

Street Lighting and Traffic Signals

Definition:

This product group criteria are applicable to:

Road lighting: These criteria cover the procurement of lighting equipment for:

- road lighting in new lighting installations;
- retrofitting of different luminaires to existing lighting installations;
- retrofitting of different light sources or controls to existing luminaires; or
- the simple replacement of light sources, lamps or luminaires on a like-for-like basis in existing lighting installations.

In accordance with standard EN 13201-1, the term 'road lighting' refers to fixed lighting installations intended to provide good visibility to users of outdoor public traffic areas during the hours of darkness to support traffic safety, traffic flow and public security. It specifically excludes lighting installations for tunnels, toll stations, canals and locks, parking lots, commercial or industrial sites, sports installations, monuments and building facades. The following technical definitions are provided to help apply the criteria (please refer to the technical report for details and further technical definitions):

'luminaire efficacy': ratio between luminous flux output from the luminaire (in lumens) and power consumption (in Watts)

Traffic signals: Red, yellow and green signal lights for road traffic with 200mm and 300mm roundels, in line with standard EN 12368, are included. Portable signal lights are specifically excluded.

List of product items:		Pages:
1	Energy efficient lighting equipment	1
2	Low light pollution lighting equipment	2
3	Good quality and durable lighting equipment	3
4	Traffic Signals	6

Energy efficient lighting equipment

1.1 Subject Matter (suggestion on how to draft the tender title)

Purchase of Energy efficient lighting equipment

1.2 Technical Specification (to be included in the terms of reference / technical specifications)

Luminaire efficacy

(Applicable when light sources or luminaires are to be replaced in an existing lighting installation and no redesign is carried out. These ambition levels should not be applied when light sources are also requested to be rated with CCT $\leq 2700K$.)

The lighting equipment to be installed shall have a luminaire efficacy higher than the relevant reference value stated below

Year of ITT*	Efficacy (lm/W)
2018-19	120
2020-21	137
2022-23	155

Verification:

The tenderer shall provide a standard photometric file that is compatible with common light planning software and that contains technical specifications on the light output and energy consumption of the luminaire, measured by using reliable, accurate, reproducible and state-of-the-art measurement methods. Methods shall respect relevant international standards, where available.

Minimum dimming performance

All light sources and luminaires shall be installed with fully functional dimming controls that are programmable to set at least one pre-set level of dimming down to at least 50 % of maximum light output.

Verification:

The tenderer shall provide documentation from the manufacturer(s) of the light sources and luminaires that are proposed for use by the tenderer, showing that they are compatible with dimming controls. The documentation shall also state what dimming controls are incorporated, for example:

- pre-set dimming, or
- variable dimming based on weather conditions or traffic volume.

The documentation shall also clearly provide a power curve of light output versus power consumption, state the maximum dimming possible and provide instructions about how to programme and re-programme the controls.

Power factor

The power factor for the luminaire to be installed shall be ≥ 0.90 .

Verification:

The tenderer shall provide a declaration of compliance with the criterion for the lighting equipment they intend to supply, supported by a declaration from the manufacturer and results from tests carried out in accordance with IEC 61000-3-2.

1.3 Award Criteria (to be included when BPQR is utilised)

Enhanced luminaire efficacy

A score of up to X points shall be awarded to tenderers that are able to provide light sources or luminaires which exceed the minimum luminous efficacy defined in TS1 (Luminaire efficacy).

Maximum points (X) will be awarded to the tender with the highest luminous efficacy value and points will be proportionately awarded to any other tenders whose light sources or luminaires exceed the minimum requirements of TS1 but do not reach the value of the highest efficacy tender.

