities may be let as separate contracts requiring their own criteria.

The strategic objectives and targets of the project should be determined at the outset of the project with reference to the GPP criteria set. The optimum stages for integration of GPP criteria should be evaluated during discussions to determine the procurement route. In all cases it is recommended that GPP criteria are integrated into both internal planning and the procurement sequence at as early a stage as possible in order to secure the desired outcomes and achieve the best value for money.

### **1.3 Key environmental impacts**

Evidence gathered from office buildings across Europe indicates that their most significant environmental impact relates to energy use during their occupation. The most significant contributors are lighting, heating, cooling and ventilation. Their relative importance varies according to the thermal efficiency of the building and the climatic zone in which it is located. This highlights the importance of taking into account the overall energy performance of a building, which could include the potential to generate cleaner energy.

The production of construction materials and products is responsible for the next most significant environmental impacts. These relate to resources used to manufacture products and process materials as well as emissions arising from material extraction and energy used in their processing. Resource use is also related to the amount of waste generated during product manufacturing, construction on-site and demolition processes, which can be significant as a proportion of the overall material flows on a construction site. This highlights the importance of designing and specifying for resource efficiency, with the most significant building elements to address being the floors, roof, structure and external walls.

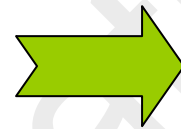
A further factor to consider is the lifespan of the building, which is also sometimes referred to as its service life, and related to this its functionality as a healthy working environment. The longer the lifespan of the main structural elements of the building, the lower their associated life cycle environmental impacts, assuming that the overall energy performance is also prioritised as part of the overall approach during the service life. Other human factors can also influence the service life. For example, a healthy and attractive working environment can contribute to a longer service lifespan and minimise the need for renovations. For example, evidence shows that in a healthy building the workforce is more productive and there are less illness-related absences.

**Key Environmental Areas in Office Buildings life cycle  
and Key Environmental Impacts**

**Proposed EU GPP Office Buildings approach**

Key environmental areas

- Primary energy consumption and associated greenhouse gas emissions during use of the building
- Depletion of natural resources, embodied energy and emissions associated with the manufacturing of building materials
- Waste generation during site preparation, construction, use and demolition of the building
- Deterioration in indoor air quality due to emissions of hazardous substances from building products and the intake of particulate air pollution from the external environment
- Water consumption during use of the building



- Design and construction to achieve high energy efficiency standards and low associated CO<sub>2</sub> emissions
- The installation of low or zero CO<sub>2</sub> energy technologies to reduce energy use and CO<sub>2</sub> emissions
- Design and specification to reduce the embodied impacts and resource use associated with construction materials
- Design, specification and site management to minimise construction and demolition (C&D) waste and to use building products or materials with a high recycled or re-used content
- Specification of fit-out and finishes that minimise hazardous emissions to indoor air
- Ventilation design in order to ensure healthy air and minimise the intake of external air pollution
- Specification and installation of water saving technologies
- Installation of physical and electronic systems to support the ongoing minimisation of energy use, water use and waste arisings by facilities managers and occupiers

Key life cycle environmental impacts:

- The following key environmental impact categories along the product life cycle are: global warming potential, acidification, eco-toxicity, human toxicity, eutrophication, abiotic resource depletion, and water consumption

## 2 GPP CRITERIA FOR OFFICE BUILDINGS

<b>A. Selection of the design team and contractors</b>	
<b>Core criteria</b>	<b>Comprehensive criteria</b>
<b>SUBJECT MATTER</b>	
<p>The construction of new office buildings to high energy and environmental standards</p> <p style="text-align: center;"><i>or</i></p> <p>The carrying out of major renovations to existing office buildings to high energy and environmental standards</p>	
<b>SELECTION CRITERIA</b>	
<p><b>A1. Competencies of the project manager and design team</b></p> <p><i>These criteria may form part of a pre-selection procedure for the lead contractor or where the services of a design team are procured by the contracting authority.</i></p> <p>The project manager, architect, consultant and/or design team consortium shall have relevant competencies and experience in each of the following areas for which they would be responsible under the contract (<i>select as relevant to the specific contract</i>):</p> <ul style="list-style-type: none"> <li>- The project management of building contracts that have delivered improved environmental performance;</li> <li>- Energy efficient building fabric and services design for new-build or renovation projects (<i>select as appropriate</i>), including if available measured energy demand data per m<sup>2</sup> from completed projects including heating, cooling, lighting, hot water and auxiliary equipment;</li> <li>- The specification and design of renewable and/or high efficiency energy generation equipment;</li> <li>- Installation of Building Energy Monitoring Systems (BEMS), communication of how they work to building managers and their use to diagnose energy use patterns in buildings;</li> <li>- Water efficient services design, including measured water demand per employee from completed projects;</li> <li>- Bioclimatic architecture and passive design to achieve good thermal and visual comfort, natural air purification etc;</li> </ul>	<p><b>A1. Competencies of the project manager and design team</b></p> <p><i>These criteria may form part of a pre-selection procedure for the lead contractor or where the services of a design team are procured by the contracting authority.</i></p> <p>The project manager, architect, consultant and/or design team consortium shall have relevant competencies and experience in each of the following areas for which they would be responsible under the contract (<i>select as relevant to the specific contract</i>):</p> <ul style="list-style-type: none"> <li>- The project management of building contracts that have delivered improved environmental performance;</li> <li>- Energy efficient building fabric and services design for new-build and/or renovation projects (<i>select as appropriate</i>), including if available measured energy demand data per m<sup>2</sup> from completed projects including heating, cooling, lighting, hot water and auxiliary equipment;</li> <li>- The specification and design of renewable and/or high efficiency energy generation equipment;</li> <li>- Installation of Building Energy Monitoring Systems (BEMS), communication of how they can be used to building occupiers and their use to diagnose energy use patterns in buildings;</li> <li>- Water efficient services design, including measured water demand per employee from completed projects;</li> <li>- Bioclimatic architecture and passive design to good thermal and optical comfort, natural air purification etc;</li> </ul>

<ul style="list-style-type: none"> <li>- Assessment of building environmental performance using multi-criteria building assessment and certification schemes,</li> <li>- The specification, procurement and installation of low environmental impact construction materials. To include reference to EPDs in compliance with ISO 14025 or equivalent</li> </ul> <p><b>Verification:</b></p> <p>Evidence in the form of information and references related to previous contracts in which the above elements have been carried out. This shall be supported by CVs for personnel who will work on the project.</p>	<ul style="list-style-type: none"> <li>- Assessment of building environmental performance using multi-criteria building assessment and certification schemes,</li> <li>- The specification, procurement and installation of low environmental impact construction materials. To include reference to EPDs in compliance with ISO 14025 or equivalent.</li> <li>- The use of holistic assessment tools in the design and specification of environmentally improved buildings including LCC and LCA. Comparative studies in compliance with ISO 14040 and ISO 14044.or equivalent</li> </ul> <p><b>Verification:</b></p> <p>Evidence in the form of information and references related to previous contracts in which the above elements have been carried out. This shall be supported by data from post-occupancy surveys. This shall be supported by CVs for personnel who will work on the project.</p>
<p><b>A2. Competencies of the lead construction contractor, specialist contractors and/or property developers</b></p> <p><i>These criteria may form part of a pre-selection procedure for the lead contractor or where specialist contractors are to be procured e.g. demolition, ESCO's.</i></p> <p>The construction contractor and/or property developer shall have relevant competencies and experience in the completion of building contracts that have been shown to have delivered improved environmental performance.</p> <p>In the case of design and build or DBO contracts, criterion A1 will also be relevant to the design team employed.</p> <p>Relevant areas of experience shall include (as appropriate to the project and the selected GPP criteria):</p> <ul style="list-style-type: none"> <li>- Energy efficient building fabric and services design for new-build or renovation projects (<i>select as appropriate</i>), including if available measured energy demand per m<sup>2</sup> from completed projects including heating, cooling, lighting, hot water and auxiliary equipment. This will have been applied in the context of new-build and/or renovation projects (select as appropriate);</li> <li>- The installation, commissioning and ongoing operation/maintenance of renewable and/or high efficiency energy generation equipment;</li> <li>- The installation of Building Energy Monitoring Systems (BEMS) and communication of how they work to building managers;</li> <li>- The installation of water efficient services, including if available measured water demand per employee from completed projects;</li> <li>- The procurement, installation and verification of low environmental impact construction</li> </ul>	<p><b>A2. Competencies of the lead construction contractor, specialist contractors and/or property developers</b></p> <p><i>These criteria may form part of a pre-selection procedure for the lead contractor or where specialist contractors are to be procured e.g. demolition, ESCO's.</i></p> <p>The construction contractor and/or property developer shall have relevant competencies and experience in the completion of building contracts that have been shown to have delivered improved environmental performance.</p> <p>In the case of design and build or DBO contracts criteria A1 will also be relevant to the design team employed.</p> <p>Relevant areas of experience shall include (as appropriate to the project and the selected GPP criteria):</p> <ul style="list-style-type: none"> <li>- Energy efficient building fabric and services design, including if available measured energy demand per m<sup>2</sup> from completed projects including heating, cooling, lighting, hot water and auxiliary equipment. This will have been applied in the context of new-build and/or renovation projects (select as appropriate);</li> <li>- The installation, commissioning and (as relevant) ongoing operation/maintenance of renewable and/or high efficiency energy generation equipment;</li> <li>- The installation of Building Energy Monitoring Systems (BEMS) and communication of how they work to building managers;</li> <li>- The installation of water efficient services, including if available measured water demand per employee from completed projects;</li> <li>- Functioning passive design features to achieve low energy use and good thermal and optical</li> </ul>



<p>materials. Supply chain management to ensure compliance with building assessment and certification systems and in order to support modelled resource efficiency strategies;</p> <ul style="list-style-type: none"> <li>- The successful implementation of demolition and site waste management plans in order to minimise waste arisings. Selection and knowledge of off-site treatment options.</li> </ul> <p><b>Verification:</b></p> <p>Evidence in the form of information and references related to relevant contracts in the last 3 years in which the above elements have been carried out. This shall also be supported by CVs for personnel who will work on the project and their relevant project experience.</p>	<p>comfort, etc; as evidenced by post-occupancy studies;</p> <ul style="list-style-type: none"> <li>- The procurement, installation and verification of low environmental impact construction materials. Supply chain management to ensure compliance with building assessment and certification systems and in order to support modelled resource efficiency strategies;</li> <li>- The successful implementation of demolition site waste management plans in order to minimise waste arisings. Selection and knowledge of off-site treatment options.</li> </ul> <p><b>Verification:</b></p> <p>Evidence in the form of information and references related to previous contracts in the last 3 years in which the above elements have been carried out. This shall be supported by evidence and data from:</p> <ul style="list-style-type: none"> <li>- Third party auditing,</li> <li>- Post-occupancy auditing,</li> <li>- LCA/LCC analysis and/or</li> <li>- Data collection from monitoring</li> </ul> <p>This shall also be supported by CVs for personnel who will work on the project and their relevant project experience.</p>
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*Supporting notes:*

- The evaluation of consultants, design teams and contractors requires an experienced evaluation panel. It may be appropriate to bring in external expertise, which may include appointment of a project manager, and the setting up of a panel with the knowledge and experience to judge the experience of competing contractors. The lists included in selection criterion 1 and 2 are indicative and should be adapted to the project and the procurement stage.
- In the reform of the Public Procurement Directives<sup>3 4</sup> (published in the Official Journal 28<sup>th</sup> March 2014 and requiring transposition by Member States within 24 months), it is explicitly stated (Art. 66 of Directive 2014/24/EU) that the organisation, qualification and experience of staff assigned to performing the contract (where the quality of the staff assigned can have a significant impact on the level of performance of the contract) can be a criterion for awarding a contract. They can therefore be cited in addition to selection criteria. For complex contracts such as building contracts it can usually be expected that the quality of the project managers, design team, specialist consultants and contractors can have a significant impact on the performance of the project.