Low light pollution lighting equipment	
2.1	Subject Matter (suggestion on how to draft the tender title)
	Purchase of Low light pollution lighting equipment
2.2	Technical Specification (to be included in the terms of reference / technical specifications)
	<p>Ratio of Upward Light Output (RULO) and obtrusive light (Applicable to all contracts where new luminaires are purchased.)</p> <p>All luminaire models purchased shall be rated with a 0.0 % RULO. If it is necessary to use a boom angle, either to optimise the pole distribution or due to site constraints in pole positioning, the 0.0 % RULO shall be maintained even when the luminaire is tilted at the required angle.</p>
	<p>Verification:</p> <p>Verification: The tenderer shall provide the photometric file(s). This shall include the photometric intensity table from which the RULO is calculated according to EN 13032-1, EN 13032-2, EN 13032-4, Annex D of IEC 62722-1 or other relevant international standards. In cases where luminaires are not installed horizontally, the photometric file shall demonstrate that either:</p> <ul style="list-style-type: none"> - tilting the data by the same tilt angle to be used with the luminaire still results in a 0.0 % RULO, or - additional shielding has been fitted to the luminaire and the shielded luminaire found to show a 0.0 % RULO when tilted at the design installation angle.
	<p>Ecological light pollution and star visibility</p> <p>At least 50-75% of all textile towel rolls, expressed in number of rolls, to be provided to the contracting authority by the tenderer as part of the contract must be compliant with the technical requirements of the EU Ecolabel for textile products.</p>
	<p>Verification:</p> <p>(The G-index value is directly related to blue light content, and so should be specified when light pollution effects on wildlife or on star visibility are a concern.) In parks, gardens and areas considered by the procurer to be ecologically sensitive, the G-index shall be ≥ 1.5 (A G-index of ≥ 1.5 would generally (but not always) equate to a CCT of $\leq 3000\text{K}$). A dimming programme (as per the procurer's specifications defined in Minimum dimming performance TS 1.2) shall be implemented for parks and gardens that are open during night-time hours. A switch-off programme shall apply to any relevant closing hours for parks and gardens. A dimming and/or switch-off programme shall be implemented for any other ecologically sensitive areas</p>

Good quality and durable lighting equipment	
3.1	Subject Matter (suggestion on how to draft the tender title)
	Purchase of durable lighting equipment
3.2	Technical Specification (to be included in the terms of reference / technical specifications)
	<p>Provision of instructions</p> <p>(Applicable when the equipment and/or controls in the particular lighting installation requested are different from the normal equipment installed elsewhere on the wider lighting network operated by the procurer.) The tenderer shall provide the following information with the installation of new or renovated lighting systems:</p> <ul style="list-style-type: none"> • disassembly instructions for luminaires; • instructions on how to replace light sources (where applicable), and which lamps can be used in the luminaires without decreasing the energy efficiency; • instructions on how to operate and maintain lighting controls; • for daylight linked controls, instructions on how to recalibrate and adjust them; and • for time switches, instructions on how to adjust the switch-off times, and advice on how best to do this to meet visual needs without excessive increase in energy consumption.
Verification:	The tenderer shall provide a declaration of compliance with this criterion, supported by examples of written instructions that will be provided to the contracting authority should the tender be successful.
	<p>Waste recovery</p> <p>The tenderer shall implement appropriate environmental measures to reduce and recover the waste produced during the installation of a new or renovated lighting system. All waste lamps and luminaires and lighting controls shall be separated and sent for recovery in accordance with the WEEE directive (Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012). Any other waste materials that are expected to be generated and that can be recycled shall be collected and delivered to appropriate facilities.</p>
Verification:	The tenderer shall provide details of the waste handling procedures in place and identify suitable sites to which WEEE and other recyclable materials can be taken to for separation, recycling and heat recovery, as appropriate.
	<p>Product lifetime, spare parts and warranty</p> <p>(The thresholds defined here are applicable to LED-based light sources, lamps and luminaires.) Any LED-based light sources shall have a rated life at 25°C of:</p> <ul style="list-style-type: none"> • L96 at 6 000 hours, • L70 at 50 000 hours (projected), • C0 at 3 000 hours or C10 at 6 000 hours, • C50 at 50 000 hours (projected). <p>The repair or provision of relevant replacement parts of LED modules suffering abrupt failure shall be covered by a warranty for a period of 5 years from the date of installation.</p>
Verification:	Test data regarding the maintained lumen output of the light sources shall be provided by an International Laboratory Accreditation Cooperation accredited laboratory that meets IES LM-80 for actual data and IES TM21 for projected data. The tenderer shall provide a copy of the minimum 5-year warranty to be signed if the tender is successful. The contractor shall provide a copy of the warranty that will apply if the tender is successful and provide the necessary contact details (phone and email as a minimum) for dealing with any related queries or potential claims. For clarity, the warranty shall, as a minimum, cover the repair or replacement costs of faulty LED module parts within a reasonable timeframe after notification of the fault (to be defined by the procurer in the ITT), either directly or via other nominated agents. Replacement parts should be the same as the originals, but if this is not possible, equivalent spare parts that perform the same function to the same or to a higher performance level may be used. The warranty shall not cover the following: a) faulty operation due to vandalism, accidents or other extreme weather events; b) lamps or luminaires that have been working for a significant time under abnormal conditions (e.g. used with the wrong line voltage), insofar as this can be proven by the contractor.