<sup>3</sup> Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC

<sup>4</sup> Directive 2014/25/EU of the European Parliament and of the Council of 26 February 2014 on procurement by entities operating in the water, energy, transport and postal services sectors and repealing Directive 2004/17/

## B. Detailed design and performance requirements

Core criteria	Comprehensive criteria
<b>TECHNICAL SPECIFICATIONS</b>	
<p><b>B1. Minimum Energy performance</b></p> <p>The modelled primary energy performance of an office building shall meet the following requirements:</p> <ul style="list-style-type: none"> <li>○ New-build: If the national minimum requirement is less than Energy Performance Certificate (EPC) class C, then the performance shall be one class better than the minimum requirement,</li> <li>○ Major renovation: A minimum Energy Performance Certificate class of D <i>unless heritage restrictions apply</i> in which case a minimum class of E.</li> </ul> <p>In either case the resulting performance shall not be less than the cost optimum primary energy demand for a <i>public sector office building</i> expressed in kWh/m<sup>2</sup> as calculated according to the methodology in Commission Delegated Regulation No 244/2012.</p> <p><i>An award criterion may then be set to encourage further cost effective improved performance in primary energy use (see criterion B8).</i></p> <p><b>Verification:</b> The Design team <i>or</i> the Design &amp; Build tenderer <i>or</i> the DBO tenderer shall submit information demonstrating that the building design to be submitted to the local building control for permitting complies with the GPP requirements.</p> <p>This shall consist of the predicted energy performance of the building according to the national calculation methodology applicable where the building is situated. A cost optimality calculation shall additionally be provided following the stated methodology. The calculations shall be verified by either a competent authority or building assessor certified to use the methodology.</p>	<p><b>B1. Minimum Energy performance</b></p> <p>The modelled primary energy performance of an office building shall meet the following requirements:</p> <ul style="list-style-type: none"> <li>○ New-build: <ul style="list-style-type: none"> <li>- If the national minimum requirement is less than Energy Performance Certificate (EPC) class B, then the performance shall be one class better than the minimum requirement, <i>or</i></li> <li>- If the national minimum requirement is Energy Performance Certificate (EPC) class A or B, then the performance shall be a minimum of 75 kWh/m<sup>2</sup></li> </ul> </li> <li>○ Major renovations: Performance to the national minimum requirement for new-build properties that was in force in 2002, <i>unless heritage restrictions apply in which case a minimum EPC class of D shall apply.</i></li> </ul> <p>In all cases the combinations of measures used to achieve this performance shall result in a positive Net Present Value when the Cost-Optimal calculation methodology for a <i>public sector office building</i> is calculated according to the methodology in Commission Delegated Regulation No 244/2012.</p> <p>For major renovations a dynamic model compliant with EN 15603 shall be used together with input data reflecting surveyed construction details of the building.</p> <p><i>An award criterion shall then be set to encourage further cost effective improved performance in primary energy use (see criterion B8) and, where the building achieves the 2018 nearly zero energy requirement for the Member State, further contributions by low and zero carbon energy technologies (see criterion B9).</i></p> <p><b>Verification:</b> The Design team <i>or</i> the Design &amp; Build tenderer <i>or</i> the DBO tenderer shall submit the following information demonstrating that the building design to be submitted to the local building control for permitting complies with the GPP requirements.</p> <p>This shall consist of the predicted energy performance of the building according to the national calculation methodology applicable where the building is situated. A cost optimality calculation shall additionally be provided following the stated methodology. The calculations shall be verified by either a competent authority or building assessor certified to use the methodology.</p>

<p><b>B2. Lighting control systems</b></p> <p>Where lighting control systems are not a minimum requirement in a Member State or their contribution is not taken into account in the national calculation method, occupancy sensors shall be installed in line with Technical Specification 3.2.3 of the indoor lighting EU GPP criteria (published in 2012).</p> <p>The indoor lighting EU GPP criteria are available here:  <a href="http://ec.europa.eu/environment/gpp/pdf/Indoor%20Lighting%20-%20EU%20GPP%20Criteria%20Final%20draft.pdf">http://ec.europa.eu/environment/gpp/pdf/Indoor%20Lighting%20-%20EU%20GPP%20Criteria%20Final%20draft.pdf</a></p> <p>In addition, occupiers shall be able to control or override lighting systems in local zones or rooms within the building.</p> <p><b>Verification:</b>  The Design team or the Design &amp; Build tenderer or the DBO tenderer shall provide technical specifications for the lighting control systems to be installed.</p> <p>Verification relating to commissioning and handover is addressed in Section F4.</p>	<p><b>B2. Lighting control systems</b></p> <p>Where lighting control systems are not a minimum requirement in a Member State or their contribution is not taken into account in the national calculation method, occupancy sensors and daylight-linked controls shall be installed in line with Technical Specification 3.2.3 of the indoor lighting EU GPP criteria (published in 2012).</p> <p>The indoor lighting EU GPP criteria are available here:  <a href="http://ec.europa.eu/environment/gpp/pdf/Indoor%20Lighting%20-%20EU%20GPP%20Criteria%20Final%20draft.pdf">http://ec.europa.eu/environment/gpp/pdf/Indoor%20Lighting%20-%20EU%20GPP%20Criteria%20Final%20draft.pdf</a></p> <p>In addition, occupiers shall be able to control or override lighting systems in local zones or rooms within the building.</p> <p><b>Verification:</b>  The Design team or the Design &amp; Build tenderer or the DBO tenderer shall provide technical specifications for the lighting control systems to be installed.</p> <p>Verification relating to commissioning and handover is addressed in Section F4.</p>
<p><b>B3. Building energy management system</b></p> <p>A building energy management system (BEMS) shall be installed and commissioned that provides occupants and facilities managers with real-time information on the energy use using networked sensors and a minimum of half hourly utility metering.</p> <p>The user interface shall allow for information on the buildings energy use to be easily analysed and downloaded by occupants and facilities managers. The performance of key aspects of the building that can be controlled by the system shall be easy to adjust i.e. lighting, heating, cooling.</p> <p><b>Verification:</b>  The Design team or the Design &amp; Build tenderer or the DBO tenderer shall provide specifications for the BEMS including information about the user interface. They shall additionally demonstrate how information will be displayed, reported and made available to at least the facilities and/or energy managers for the building.</p>	<p><b>B3. Building energy management system</b></p> <p>A building energy management system (BEMS) shall be installed and commissioned that provides occupants and facilities managers with real-time information on the energy use using networked sensors and a minimum of half hourly utility metering.</p> <p>The user interface shall allow for information on the buildings energy use to be easily analysed and downloaded by occupants and facilities managers. The performance of key aspects of the building that can be controlled by the system shall be easy to adjust i.e. lighting, heating, cooling.</p> <p>Additionally the system shall allow for:</p> <ul style="list-style-type: none"> <li>• Analysis and control of energy uses for different zones within the building (as a minimum for heating, cooling, lighting);</li> <li>• Performance optimisation according to ambient conditions inside and outside the building, and;</li> <li>• Diagnosis of the reason for any deviations from design performance.</li> </ul> <p><b>Verification:</b>  The Design team or the Design &amp; Build tenderer or the DBO tenderer shall provide specifications for the BEMS including information about the user interface. They shall additionally demonstrate how information will be displayed, reported and made available to at least the facilities and/or energy managers for the building.</p>

<p><b>B4. Low or zero carbon energy sources</b></p> <p>Where the building is located so as to benefit from the potential to connect to a high efficiency alternative energy systems (e.g. gas cogeneration, district heating/cooling, biomass district heating), the building's energy systems shall be designed to connect to this infrastructure.</p> <p><b>Verification:</b></p> <p>The Design team or the Design &amp; Build tenderer or the DBO tenderer shall identify where existing infrastructure exists and determine whether it would be beneficial environmentally for the building to connect to this infrastructure. The primary energy savings shall be quantified.</p>	<p><b>B4. Low or zero carbon energy sources</b></p> <p>A minimum of 10% of the primary energy demand for the building shall be supplied/generated by localised renewable energy sources (e.g. solar panels, biomass boiler, wind turbines, etc) or high efficiency alternative systems (e.g. cogeneration, district heating/cooling, heat pumps) installed within the curtilage of the building or which are shared with other buildings.</p> <p><b>Verification:</b></p> <p>The Design team or the Design &amp; Build tenderer or the DBO tenderer shall provide designs and drawings for the energy systems to be installed together with calculations of their modelled energy generation and the net contribution to the building's primary energy use.</p>
<p><b>B5. Recyclable waste storage</b></p> <p>Dedicated storage space shall be provided within the building, or within the curtilage of the building, to facilitate the segregation of recyclable materials and end-of-life products by occupiers (with reference to the requirements in Section F7).</p> <p>The waste collection area(s) shall be sized based on the likely level of occupation in order to accommodate sufficient containers to maximise recycling whilst also handling residual waste.</p> <p><b>Verification:</b></p> <p>Design teams or contractors shall provide plans of the building showing the space(s) that have been designated for waste segregation and collection as well as the assumptions made in order to estimate the space provision.</p>	<p><b>B5. Recyclable waste storage</b></p> <p>Dedicated storage space shall be provided within the building, or within the curtilage of the building, to facilitate the segregation of recyclable materials and end-of-life products by occupiers (with reference to the requirements in Section F7).</p> <p>The waste collection area(s) shall be sized based on the likely level of occupation in order to accommodate sufficient containers to maximise recycling whilst also handling residual waste.</p> <p><b>Verification:</b></p> <p>Design teams or contractors shall provide plans of the building showing the space(s) that have been designated for waste segregation and collection as well as the assumptions made in order to estimate the space provision.</p>
<p><b>B6. Water saving installations</b></p> <p>All sanitary and kitchen water facilities shall be equipped with water efficient fittings that are in compliance with the criteria for sanitary tapware and toilets and flushing urinals.</p> <p>EU GPP criteria for sanitary tapware  <a href="http://ec.europa.eu/environment/gpp/pdf/criteria/sanitary/EN.pdf">http://ec.europa.eu/environment/gpp/pdf/criteria/sanitary/EN.pdf</a></p> <p>EU GPP criteria for toilets and urinals  <a href="http://ec.europa.eu/environment/gpp/pdf/criteria/toilets/criteria_Toilets_en.pdf">http://ec.europa.eu/environment/gpp/pdf/criteria/toilets/criteria_Toilets_en.pdf</a></p> <p><b>Verification:</b></p> <p>See the respective EU GPP criteria documents.</p>	<p><b>B6. Water saving installations</b></p> <p>All sanitary and kitchen water facilities shall be equipped with water efficient fittings that are in compliance with the criteria for sanitary tapware and toilets and flushing urinals.</p> <p>EU GPP criteria for sanitary tapware  <a href="http://ec.europa.eu/environment/gpp/pdf/criteria/sanitary/EN.pdf">http://ec.europa.eu/environment/gpp/pdf/criteria/sanitary/EN.pdf</a></p> <p>EU GPP criteria for toilets and urinals  <a href="http://ec.europa.eu/environment/gpp/pdf/criteria/toilets/criteria_Toilets_en.pdf">http://ec.europa.eu/environment/gpp/pdf/criteria/toilets/criteria_Toilets_en.pdf</a></p> <p><b>Verification:</b></p> <p>See the respective EU GPP criteria documents .</p>

<p><b>B7.1 Thermal comfort conditions</b></p> <p>Design indoor temperature values (minimum room temperature in winter, maximum room temperature in summer) for the office building shall comply with at least category II in accordance with EN 15251 or equivalent. Annex A1 shall be referred to for mechanically cooled buildings and A2 for passively cooled buildings.</p> <p><b>Verification:</b></p> <p>Design teams or the Design &amp; Build contractor or the DBO contractor shall provide modelling data for the room temperatures.</p>	<p><b>B7.1 Thermal comfort conditions</b></p> <p>Design indoor temperature values (minimum room temperature in winter, maximum room temperature in summer) for the office building shall comply with at least category I in accordance with EN 15251 or equivalent. Annex A1 shall be referred to for mechanically cooled buildings and A2 for passively cooled buildings.</p> <p><b>Verification:</b></p> <p>Design teams or the Design &amp; Build contractor or the DBO contractor shall provide modelling data for the room temperatures.</p>
<p><b>B7.2 Daylighting and glare</b></p> <p>Offices and meeting rooms shall achieve a minimum Daylight Factor of 2.0% for 80% of the floor area and glare control corresponding to a Daylight Glare Probability value of 0.30.</p> <p><b>Verification:</b></p> <p>Design teams or the Design &amp; Build contractor or the DBO contractor shall provide modelling data for daylighting conditions and glare control.</p>	<p><b>B7.2 Daylighting and glare</b></p> <p>Offices and meeting rooms shall achieve a minimum Daylight Factor of 2.0% for 80% of the floor area and glare control corresponding to a Daylight Glare Probability value of 30%.</p> <p><b>Verification:</b></p> <p>Design teams or the Design &amp; Build contractor or the DBO contractor shall provide modelling data for the room temperatures, daylighting conditions and glare control.</p>
<p><b>B7.3 Ventilation and air quality</b></p> <p>In locations with poor air quality, the ventilation systems of the building shall be designed to be in compliance with the following criteria in order to ensure that clean air is supplied to the offices:</p> <ul style="list-style-type: none"> <li>- Air intakes shall be located at least 20 metres from major sources of urban air pollution and shall be in compliance with guidance A2.2 in EN 13779:2007 or equivalent.</li> <li>- The ventilation system shall be specified to provide a level of filtration and a rate of air change that is in compliance with the specifications in table A.5 of EN 13779:2007 or equivalent.</li> </ul> <p>Poor air quality is defined as outdoor air (ODA) class 2 or 3 according to EN 13779-2007 or equivalent.</p> <p><b>Verification:</b></p> <p>The design team or the DBO contractor shall provide drawings and plans of the ventilation services detailing the air intake locations. These shall be provided at the detailed design stage and upon completion. They shall also obtain local air monitoring data from the local public authority enabling classification the location according to EN 13779-2007, or its equivalent, together with technical specifications for the air filter systems.</p>	<p><b>B7.3 Ventilation and air quality</b></p> <p>In locations with poor air quality the ventilation systems of the building shall be designed to be in compliance with the following criterion in order to ensure that clean air is supplied to the offices:</p> <ul style="list-style-type: none"> <li>- Air intakes shall be located at least 20 metres from major sources of urban air pollution and shall be in compliance with guidance A2.2 in EN 13779:2007 or equivalent.</li> <li>- The ventilation system shall be specified to provide a level of filtration and a rate of air change that is in compliance with the specifications in table A.5 of EN 13779:2007 or equivalent.</li> </ul> <p>Poor air quality is defined as outdoor air (ODA) class 2 or 3 according to EN 13779-2007 or equivalent.</p> <p><b>Verification:</b></p> <p>The design team or the DBO contractor shall provide drawings and plans of the ventilation services detailing the air intake locations. These shall be provided at the detailed design stage and upon completion. They shall also provide local air monitoring data from the local public authority enabling classification of the location according to EN 13779-2007, or its equivalent, together with technical specifications for the air filter systems.</p>

AWARD CRITERIA	
<p><b>B8. Minimum Energy performance requirements</b>  <i>This criterion supplements and encourages further performance improvements over and above the requirements of criterion B1.</i></p> <p>The procurer shall award points according to the modelled improvement in the energy performance of the building in excess of those in criterion B1. This could relate to the EPC rating or could be in gradations of improvement of 15 kWh/m<sup>2</sup>.</p> <p><b>Verification:</b>  Please refer to the verification for criterion B1.</p>	<p><b>B8. Minimum Energy performance requirements</b>  <i>This criterion supplements and encourages further performance improvements over and above the requirements of criterion B1.</i></p> <p>The procurer shall award points according to the modelled improvement in the energy performance of the building <i>either</i>:</p> <ul style="list-style-type: none"> <li>○ In proportion to how close the proposed design approaches the Member States national Nearly Zero Energy requirements in kWh/m<sup>2</sup> or, <i>if these are not defined</i>,</li> <li>○ On the basis of a comparison of design proposals that, depending on the prevailing national minimum requirements, have a primary energy demand: <ul style="list-style-type: none"> <li>i) Renovations: Up to 100 kWh/m<sup>2</sup></li> <li>ii) New-build: Up to 60 kWh/m<sup>2</sup></li> </ul> </li> </ul> <p>The points could be awarded in gradations of improvement of 15 kWh/m<sup>2</sup>. In all cases the combinations of measures used to achieve this performance shall result in a positive Net Present Value when the Cost-Optimal calculation methodology for a <i>public sector office building</i> is calculated according to the methodology in Commission Delegated Regulation No 244/2012.</p> <p><b>Verification:</b>  Please refer to the verification for criterion B1.</p>
	<p><b>B9. Low or zero carbon energy sources</b>  <i>This criterion supplements and encourages improved performance over and above the requirements of criterion B4.</i></p> <p>The procurer shall award points in proportion to the primary energy demand for the building to be supplied/generated by localised renewable energy sources (e.g. solar panels, biomass boiler, wind turbines, etc) or high efficiency alternative systems (e.g. cogeneration, district heating/cooling, heat pumps) installed within the curtilage of the building or which are shared with other buildings.</p> <p><b>Verification:</b>  The Design team (in the case of a Design Contest) or Design &amp; Build contractor or DBO contractor shall provide designs and drawings for the energy systems to be installed together with calculations of their modelled energy generation and the net contribution to the building's primary energy use.</p>

**B10.1 Performance of the main building elements**

This criterion may only be applied where a Bill of Quantities for a reference building is to be provided to bidders as the basis for comparison or where designs submitted by different bidders are to be compared during a competitive process.

Additional technical guidance shall be followed during the procurement process, as provided in Annex 1 (EPD option) and Annex 2 (LCA option).

A technical evaluator specialised in LCA shall assist in preparing the ITT and shall carry out a critical review of the submissions.

The procurer shall award points based on the improvement in life cycle performance of the main building elements listed in Table (a) in comparison with a reference building or other competing designs. This shall be according to either option 1 (based on EPDs) or option 2 (based on an LCA) as presented below. *The basis for the comparison and the option to be used shall be specified in the ITT.*

Table (a) Scope of the building elements to be evaluated

New-build	Renovation
<ul style="list-style-type: none"> <li>- The structural frame, including beams, columns and slabs</li> <li>- External walls, cladding and insulation</li> <li>- Floors and ceilings</li> <li>- Internal walls</li> <li>- Windows</li> <li>- Roofs</li> </ul>	<ul style="list-style-type: none"> <li>- External walls, cladding and insulation</li> <li>- Re-roofing and insulation</li> <li>- Windows</li> </ul> <p>Where additional floors or building extensions are proposed that account for &gt;25% of the existing useable floor area, the list of new-build elements shall also apply.</p>

**Option 1: Aggregation of Environmental Product Declarations (EPDs)**

The performance shall be evaluated using Environmental Product Declarations (EPDs) that are in compliance with ISO 14025, EN 15804 or equivalent. The ITT shall specify which of the following two methods shall be used for the evaluation:

- (i) Aggregation of EPD characterisation results (the raw LCA results for indicators) for each building element, *or*

**B10.1 Performance of the main building elements**

This criterion may only be applied where a Bill of Quantities for a reference building is to be provided to bidders as the basis for comparison or where designs submitted by different bidders are to be compared during a competitive process.

Additional technical guidance shall be followed during the procurement process, as provided in Annex 1 (EPD options) and Annex 2 (LCA options).

A technical evaluator specialised in LCA shall assist in preparing the ITT and shall carry out a critical review of the submissions.