	<p>Reparability</p> <p>The tenderer shall make sure that it is feasible and practical for a professional to access components (e.g. light source, lamp, LED module, driver) after the luminaire has been put into service. Components must be identifiable, accessible and removable without damaging the component or the luminaire. Replacement of components shall be able to be performed on site (i.e. at luminaire mounting height), without tools (i.e. plug and play) or with one of the following types of screwdriver: - standard, Pozidriv, Phillips, Torx, Allen key or combination wrench.</p>
	<p>Verification: The tenderer shall provide a technical manual, which shall include an exploded diagram of the luminaire illustrating the parts that can be accessed and replaced. The parts covered by service agreements under the warranty must also be indicated.</p>
	<p>Failure rate of control gear</p> <p>The specified control gear failure rate shall be lower than 0.2 % per 1000 h and be covered by an 8-year warranty for control gear.</p>
	<p>Verification: The tenderer shall provide a declaration of compliance with the above failure rate for any control gear it intends to supply. The declaration shall be supported by relevant industry-standard testing procedures.</p>
	<p>Failure rate of control gear</p> <p>The specified control gear failure rate shall be lower than 0.2 % per 1000 h and be covered by an 8-year warranty for control gear.</p>
	<p>Verification: The tenderer shall provide a declaration of compliance with the above failure rate for any control gear it intends to supply. The declaration shall be supported by relevant industry-standard testing procedures.</p>
	<p>Labelling of LED luminaires (Applicable when new LED luminaires are installed.)</p> <p>The luminaires proposed to be installed by the tenderer shall carry, as a minimum, the following technical information:</p> <ul style="list-style-type: none"> • manufacturer's name, code, serial number and date of manufacture; • input power rating; • luminous flux at 25 °C; • upward Light Ratio; • CIE flux codes; • correlated colour temperature (CCT); • G-index; • indication of the dimming control technology (if applicable). <p>The information should be included in the luminaire and, where possible, also in a part of the light pole that is accessible from ground level. The tenderer should specify how exactly this information will be displayed (e.g. on a label with a QR code, a label with written information or a metal plate with engravings).</p>
	<p>Verification: The tenderer shall provide a sample description of the label they propose to provide with their lighting equipment if their tender is successful.</p>
3.3	Award Criteria (to be included when BPQR is utilised)
	<p>Extended Warranty (Applies to TS: Product lifetime, spare parts and warranty.)</p> <p>A maximum of X points shall be awarded to tenderers that are willing to provide initial warranties that go beyond the minimum warranty periods stated in TS12 and whose cost is already included in the bid price. Points shall be awarded in proportion to how long the warranty exceeds the minimum requirements, as follows:</p>

- Minimum + 1 year: 0.2X points
- Minimum + 2 years: 0.4X points
- Minimum + 3 years: 0.6X points
- Minimum + 4 years: 0.8X points
- Minimum + 5 years or more: X points

Tenderers may also optionally provide quotations for extended warranties that are not included in the bid price, although points shall not be awarded for this. In such cases, no payment for any extended warranty will be required until the final year of the initial warranty, after which the procurer will make annual payments to the successful tenderer at the beginning of each year of the extended warranty. Furthermore, the procurer will have the option to initiate or reject the offer of an extended warranty right up until the final year of the initial warranty; the costs of the extended warranty will be those initially proposed, plus inflation.