The procurer shall award points based on the improvement in life cycle performance of the main building elements listed in Table (b) in comparison with a reference building or other competing designs. This shall be according to either option 1 (based on EPDs) or option 2 (based on an LCA) as presented below. *The basis for the comparison and the option to be used shall be specified in the ITT.*

Table (b) Scope of the building elements to be evaluated

New-build	Renovation
<ul style="list-style-type: none"> <li>- The structural frame, including beams, columns and slabs</li> <li>- External walls, cladding and insulation</li> <li>- Floors and ceilings</li> <li>- Internal walls</li> <li>- Windows</li> <li>- Roofs</li> </ul>	<ul style="list-style-type: none"> <li>- External walls, cladding and insulation</li> <li>- Re-roofing and insulation</li> <li>- Windows</li> </ul> <p>Where additional floors or building extensions are proposed that account for &gt;25% of the existing useable floor area, the list of new-build elements shall also apply.</p>

**Option 1: Aggregation of Environmental Product Declarations (EPDs)**

The performance shall be evaluated using Environmental Product Declarations (EPDs) that are in compliance with ISO 14025, EN 15804 or equivalent. The ITT shall specify which of the following two methods shall be used for the evaluation:

- (i) Aggregation of EPD characterisation results (the raw LCA results for indicators) for each building element, *or*

<p>(ii) Aggregation of weighted EPD scores or ratings (usually a numeric score or letter rating) for each building element.</p> <p>The Product Category Rules (PCRs) <sup>5</sup> for the EPDs shall be specified in the ITT and all bidders shall aggregate EPDs from the PCRs, which shall be in accordance with ISO 14025, EN 15804 or equivalent. Normalisation and weighting to give a score or rating for building elements shall be permitted where national PCRs have been established in support of a building assessment and certification scheme.</p> <p><b>Option 2: Carry out a Life Cycle Assessment (LCA)</b></p> <p>The performance shall be evaluated by carrying out a Life Cycle Assessment (LCA) of the building in accordance with ISO 14040/14044, EN 15978 or equivalent. The ITT shall specify which of the following methods shall be used for the evaluation:</p> <ul style="list-style-type: none"> <li>(i) Impact Category results: The aggregated characterisation results for each indicator obtained using the specified LCA method;</li> <li>(ii) LCA tool score: A single score obtained using a national or regional building LCA tool used by public authorities;</li> <li>(iii) Building assessment scheme LCA score: A normalised and weighted scoring derived from an LCA-based criterion within a national or regional building assessment and certification scheme used by public authorities.</li> </ul> <p>In each case the methodology shall include, as a minimum, the Lifecycle Impact Category Indicators specified in Annex 2</p> <p><b>Verification:</b></p> <p>The Design team <i>or</i> the Design &amp; Build tenderer <i>or</i> the DBO tenderer shall provide a bill of materials for the proposed design. The comparison with the reference building shall be written up in a concise technical report that compares the proposed design option(s) and calculates the improvement potential.</p> <p>Where the results from a building assessment and certification system are used, the tenderer's accredited building assessor shall provide verification according to the methodology used by the system.</p> <p><i>The technical report shall be subject to a critical review by the contracting authorities appointed LCA technical evaluator. The critical review shall follow the guidelines in Annex 3.</i></p>	<p>(ii) Aggregation of weighted EPD scores or ratings (usually a numeric score or letter rating) for each building element.</p> <p>The Product Category Rules (PCRs) for the EPDs shall be specified in the ITT and all bidders shall aggregate EPDs from the PCR's, which shall be in accordance with ISO 14025, EN 15804 or equivalent. Normalisation and weighting to give a score or rating for building elements shall be permitted where national PCRs have been established in support of a building assessment and certification scheme.</p> <p><b>Option 2: Carry out a Life Cycle Assessment (LCA)</b></p> <p>The performance shall be evaluated by carrying out a Life Cycle Assessment (LCA) of the building in accordance with ISO 14040/14044, EN 15978 or equivalent. The ITT shall specify which of the following methods shall be used for the evaluation:</p> <ul style="list-style-type: none"> <li>(i) Impact Category results: The aggregated characterisation results for each indicator obtained using the specified LCA method;</li> <li>(ii) LCA tool score: A single score obtained using a national or regional building LCA tool used by public authorities;</li> <li>(iii) Building assessment scheme LCA score: A normalised and weighted scoring derived from an LCA-based criterion within a national or regional building assessment and certification scheme used by public authorities.</li> </ul> <p>In each case the methodology shall include, as a minimum, the Lifecycle Impact Category Indicators specified in Annex 2</p> <p><b>Verification:</b></p> <p>The Design team <i>or</i> the Design &amp; Build tenderer <i>or</i> the DBO tenderer shall provide a bill of materials for the proposed design. The comparison with the reference building shall be written up in a concise technical report that compares the proposed design option(s) and calculates the improvement potential.</p> <p>Where the results from a building assessment and certification system are used, the tenderer's accredited building assessor shall provide verification according to the methodology used by the system.</p> <p><i>The technical report shall be subject to a critical review by the contracting authorities appointed LCA technical evaluator. The critical review shall follow the guidelines in Annex 3.</i></p>
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<sup>5</sup> Product Category Rules are required to be followed for the production of each EPD within a scheme. They define how life cycle assessment shall be carried out and verified for each product so as to ensure consistency.



**B10.2 Incorporation of recycled content in concrete, masonry and insulation**

*This criterion is applicable to office buildings with concrete structural frames and masonry internal and external walls.*

The procurer shall award points to tenderers that achieve greater than or equal to 15% by value of recycled content and/or by-products<sup>6</sup> for the sum of the main building elements in Table (c).

*Table (c) Scope of the building elements to be included*

<b>New-build</b>	<b>Renovation</b>
<ul style="list-style-type: none"> <li>- The structural frame, including beams, columns and slabs</li> <li>- External walls, cladding and insulation</li> <li>- Floors and ceilings</li> <li>- Internal walls</li> <li>- Roofs</li> </ul>	<ul style="list-style-type: none"> <li>- External walls, cladding and insulation</li> <li>- Internal walls</li> <li>- Re-roofing and insulation</li> </ul> <p>Where additional floors or building extensions are proposed that account for &gt;25% of the existing useable floor area, the list of new-build elements shall also apply.</p>

The recycled content shall be calculated on the basis of an average mass balance of recycled materials and/or by-products according to how they are produced and delivered to site (*as applicable*):

- The total number of ready mixed batches delivered to site in accordance with EN 12620 and EN 206 or equivalent;
- On an annual basis for factory made panels, columns, blocks and elements with claimed content levels in accordance with EN 12620 and EN 206 or equivalent;
- On an annual basis for dedicated insulation production lines for specific product brands with claimed content levels

<sup>6</sup> A by-product is defined in art. 5 of the Waste Framework Directive as 'A substance or object, resulting from a production process, the primary aim of which is not the production of that item.....'

<sup>7</sup> A by-product is defined in art. 5 of the Waste Framework Directive as 'A substance or object, resulting from a production process, the primary aim of which is not the production of that item.....'

**B10.2 Incorporation of recycled or re-used content in concrete, masonry and insulation**

*This criterion is applicable to office buildings with concrete structural frames and masonry internal and external walls.*

The procurer shall award points to tenderers that achieve greater than or equal to 30% by value of recycled content, re-used content and/or by-products<sup>7</sup> for the sum of the main building elements in Table (d).

*Table (d) Scope of the building elements to be included*

<b>New-build</b>	<b>Renovation</b>
<ul style="list-style-type: none"> <li>- The structural frame, including beams, columns and slabs</li> <li>- External walls, cladding and insulation</li> <li>- Floors and ceilings</li> <li>- Internal walls</li> <li>- Roofs</li> </ul>	<ul style="list-style-type: none"> <li>- External walls, cladding and insulation</li> <li>- Internal walls</li> <li>- Re-roofing and insulation</li> </ul> <p>Where additional floors or building extensions are proposed that account for &gt;25% of the existing useable floor area, the list of new-build elements shall also apply.</p>

The recycled or re-used content shall be calculated on the basis of an average mass balance of recycled materials and/or by-products according to how they are produced and delivered to site (*as applicable*):

- The total number of ready mixed batches delivered to site in accordance with EN 12620 and EN 206 or equivalent;
- On an annual basis for factory made panels, columns, blocks and elements with claimed content levels in accordance with EN 12620 and EN 206 or equivalent;
- On an annual basis for dedicated insulation production lines for specific product brands with claimed content levels;

<p><b>Verification:</b> The Design team <i>or</i> the Design &amp; Build tenderer <i>or</i> the DBO tenderer shall quantify the proportional contribution of the recycled content to the overall value of the specified building elements, based on the information provided by the supplier(s) of the construction product.</p> <p>This information must include the average mass balance calculations as described above, supported by batch testing results, delivery documentation and/or factory production control documentation. In each this shall be verified by a third party audit.</p> <p><i>The ordering and delivery to site of these building elements shall later be verified by the main construction contractor (see Section D7).</i></p>	<ul style="list-style-type: none"> <li>• Whole re-used products, including confirmation of their origin.</li> </ul> <p>Re-used content shall be weighted higher in the evaluation than recycled content. Additional points shall be awarded to designs that re-use the primary load bearing structure of an existing building either in-situ or from another site.</p> <p><b>Verification:</b> The Design team <i>or</i> the Design &amp; Build tenderer <i>or</i> the DBO tenderer shall quantify the proportional contribution of the recycled or re-used content to the overall value of the specified building elements, based on the information provided by the supplier(s) of the construction product.</p> <p>This information must include the average mass balance calculations as described above, supported by batch testing results, delivery documentation and/or factory production control documentation. In each this shall be verified by a third party audit.</p> <p><i>The ordering and delivery to site of these building elements shall later be verified by the main construction contractor (see Section D7).</i></p>
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## C. Strip-out, demolition and site preparation works

Core criteria	Comprehensive criteria
<b>TECHNICAL SPECIFICATIONS</b>	
<p><b>C1. Demolition waste audit and management plan</b></p> <p>A minimum of 55% by weight of the non-hazardous waste generated during demolition and strip-out works, and excluding excavations and backfilling, shall be prepared for re-use, recycling and other forms of material recovery. This shall include:</p> <ul style="list-style-type: none"> <li>(i) Timber, glass, metal, brick, stone, ceramic and concrete materials recovered from the main building structures;</li> <li>(ii) Fit-out and non-structural elements, to include doors and their frames, flooring, ceiling tiles, gypsum panels, plastic profiles, insulation materials window frames, window glass, bricks, concrete in the form of blocks and precast elements, steel rebars.</li> </ul> <p>The contractor shall carry out a pre-demolition/strip-out audit in order to determine what can be re-used, recycled or recovered. This shall comprise:</p> <ul style="list-style-type: none"> <li>(i) Identification and risk assessment of hazardous waste that may require specialist handling and treatment, or emissions that may arise during demolition;</li> <li>(ii) A bill of quantities with a breakdown of different building materials and products,</li> <li>(iii) An estimate of the % re-use and recycling potential based on proposals for systems of separate collection during the demolition process,</li> </ul> <p>The materials, products and elements identified shall be itemised in a Demolition Bill of Quantities.</p> <p><b>Verification:</b></p> <p>The lead construction contractor, Design &amp; Build contractor <i>or</i> DBO contractor shall submit a pre-demolition/strip-out audit that contains the specified information.</p> <p>A system shall be used to monitor and account for waste arisings. The destination of consignments of waste and end-of-waste materials shall be tracked using consignment notes and invoices. Monitoring data shall be provided to the contracting authority.</p>	<p><b>C1. Demolition waste audit and management plan</b></p> <p>A minimum of 80% by weight of the non-hazardous waste generated during demolition and strip-out works, and excluding excavations and backfilling, shall be prepared for re-use, recycling. This shall include:</p> <ul style="list-style-type: none"> <li>(i) Timber, glass, metal, brick, ceramics and concrete materials recovered from the main building structures,</li> <li>(ii) Fit-out and non-structural elements, to include doors and their frames, flooring, ceiling tiles, gypsum panels, plastic profiles, insulation materials window frames, window glass, bricks, concrete in the form of blocks and precast elements, steel rebars.</li> </ul> <p>The contractor shall carry out a pre-demolition/strip-out audit in order to determine what can be re-used, recycled. This shall comprise:</p> <ul style="list-style-type: none"> <li>(i) Identification and risk assessment of hazardous waste that may require specialist handling or treatment, or emissions that may arise during demolition;</li> <li>(ii) A bill of quantities with a breakdown of the different constituent building materials and products,</li> <li>(iii) An estimate of the % re-use and recycling potential based on proposals for systems of separate collection during the demolition process,</li> </ul> <p>The materials, products and elements identified shall be itemised in a Demolition Bill of Quantities.</p> <p><b>Verification:</b></p> <p>The lead construction contractor, Design &amp; Build contractor <i>or</i> DBO contractor shall submit a pre-demolition/strip-out audit that contains the specified information.</p> <p>A system shall be used to monitor and account for waste arisings. The destination of consignments of waste and end-of-waste materials shall be tracked using consignment notes and invoices. Monitoring data shall be provided to the contracting authority.</p>

## D. Construction of the building or major renovation works

Core criteria	Comprehensive criteria
<b>SELECTION CRITERIA</b>	
<p><b>D1. Legal sourcing of timber by the lead construction contractor</b></p> <p>Tenderers must demonstrate their technical capacity to comply with the requirements of Regulation (EU) 995/2010 (EU Timber Regulation) in the supply of timber or timber products required under this contract, namely to demonstrate that such products are placed legally on the EU market.</p> <p><b>Verification:</b></p> <p>Technical capacity in this regard may be demonstrated by showing that the tenderer, or the operator supplying the timber if this is not the tenderer, has in place a due diligence system in accordance with Article 6 of the EU Timber Regulation. Where tenderers are Traders within the meaning of the Regulation they must also provide information regarding their technical capacity to demonstrate traceability of timber in accordance with Article 5.</p>	<p><b>D1. Legal sourcing of timber by the lead construction contractor</b></p> <p>Tenderers must demonstrate their technical capacity to comply with the requirements of Regulation (EU) 995/2010 (EU Timber Regulation) in the supply of timber or timber products required under this contract, namely to demonstrate that such products are placed legally on the EU market.</p> <p><b>Verification:</b></p> <p>Technical capacity in this regard may be demonstrated by showing that the tenderer, or the operator supplying the timber if this is not the tenderer, has in place a due diligence system in accordance with Article 6 of the EU Timber Regulation. Where tenderers are Traders within the meaning of the Regulation they must also provide information regarding their technical capacity to demonstrate traceability of timber in accordance with Article 5.</p>
<b>TECHNICAL SPECIFICATIONS</b>	
<p><b>D2. Installation and commissioning of building energy systems</b></p> <p>Depending on the procurement route this may also apply to systems installed by a third party energy services contractor (see Section E).</p> <p>The following systems shall be designed, installed and commissioned in conformance with the agreed designs and specifications:</p> <ul style="list-style-type: none"> <li>- Heating, cooling and ventilation (HVAC)</li> <li>- Low and Zero Carbon energy technologies</li> <li>- Building Energy Management System (BEMS)</li> <li>- Lighting controls</li> </ul> <p>Each system shall be subjected to functional performance testing, including measurement of performance.</p> <p>HVAC systems shall be in conformance with EN12599 or equivalent and, as relevant to other systems installed, other applicable EN, ISO or national standards, or their equivalent.</p> <p><b>Verification:</b></p> <p>The main construction contractor or the DBO contractor shall describe and commit to carrying out a functional performance testing routine in order to ensure that the systems perform within design parameters.</p>	<p><b>D2. Installation and commissioning of building energy systems</b></p> <p>Depending on the procurement route this may also apply to systems installed by a third party energy services contractor (see Section E).</p> <p>The following systems shall be designed, installed and commissioned in conformance with the agreed designs and specifications:</p> <ul style="list-style-type: none"> <li>- Heating, cooling and ventilation (HVAC)</li> <li>- Low and Zero Carbon energy technologies</li> <li>- Building Energy Management System (BEMS)</li> <li>- Lighting controls</li> </ul> <p>Each system shall be subjected to functional performance testing, including measurement of performance.</p> <p>HVAC systems shall be in conformance with EN12599 or equivalent and, as relevant to other systems installed, other applicable EN, ISO or national standards, or their equivalent.</p> <p><b>Verification:</b></p> <p>The main construction contractor or the DBO contractor shall describe and commit to carrying out a functional performance testing routine in order to ensure that the systems perform within design parameters.</p>

<p><b>D3. Site waste management</b></p> <p>Waste arisings during construction and renovation, and excluding demolition waste, shall be less than or equal to 11 tonnes per 100m<sup>2</sup> gross internal office floor area.</p> <p>A site waste management plan shall be prepared prior to the commencement of work on-site. The plan shall establish systems for the separate collection of materials on-site for re-use, recycling and other forms of recovery. The site waste management plan shall encompass:</p> <ul style="list-style-type: none"> <li>(i) Construction products that form main building elements, including timber, glass, metal, brick, ceramics, concrete and inert waste, as well as associated packaging materials.</li> <li>(ii) Construction products that form part of the building fit-out, including flooring, ceiling tiles, plaster and gypsum panels, plastic profiles and insulation materials, as well as associated packaging materials.</li> </ul> <p>Separate material collection for re-use, recycling and recovery shall respect the waste hierarchy in Directive 2008/98/EC.</p> <p><b>Verification:</b></p> <p>The lead construction contractor, Design &amp; Build contractor <i>or</i> DBO contractor shall submit a site waste management plan consisting of:</p> <ul style="list-style-type: none"> <li>(i) A bill of materials with estimates for waste arisings based on good practices,</li> <li>(ii) Estimates of the % re-use potential based on separate collection during the construction process,</li> <li>(iii) An estimation of the % recycling and recovery potential based on separate collection,</li> </ul> <p>A system shall be used to monitor and account for waste arisings and to track the destination of consignments of waste. Monitoring data shall be provided to the contracting authority.</p>	<p><b>D4. Site waste management</b></p> <p>Waste arisings during construction and renovation, and excluding demolition waste, shall be less than or equal to 7 tonnes per 100m<sup>2</sup> gross internal office floor area.</p> <p>A site waste management plan shall be prepared prior to the commencement of work on-site. The plan shall identify opportunities for waste prevention and shall establish systems for the separate collection of materials on-site for re-use, recycling and other forms of recovery. The site waste management plan shall encompass:</p> <ul style="list-style-type: none"> <li>(i) Construction products that form main building elements, including timber, glass, metal, brick, ceramics, concrete and inert waste, as well as associated packaging materials.</li> <li>(ii) Construction products that form part of the building fit-out, including flooring, ceiling tiles, plaster and gypsum panels, plastic profiles and insulation materials, as well as associated packaging materials.</li> </ul> <p>Separate material collection for re-use, recycling and recovery shall respect the waste hierarchy in Directive 2008/98/EC.</p> <p><b>Verification:</b></p> <p>The lead construction contractor, Design &amp; Build contractor <i>or</i> DBO contractor shall submit a site waste management plan consisting of:</p> <ul style="list-style-type: none"> <li>(i) A bill of materials with estimates for waste arisings and the potential for waste prevention based on good practices,</li> <li>(ii) Estimates of the % re-use potential based on separate collection during the construction process,</li> <li>(iii) An estimation of the % recycling and recovery potential based on separate collection,</li> </ul> <p>A system shall be used to monitor and account for waste arisings and to track the destination of consignments of waste. Monitoring data shall be provided to the contracting authority.</p>
<p><b>D4. Selection of fit-out materials and finishes</b></p> <p>Each material and finish selected for the fit-out of the offices shall comply with the following emissions limits in table (c) below. This requirement shall apply to:</p> <ul style="list-style-type: none"> <li>- Ceiling tiles</li> <li>- Paints and varnishes</li> <li>- Textile floor and wall coverings</li> <li>- Laminate and flexible floor coverings</li> <li>- Wooden floor coverings</li> </ul>	<p><b>D4. Selection of fit-out materials and finishes</b></p> <p>Each material and finish selected for the fit-out of the offices shall comply with the following emissions limits in table (d) below. This requirement shall apply to:</p> <ul style="list-style-type: none"> <li>- Ceiling tiles</li> <li>- Paints and varnishes</li> <li>- Textile floor and wall coverings</li> <li>- Laminate and flexible floor coverings</li> <li>- Wooden floor coverings</li> </ul>

Table (c) Materials and finishes emission limits

Product	Emissions limits (µg/m <sup>3</sup> )	
	3 days	28 days
TVOCs	10,000	<2,000
Formaldehyde	-	<120

**Verification:**

The main construction contractor or the DBO contractor shall provide compliant test results for each material or finish installed. The determination of emissions shall be in conformance with CEN/TS 16516 or equivalent product testing standards or labels, which use the European 'reference room' as the basis for testing.

Table (d) Material and finishes emission limits

Product	Emissions limits (µg/m <sup>3</sup> )	
	3 days	28 days
TVOCs	10,000	<1,000
SVOCs	-	100
Formaldehyde	-	<10
Carcinogens - trichloroethylene, - benzene - DEHP - DBP	<10 sum total of the four substances	<1 for each substance

**Verification:**

The main construction contractor or the DBO contractor shall provide compliant test results for each material or finish installed. The determination of emissions shall be in conformance with CEN/TS 16516 or equivalent product testing standards or labels, which use the European 'reference room' as the basis for testing.

**CONTRACT PERFORMANCE CLAUSE**

**D5. Installation and commissioning of building energy systems**

*Depending on the procurement route, this may also apply to systems installed by a third party energy services contractor (see Section E).*

The following systems shall be installed and commissioned in conformance with the agreed designs and specifications:

- Heating, cooling and ventilation (HVAC)
- Low and Zero Carbon energy technologies
- Building Energy Management System (BEMS)
- Lighting controls

Each system shall be subjected to functional performance testing as described in the successful tender, including measurement of performance.

The main construction contractor or the DBO contractor shall provide a copy of the survey report or certificate confirming that testing of the building services has been carried out and providing data showing that the services perform within design parameters.

**D5. Installation and commissioning of building energy systems**

*Depending on the procurement route, this may also apply to systems installed by a third party energy services contractor (see Section E).*

The following systems shall be designed, installed and commissioned in conformance with the agreed designs and specifications:

- Heating, cooling and ventilation (HVAC)
- Low and Zero Carbon energy technologies
- Building Energy Management System (BEMS)
- Lighting controls

Each system shall be subjected to functional performance testing as described in the successful tender, including measurement of performance.

The main construction contractor or the DBO contractor shall provide a copy of the survey report or certificate confirming that testing of the building services has been carried out and providing data showing that the services perform to within design parameters.

<p><b>D6. Incorporation of recycled content</b></p> <p>As materials are ordered and brought onto site, recycled content claims shall be verified for each batch of product.</p> <p>The main construction contractor <i>or</i> the DBO contractor shall verify claims by obtaining information from supplier(s) of the construction products used. This shall include mass balance calculations supported by batch testing results, delivery documentation and/or factory production control documentation. In each the data shall be verified by a third party audit.</p>	<p><b>D6. Incorporation of recycled or reused content</b></p> <p>As materials are ordered and brought onto site, recycled or re-used content claims shall be verified for each batch of product.</p> <p>The main construction contractor <i>or</i> the DBO contractor shall verify claims by obtaining information from supplier(s) of the construction products used. This shall include mass balance calculations supported by batch testing results, delivery documentation and/or factory production control documentation. In each the data shall be verified by a third party audit.</p>
<p><b>D7. Legal sourcing of timber</b></p> <p>All timber or timber products supplied under the contract must have been placed legally on the EU market in accordance with Regulation (EU) 995/2010 (EU Timber Regulation.)</p> <p>In order to demonstrate compliance with the EU Timber Regulation, the lead contractor shall be required to provide the following information in respect of timber or timber products provided under the contract:</p> <ul style="list-style-type: none"> <li>• A description of each type of timber used, including the trade name, type of product, the common name of tree species and, where applicable, its full scientific name;</li> <li>• Name and address of the trader who supplied the timber and timber products;</li> <li>• The country of harvest, and where applicable: <ul style="list-style-type: none"> <li>(i) Sub-national region where the timber was harvested;</li> <li>(ii) Concession of harvest;</li> <li>(iii) Quantity (expressed in volume, weight or number of units);</li> </ul> </li> <li>• Name and address of the supplier to the operator (trader);</li> <li>• Documents or other information indicating compliance of those timber products with the applicable legislation;</li> <li>• Evidence of the risk assessment and mitigation procedures put in place in accordance with Article 6(1) (b) and (c) of Regulation (EU) 995 of 2010</li> </ul> <p>Valid EU FLEGT or UN CITES licenses and/or third party certification of due diligence according to Regulation (EU) No 995/2010 shall be accepted as evidence of legal harvesting and sourcing.</p>	<p><b>D7. Legal sourcing of timber</b></p> <p>All timber or timber products supplied under the contract must have been placed legally on the EU market in accordance with Regulation (EU) 995/2010 (EU Timber Regulation.)</p> <p>In order to demonstrate compliance with the EU Timber Regulation, the lead contractor shall be required to provide the following information in respect of timber or timber products provided under the contract:</p> <ul style="list-style-type: none"> <li>• A description of each type of timber used, including the trade name, type of product, the common name of tree species and, where applicable, its full scientific name;</li> <li>• Name and address of the trader who supplied the timber and timber products;</li> <li>• The country of harvest, and where applicable: <ul style="list-style-type: none"> <li>(i) Sub-national region where the timber was harvested;</li> <li>(ii) Concession of harvest;</li> <li>(iii) Quantity (expressed in volume, weight or number of units);</li> </ul> </li> <li>• Name and address of the supplier to the operator (trader);</li> <li>• Documents or other information indicating compliance of those timber products with the applicable legislation;</li> <li>• Evidence of the risk assessment and mitigation procedures put in place in accordance with Article 6(1) (b) and (c) of Regulation (EU) 995 of 2010</li> </ul> <p>Valid EU FLEGT or UN CITES licenses and/or third party certification of due diligence according to Regulation (EU) No 995/2010 shall be accepted as evidence of legal harvesting and sourcing.</p>

### **Sustainable Sourcing of Timber**

*These GPP criteria do not include a proposal on the sourcing of timber from sustainable forestry, for the following reasons:*

Several Member States are using their own criteria to define sustainable management of forests and have different processes in place to determine whether certification schemes provide sufficient assurance. Work between leading Member States (Belgium, Denmark, Germany, the UK and the Netherlands) is under way to identify common ground. In this situation, it was not possible, within the framework of this criteria development process, to provide a harmonised definition of sustainable managed forestry. Once the work of the above-mentioned Member States is finalised, the Commission will evaluate the results and decide on possible steps to be taken.

The current consensus of the above-mentioned Member States is that, in general, FSC and PEFC provide sufficient levels of assurance for compliance with their national criteria. Although 100% certified sustainable wood is desirable, it could be difficult to achieve due to possible fluctuations in market demand, particularly for SMEs that are accustomed to working with a limited number of suppliers. Instead, a minimum of 25% sustainable wood should be easily achievable while more ambitious public authorities could set a minimum requirement of 70%, with a recommendation to seek feedback from the market prior to publishing the ITT.

*(for more details, see the Technical Background Report).*

### **D8. Site waste management**

Operation of the agreed site waste management plan shall be monitored and reported on during progress of construction work on-site. This shall include data accounting for the weight of materials collected by the separate collection of materials on-site for re-use and recycling according to the scope described in the technical specifications.

A system shall be used to monitor and quantify waste arisings and materials segregated for recycling and re-use. It shall also track and verify the destination of consignments of waste. The monitoring and tracking data shall be provided to the contracting authority on an agreed periodic basis.

### **D8. Site waste management**

Operation of the agreed site waste management plan shall be monitored and reported on during progress of construction work on-site. This shall include data accounting for the weight of materials collected by the separate collection of materials on-site for re-use and recycling according to the scope described in the technical specifications.

A system shall be used to monitor and quantify waste arisings and materials segregated for recycling and re-use. It shall also track and verify the destination of consignments of waste. The monitoring and tracking data shall be provided to the contracting authority on an agreed periodic basis.



## E. Installation of energy systems and the supply of energy services

Core criteria	Comprehensive criteria
<b>TECHNICAL SPECIFICATIONS</b>	
<p><b>E1. Heating systems, including Combined Heat and Power (CHP)</b></p> <p>All heating systems, including those supplied by CHP units, that supply heat to either water or air based heating distribution systems for an office building shall meet the relevant Core GPP criteria that demonstrate the efficiency of each technology:</p> <ul style="list-style-type: none"> <li>• Water-based heaters, which covers boilers and heat pumps up to 400 kW heat output and CHP units with an electricity generating capacity of less than or equal to 50 kWe. <a href="http://ec.europa.eu/environment/gpp/pdf/criteria/water_based/heaters_en.pdf">http://ec.europa.eu/environment/gpp/pdf/criteria/water_based/heaters_en.pdf</a></li> <li>• Combined Heat and Power which covers prime movers with an electricity generating capacity of greater than 50 kWe. Technical specification 3.2.1 shall be met.  <a href="http://ec.europa.eu/environment/gpp/pdf/chp_GPP_product_sheet.pdf">http://ec.europa.eu/environment/gpp/pdf/chp_GPP_product_sheet.pdf</a></li> </ul> <p><b>Verification:</b></p> <p>Tenderers shall provide technical performance data for the products proposed to be installed demonstrating how they will comply with the appropriate GPP criteria.</p>	<p><b>E1. Heating systems, including Combined Heat and Power (CHP)</b></p> <p>All heating systems, including those supplied by CHP units, that supply heat to either water or air based heating distribution systems for an office building shall meet the relevant Comprehensive GPP criteria that demonstrate the efficiency of each technology:</p> <ul style="list-style-type: none"> <li>• Water-based heaters, which covers boilers and heat pumps up to 400 kW heat output and CHP units with an electricity generating capacity of less than or equal to 50 kWe. <a href="http://ec.europa.eu/environment/gpp/pdf/criteria/water_based/heaters_en.pdf">http://ec.europa.eu/environment/gpp/pdf/criteria/water_based/heaters_en.pdf</a></li> <li>• Combined Heat and Power which covers prime movers with an electricity generating capacity of greater than 50 kWe. Technical specification 3.2.1 shall be met.  <a href="http://ec.europa.eu/environment/gpp/pdf/chp_GPP_product_sheet.pdf">http://ec.europa.eu/environment/gpp/pdf/chp_GPP_product_sheet.pdf</a></li> </ul> <p><b>Verification:</b></p> <p>Tenderers shall provide technical performance data for the products proposed to be installed demonstrating how they will comply with the appropriate GPP criteria.</p>

## F. Practical completion and handover

Core criteria	Comprehensive criteria
<b>TECHNICAL SPECIFICATIONS</b>	
<p><b>F1. Quality of the completed building fabric</b></p> <p>The building fabric and its construction shall be designed in order to ensure a high standard of air tightness. The design air tightness shall be 4 m<sup>3</sup>/(h.m<sup>2</sup>) at 50 Pascals for new-build and 8 m<sup>3</sup>/(h.m<sup>2</sup>) at 50 Pascals for major renovations.</p> <p>Upon completion of the building, the lead contractor shall test the quality of the finished building fabric and its construction according to EN 13829 or equivalent in order to ensure that the design performance has been achieved.</p> <p><b>Verification:</b></p> <p>The tenderer shall provide a commitment to carry out, upon completion, testing of the airtightness of the building fabric and to address any defects that may arise.</p>	<p><b>F1. Quality of the completed building fabric</b></p> <p>The building fabric and its construction shall be designed in order to ensure continuity of insulation and a high standard of air tightness. The design air tightness shall be 2 m<sup>3</sup>/(h.m<sup>2</sup>) at 50 Pascals for new-build and 5 m<sup>3</sup>/(h.m<sup>2</sup>) at 50 Pascals for major renovations.</p> <p>Upon completion of the building, the lead contractor shall test the quality of the finished building fabric and its construction according to EN13817 and EN 13829 or equivalent in order to ensure that there are no defects and that the design performance has been achieved.</p> <p><b>Verification:</b></p> <p>The tenderer shall provide a commitment to carry out, upon completion, testing of the thermal integrity and airtightness of the building fabric and to address any defects that may arise.</p>
<b>AWARD CRITERIA</b>	
<p><b>F2. Installation and commission of low or zero carbon energy sources</b></p> <p>Additional points shall be awarded to tenderers that provide aftercare service over and above minimum warranty requirements to ensure that systems function correctly.</p> <p><b>Verification:</b></p> <p>The main construction contractor or the DBO contractor shall outline the extent of the aftercare services expressed in terms of staff time and technical scope.</p>	<p><b>F2. Installation and commission of low or zero carbon energy sources</b></p> <p>Additional points shall be awarded to tenderers that provide an aftercare service over and above minimum warranty requirements to ensure that systems function correctly.</p> <p><b>Verification:</b></p> <p>The main construction contractor or the DBO contractor shall outline the extent of the aftercare services expressed in terms of staff time and technical scope.</p>
<b>CONTRACT PERFORMANCE CLAUSES</b>	
<p><b>F3. Quality of the completed building fabric</b></p> <p>The lead contractor shall test the quality of the finished building fabric and its construction to ensure that they meet the design specifications for air tightness. A blower door test shall be carried out for at least 20% of the buildings useable internal floor space demonstrating that the design air tightness is 4 m<sup>3</sup>/(h.m<sup>2</sup>) at 50 pascals for new-build and 8 m<sup>3</sup>/(h.m<sup>2</sup>) at 50 pascals for major renovations.</p> <p>The test shall be carried out in accordance with EN 13829 or equivalent standards accepted by the respective building control body where the building is located. Where defects are identified, remedies shall be proposed.</p> <p>The testing shall be carried out following practical completion of the building. The</p>	<p><b>F3. Quality of the completed building fabric</b></p> <p>The lead contractor shall test the quality of the finished building fabric and its construction to ensure that they meet the design specifications for airtightness and continuity of insulation.</p> <p>This shall take the form of thermal imaging carried out in accordance with EN 13187 and a blower door test for at least 20% of the buildings useable internal floor space demonstrating that the design air tightness is 2 m<sup>3</sup>/(h.m<sup>2</sup>) at 50 pascals for new-build and 5 m<sup>3</sup>/(h.m<sup>2</sup>) at 50 pascals for major renovations.</p> <p>The latter shall be carried out in accordance with EN 13829 or equivalent standards accepted by the respective building control body where the building is located. Where defects are</p>

<p>contractor shall provide a copy of the survey report or certificate confirming that the building meets the air tightness requirement following a test carried out according to EN 13829 or equivalent.</p>	<p>identified then remedies shall be proposed.</p> <p>The testing shall be carried out following practical completion of the building. The contractor shall provide a copy of the survey report or certificate confirming that:</p> <ul style="list-style-type: none"> <li>- The building meets the air tightness requirement following a test carried out according to EN 13829 or equivalent.</li> <li>- There are no significant defects in the construction details in accordance with EN 13187 or equivalent.</li> </ul>
<p><b>F4. Lighting control systems</b></p> <p>Systems shall be commissioned in accordance with contract performance clause 3.3.1 from the same criterion.</p> <p>The main contractor shall provide an operational manual for the systems in line with GPP indoor lighting design (technical specification) criterion 3.3.1.</p> <p>Training shall be provided to either the occupant and/or the appointed facilities management provider on how to use the systems. The interface with the BEMS (criterion F5) shall also be addressed.</p> <p>The Design team or the Design &amp; Build contractor or the DBO contractor shall provide a copy of the survey report or certificate confirming that testing of the lighting systems has been carried out and providing data showing that the systems perform to within design parameters. They shall additionally confirm that the required materials and training have been provided.</p>	<p><b>F4. Lighting control systems</b></p> <p>Systems shall be commissioned in accordance with contract performance clause 3.3.1 from the same criterion.</p> <p>The main contractor shall provide an operational manual for the systems in line with GPP indoor lighting design (technical specification) criterion 3.3.1.</p> <p>Training shall be provided to either the occupant and/or the appointed facilities management provider on how to use the systems. The interface with the BEMS (criterion F5) shall also be addressed.</p> <p>The Design team or the Design &amp; Build contractor or the DBO contractor shall provide a copy of the survey report or certificate confirming that testing of the lighting systems has been carried out and providing data showing that the systems perform to within design parameters. They shall additionally confirm that the required materials and training have been provided.</p>
<p><b>F5. Building energy management system</b></p> <p>The BEMS shall be commissioned in accordance with the required technical specifications. The main contractor shall provide an operational manual for the Building Energy Management System (BEMS). Training shall be provided to either the occupant and/or the appointed facilities management provider on how to use the BEMS. This shall include use of the user interface to analyse and download energy data using accessible software tools.</p> <p>The main construction contractor or the DBO contractor shall provide:</p> <ul style="list-style-type: none"> <li>- A copy of the survey report or certificate confirming that testing of the BEMS has been carried out,</li> <li>- Data showing that the systems perform within design parameters,</li> </ul>	<p><b>F5. Building energy management system</b></p> <p>The BEMS shall be commissioned in accordance with the required technical specifications. The main contractor shall provide an operational manual for the Building Energy Management System (BEMS). Training shall be provided to either the occupant and/or the appointed facilities management provider on how to use the BEMS. This shall include use of the user interface to analyse and download energy data using accessible software tools.</p> <p>The main construction contractor or the DBO contractor shall provide:</p> <ul style="list-style-type: none"> <li>- A copy of the survey report or certificate confirming that testing of the BEMS has been carried out,</li> <li>- Data showing that the systems perform within design parameters,</li> <li>- Confirmation that the required materials and training have been provided.</li> </ul>

<p>- Confirmation that the required materials and training have been provided.</p>									
<p><b>F6. Installation and commission of low or zero carbon energy sources</b> The low or zero carbon energy systems shall be commissioned in accordance with the required technical specifications.</p> <p>The main construction contractor or the DBO contractor shall provide a copy of the survey report or certificate confirming that testing of the energy systems has been carried out and providing data showing that the systems perform within design parameters.</p>	<p><b>F6. Installation and commission of low or zero carbon energy sources</b> The low or zero carbon energy systems shall be commissioned in accordance with the required technical specifications.</p> <p>The main construction contractor or the DBO contractor shall provide a copy of the survey report or certificate confirming that testing of the energy systems has been carried out and providing data showing that the systems perform within design parameters.</p>								
<p><b>F7. Recyclable waste storage</b></p> <p>Upon completion it shall be confirmed that dedicated storage space has been provided within the building, or within the curtilage of the building, to facilitate the segregation of recyclable materials and end-of-life products by occupiers (with reference to the requirements in criterion B5).</p> <p>The construction contractor, the Design &amp; Build contractor or the DBO contractor shall provide final detailed plans of the recycling facilities as-built.</p>	<p><b>F7. Recyclable waste storage</b></p> <p>Upon completion it shall be confirmed that dedicated storage space shall be provided within the building, or within the curtilage of the building, to facilitate the segregation of recyclable materials and end-of-life products by occupiers (with reference to the requirements in criterion B5).</p> <p>The construction contractor, the Design &amp; Build contractor or the DBO contractor shall provide final detailed plans of the recycling facilities as-built.</p>								
	<p><b>F8. Air quality testing</b></p> <p>The lead contractor shall test the air quality within the building a minimum of four weeks following completion of the building fit-out, so as to ensure it conforms with the requirements in table (e).</p> <p>Testing shall be carried out for one representative office room, where the office consists predominantly of cellular office spaces, or selected sample locations where the office consists of open plan office spaces.</p> <p><i>Table (e) Parameters for office air quality testing</i></p> <table border="1" data-bbox="1108 1070 1688 1385"> <thead> <tr> <th><i>Substance(s) to be tested</i></th> <th><i>Testing parameters</i></th> </tr> </thead> <tbody> <tr> <td>Total Volatile Organic Compounds (TVOC's)</td> <td>&lt;500 µ/m<sup>3</sup> (eight hour average) in accordance with ISO 16017-2 or equivalent</td> </tr> <tr> <td>Formaldehyde</td> <td>&lt;100 µ/m<sup>3</sup> (30 minutes average) in accordance with ISO 16000-3 or equivalent</td> </tr> <tr> <td>Particulates</td> <td>An eight hour average for two particle sizes in accordance with ISO 7708 or</td> </tr> </tbody> </table>	<i>Substance(s) to be tested</i>	<i>Testing parameters</i>	Total Volatile Organic Compounds (TVOC's)	<500 µ/m <sup>3</sup> (eight hour average) in accordance with ISO 16017-2 or equivalent	Formaldehyde	<100 µ/m <sup>3</sup> (30 minutes average) in accordance with ISO 16000-3 or equivalent	Particulates	An eight hour average for two particle sizes in accordance with ISO 7708 or
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Formaldehyde	<100 µ/m <sup>3</sup> (30 minutes average) in accordance with ISO 16000-3 or equivalent								
Particulates	An eight hour average for two particle sizes in accordance with ISO 7708 or								

	<p>equivalent: PM10: 50 <math>\mu\text{m}^3</math> PM2.5: 15 <math>\mu\text{m}^3</math></p>	<p>The lead construction contractor or the DBO contractor shall carry out testing and provide test results demonstrating compliance with the required parameters. All measurements shall be taken during normal occupied hours and under design ventilation conditions in which the systems have been running for at least 12-24 hours prior to testing.</p>
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Consultation

## G. Facilities management

Core criteria	Comprehensive criteria
<b>TECHNICAL SPECIFICATIONS</b>	
<p><b>G1. Building energy management system</b>                      The facilities manager shall produce monthly reports for the occupier using data from the Building Energy Management System (BEMS). The arrangement shall be subject to a review on an annual basis. The reports shall disaggregate heating, cooling, ventilation and lighting energy use on a seasonal basis.</p> <p><b>Verification:</b>                      Potential facilities management contractors or DBO contractors shall submit their proposed format for the reports as part of their ITT response.</p>	<p><b>G1. Building energy management system</b>                      The facilities manager shall produce monthly reports for the occupier using data from the Building Energy Management System (BEMS). The arrangement shall be subject to a review on an annual basis.</p> <p>The reports shall identify trends in energy use within the building, disaggregated so that heating, cooling and lighting can be identified on a seasonal basis as well as by zone or department. The reports shall include recommendations on remedial action and/or further energy savings that could be made.</p> <p><b>Verification:</b>                      Potential facilities management contractors or DBO contractors shall submit their proposed format for the reports as part of their ITT response.</p>
<p><b>G2. Energy performance contract</b>                      The building operator or facilities manager (as appropriate) shall agree, based on the preliminary modelling of the buildings energy consumption (see criterion A1), limits on energy consumption associated with lighting, heating, cooling, ventilation and auxiliary power. This shall exclude predicted loads relating to the users such as servers and small power loads.</p> <p>If energy usage were to exceed these limits, the building operator or facilities manager (as appropriate) would be liable for the additional costs. If energy usage were to be below these limits, the savings would be shared 50:50 (or an alternative agreed apportionment of the savings) with the contracting authority.</p> <p>The arrangement shall be subject to a review on an annual basis.</p> <p><b>Verification:</b>                      The building operator or facilities manager shall make a contractual commitment to the agreed arrangement, including the scope and energy limits. A process for independent collation and presentation of the annual data shall be provided.</p>	<p><b>G2. Energy performance contract</b>                      The building operator or facilities manager (as appropriate) shall agree, based on the preliminary modelling of the buildings energy consumption (see criterion A1) limits on energy consumption by lighting, heating, cooling, ventilation and auxiliary power. This shall exclude predicted loads relating to the users such as servers and small power loads.</p> <p>If energy usage were to exceed these limits, the building operator or facilities manager (as appropriate) would be liable for the additional costs. If energy usage were to be below these limits, the savings would be shared 50:50 (or an alternative agreed apportionment of the savings) with the contracting authority.</p> <p>The arrangement shall be subject to a review on an annual basis.</p> <p><b>Verification:</b>                      The building operator or facilities manager shall make a contractual commitment to the agreed arrangement, including the scope and energy limits. A process for independent collation and presentation of the annual data shall be provided.</p>
<p><b>G3. Waste management system</b>                      The building manager shall implement systems that allow occupiers to segregate paper, cardboard, food and drink packaging (glass, plastic and tetrapak) into separate streams for recycling. Batteries, ink and toner cartridges, IT equipment and furniture shall also be collected and arranged for re-use or recycling where possible.</p>	<p><b>G3. Waste management system</b>                      The building manager shall implement systems that allow occupiers and on-site catering services to segregate paper (at least two grades), cardboard, food and drink packaging (glass, plastic and tetrapak) and food/catering waste into separate streams for recycling. Batteries, ink and toner cartridges, IT equipment and furniture shall also be collected and arranged for re-use</p>

<p><b>Verification:</b></p> <p>Facilities managers <i>or</i> DBO contractors shall submit a proposal for the systems to be used, including details of the waste streams, the segregation systems, working arrangements and contractors to be used.</p>	<p>or recycling where possible.</p> <p><b>Verification:</b></p> <p>Facilities managers <i>or</i> DBO contractors shall submit a proposal for the systems to be used, including details of the waste streams, the segregation systems, working arrangements and contractors to be used.</p>
<b>CONTRACT PERFORMANCE CLAUSE</b>	
<p><b>G4. Energy performance contract</b></p> <p>Energy data shall be independently collated so that the energy performance of the building can be monitored on an annual basis against the agreed energy consumption limits.</p> <p>The building operator or facilities manager shall arrange for the third party collation of data from utility bills/meters and the Building Energy Management System.</p> <p>This data shall be reviewed annually by both the operator and the contracting authority in order to determine the building energy consumption and the monthly profit/loss for the operator and public authority.</p>	<p><b>G4. Energy performance contract</b></p> <p>Energy data shall be independently collated so that the energy performance of the building can be monitored on an annual basis against the agreed energy consumption limits.</p> <p>The building operator or facilities manager shall arrange for the third party collation of data from utility bills/meters and the Building Energy Management System.</p> <p>This data shall be reviewed annually by both the operator and the contracting authority in order to determine the building energy consumption and the monthly profit/loss for the operator and public authority.</p>
<p><b>G5. Waste management system</b></p> <p>The building manager shall monitor and quantify on an ongoing agreed basis the overall waste arisings and recycling rate for the building(s).</p> <p>Facilities managers <i>or</i> DBO contractors shall provide the contracting authority with monthly data quantifying waste arisings as a proportion of the overall waste arisings from the building and in kg per waste fraction.</p>	<p><b>G5. Waste management system</b></p> <p>The building manager shall monitor and quantify on an ongoing agreed basis the overall waste arisings and recycling rate for the building(s).</p> <p>Facilities managers <i>or</i> DBO contractors shall provide the contracting authority with monthly data quantifying waste arisings as a proportion of the overall waste arisings from the building and in kg per waste fraction.</p>

# PROPOSED TECHNICAL ANNEXES

## Annex 1

### **Supporting guidance for criterion B10.1: Option 1 – Aggregation of EPDs**

In detailed design and performance award Criteria B10.1 it was described how Environmental Product Declarations (EPDs) could be used by bidders in order to demonstrate how they would reduce the environmental impact of the construction of an office building.. This brief guidance note describes:

- When this criterion can be used;
- The rules required to ensure that bids are comparable; and
- The technical support required for bid selection.

The need for conformity of EPDs with ISO 14025, EN 15804 or equivalent is also highlighted. However, additional normalisation and weighting rules within existing building assessment and certification schemes may be used to evaluate designs.

#### **1.1 When can EPD option 1 be used?**

The use of criteria B10.1 is only recommended where a comparison can be made against a reference building design and/or between different building designs. It is therefore relevant to the following procurement scenarios:

- Where the client already has a reference building design and bill of quantities that has been appraised in order to provide a guide price for comparison with bids;
- Where a design competition is to be used to encourage innovative building designs to be brought forward by design teams and/or contractors;
- Where building designs are required to demonstrate a defined level of environmental performance for specific building elements following rules with an existing building assessment and certification scheme.

In these scenarios, the aggregation of EPDs as the basis for evaluation of performance can be made an award requirement.

#### **1.2 Conformity of the EPDs used**

EPDs shall be compiled for the listed building elements. These EPDs shall all have been selected from within the same Product Category Rules (PCRs). All EPDs shall be in conformance with ISO 14025, EN 15804 or equivalent.

New primary data for building elements may be used to supplement these EPDs but shall be subject to LCA analysis according to the same PCRs.

Some existing building assessment and certification schemes apply normalisation and/or weighting rules to EPD results in order to generate a comparative score or rating. As long as the main PCR rules are in compliance with ISO 14025, EN 15804 or equivalent, these comparative scores or ratings may be used and each design shall be evaluated according to the system used with the same scheme.

#### **1.3 Will additional expertise be required to evaluate bids?**

In any bidding process for office buildings, the procurer is likely to require supporting design and technical expertise in order to set requirements and evaluate designs. The procurer may therefore wish to call upon expert input at two main stages:

1. Putting together the design brief and performance requirements: Bidders shall be instructed on what technical requirements they should follow in order to ensure that the designs submitted are comparable.
2. Evaluating designs and improvement options: A technical evaluation of bidders responses to this criteria should be carried out in order to support the procurer.



#### 1.4 What instructions should be given to bidders?

The following technical instructions shall be incorporated into the ITT in order to ensure that bids are comparable. Where designs are to be evaluated against a reference building, this shall be clearly stated and quantities of the specified building elements provided.

##### Technical instructions for bidders using EPDs for building evaluations

Technical point to address	What this means in practice
a. Comparability of EPDs	<p>The EPDs shall be selected from within the same Product Category Rules (PCRs). The PCR scheme shall therefore be specified.</p> <p>Where the normalisation and/or weighting rules of an EPD system linked to an existing building certification scheme are to be used,, each design shall be evaluated according to the same scheme and rules.</p>
b. Building elements within the scope of the criteria	<p>The scope of the criteria shall, as a minimum, comprise the following building elements:</p> <ul style="list-style-type: none"> <li>- The structural frame, including beams, columns and slabs</li> <li>- External walls and insulation</li> <li>- Floors and ceilings</li> <li>- Internal walls</li> <li>- Windows</li> <li>- Roofs</li> </ul>
c. Definition of the building's life cycle and boundaries	<p>EPDs that address cradle to grave shall be compiled.</p>
d. Relevance of the results to the whole building	<p>The declared unit for each EPD shall be multiplied by the appropriate quantity in the bill of materials. This is to ensure that the total environmental impact for each building design can be compared.</p>
e. Lifecycle impact category indicators to be used for evaluation purposes	<p>As a minimum the PCRs used shall include the following three impact category indicators:</p> <ul style="list-style-type: none"> <li>- Global Warming Potential (GWP),</li> <li>- Depletion of abiotic resources-elements (ADP elements)</li> <li>- Depletion of abiotic resources-fossil fuels (ADP fossil fuels)</li> </ul>

**Supporting guidance for criterion B10.1: Option 2 - LCA analysis**

In detailed design and performance requirement award Criterion B10.1 it was described how Life Cycle Assessment (LCA) could be used by bidders in order to demonstrate how they have reduced the environmental impact of an office building's construction. This brief guidance note describes:

- When this criteria can be used;
- The rules required to ensure that bids are comparable; and
- The technical support required for bid selection.

All use of LCA shall be carried out with reference to ISO 14040/ISO 14044, EN 15978 or equivalent.

**2.1 When can LCA option 2 be used?**

The use of criteria 10b is only recommended where a comparison can be made of improvement options against a reference building design and/or between different building designs. It is therefore relevant to the following procurement scenarios:

- Where the client already has a reference building design and bill of quantities that has been appraised in order to provide a guide price for comparison with bids:
- Where a design competition is to be used to encourage innovative building designs to be brought forward by design teams and/or contractors:
- Where building designs are required to demonstrate a defined level of performance for specific building components using an LCA-based calculation tool:

In these scenarios an LCA analysis can be made an award requirement.

**2.2 Will additional expertise be required to evaluate bids?**

In any tender process for office buildings the procurer is likely to require supporting design and technical expertise in order to set requirements and evaluate designs. The procurer may therefore wish to call upon this expertise at two stages in the procurement process:

1. When putting together the design brief and performance requirements: Bidders shall be instructed on what technical requirements they should follow in order to ensure that the designs submitted are comparable.
2. When evaluating designs and improvement options: A technical evaluation of tenderers' responses to this criterion should be carried out in order to support the procurer.

A technical evaluator shall be required to carry out a critical review of each tenderers LCA analysis according to the guidance in Annex 3.

**2.3 What instructions should be given to bidders?**

The following technical instructions should be incorporated into the ITT in order to ensure that bids are comparable. Where designs are to be evaluated against a reference building, this shall be clearly stated and the bill of materials provided.

**Technical instructions for bidders using LCA for building evaluations**

Technical point to address	What this means in practice
a. Method and inventory data	<p>The impact assessment method and life cycle inventory (LCI) data to be used by each design team shall, as far as possible, be specified to ensure comparability.</p> <p>Verified primary data may be used to supplement gaps following the guidance in ISO 14040/14044, EN 15978 or equivalent, and for data from EPDs ISO 14025, EN 15804 or equivalent.</p>
b. Comparison on the basis of functional	<p>The following characteristics of the building shall be specified as a reference point for each design (see ISO 14040/14044, EN 15987 or</p>

equivalence	<p>equivalent):</p> <ul style="list-style-type: none"> <li>- Relevant technical and function requirements, as described in the performance requirements;</li> <li>- The envisaged pattern of use;</li> <li>- The requested service life.</li> </ul> <p>A common functional unit or reference unit shall then be used to present the results (see ISO 14040, EN 15987 or equivalent).</p>
c. Definition of the buildings life cycle and boundaries	<p>The boundary for the analysis shall be cradle-to-grave (see ISO 14040).</p> <p>In the case of a building refurbishment, design teams shall indicatively refer to Module B5 of EN 15978 'boundary for refurbishment' .</p> <p>Allocation for recycled or re-used materials either as inputs (product stage) or outputs (end of life stage) shall be made according to the rules in ISO 14044, Section 4.3.4.3.</p>
d. Building elements within the scope of the criteria	<p>The scope of the criteria shall, as a minimum, comprise the following building elements:</p> <ul style="list-style-type: none"> <li>- The structural frame, including beams, columns and slabs</li> <li>- External walls and insulation</li> <li>- Floors and ceilings</li> <li>- Internal walls</li> <li>- Windows</li> <li>- Roofs</li> </ul>
e. Lifecycle category indicators to be used for evaluation purposes	<p>As a minimum the following three of the impact category indicators shall be used:</p> <ul style="list-style-type: none"> <li>- Global warming potential (GWP)</li> <li>- Abiotic resource depletion potential for elements (ADP_elements)</li> <li>- Abiotic resource depletion potential of fossil fuels (ADP_fossil fuels)</li> </ul> <p>Where an LCA tool generates an aggregated scoring or rating for the building then only the result for these impact categories shall be taken into account.</p>

### Annex 3

#### **Brief for LCA technical evaluator**

The role of the technical evaluator will be to assist the procurer in setting the ground rules for the tenderers, with reference to either Annex 1 or 2, depending on the option chosen.

Once tenders have been received they will either:

- (i) Carry out a check for how EPDs have been aggregated, or
- (ii) Carry out a critical review of the LCAs for methodological choices, data quality and comparability.

The critical review will be carried out with reference to ISO 14044, section 6, and the following sections of the European Commission's Product Environmental Footprint (PEF) Guide:

- o Critical review (section 9, p-68)
- o Data collection checklist (Annex III)
- o Data quality requirements (section 5.6, p-36)
- o Interpretation of results (section 7, p-61)

The technical evaluator shall agree with the procurer the weighting of the LCIA indicator results, unless this is already predetermined by options ii or iii in Criterion 10B.1.