TRAFFIC SIGNALS

TRAFFIC SIGNALS	
4.1	Subject Matter (suggestion on how to draft the tender title)
	Purchase of durable traffic signals
4.2	Technical Specification (to be included in the terms of reference / technical specifications)
	<p>Life cycle cost (LCC)</p> <p>The life cycle cost shall be calculated based on the specifications set by the procurer, which should include:</p> <ul style="list-style-type: none"> • the timeframe (e.g. 8 years); • an inventory of the traffic signals required (e.g. red ball signals, amber ball signals, green ball signals, green arrow signals, pedestrian stop signals and pedestrian go signals); • the average duty cycle of each traffic signal (e.g. red signal 55 %, amber signal 2 %, green signal 43 %); and • the electricity rate (e.g. EUR 0.12/kWh). <p>The tenderer shall provide the following details in order to complete the life cycle cost assessment:</p> <ul style="list-style-type: none"> • the period of time that bulbs are covered by warranty for abrupt failure; • the rated lifetime of the lamp (i.e. the time when lamp lumen output is expected to fall to 70 % of the original output); • the purchase cost for lamps (both at the beginning and for any necessary replacement during the defined timeframe); • the purchase cost for any ancillaries; • the purchase cost for any poles, foundations and new electrical connections; and • the installation cost (hours of labour multiplied by labour rates, plus any costs for lifting equipment, etc.).
Verification:	The procurer shall provide the tenderers with a common spreadsheet-based life cycle cost calculator in which the information required from the procurer has already been entered. The tenderer shall submit a copy of the completed spreadsheet, together with a declaration confirming that these costs are valid at least for a defined period covering the original timescale planned for the execution of the contract after selection of the successful tenderer.
	<p>Product lifetime, spare parts and warranty</p> <p>(The thresholds defined here are applicable to LED-based light sources, lamps and luminaires.) Any LED-based light sources shall have a rated life at 25° C of:</p> <ul style="list-style-type: none"> • L96 at 6 000 hours, • L70 at 50 000 hours (projected), • L0C0 at 3 000 hours or C10 at 6 000 hours, • C50 at 50 000 hours (projected). <p>The repair or provision of relevant replacement parts of LED modules suffering abrupt failure shall be covered by a warranty for a period of 5 years from the date of installation.</p>
Verification:	Test data regarding the maintained lumen output of the light sources shall be provided by an International Laboratory Accreditation Cooperation accredited laboratory that meets IES LM-80 for actual data and IES TM21 for projected data. The tenderer shall provide a copy of the minimum 5-year warranty to be signed if the tender is successful. The contractor shall provide a copy of the warranty that will apply if the tender is successful and provide the necessary contact details (phone and email as a minimum) for dealing with any related queries or potential claims. For clarity, the warranty shall, as a minimum, cover the repair or replacement costs of faulty LED module parts within a reasonable timeframe after notification of the fault (to be defined by the procurer in the ITT), either directly or via other nominated agents. Replacement parts should be the same as the originals, but if this is not possible, equivalent spare parts that perform the same function to the same or to a higher performance level may be used. The warranty shall not cover the following: <ul style="list-style-type: none"> a) faulty operation due to vandalism, accidents or other extreme weather events; b) lamps or luminaires that have been working for a significant time under abnormal conditions (e.g. used with the wrong line voltage), insofar as this can be proven by the contractor.

4.3	Award Criteria (to be included when BPQR is utilised)	
	<p>Lowest life cycle cost</p> <p>A maximum of X points shall be awarded to the tenderer whose proposal is shown to have the lowest life cycle cost. Points shall be awarded to other tenderers in proportion to how their life cycle cost compares to the lowest cost using the following formula:</p> <p><i>Points awarded to tender A = X x (Lowest LCC of all tenders/ LCC of tender A)</i></p>	
	Verification:	Once all tenders have been received, the procurer shall be able to determine which tender provides the lowest life cycle cost and use this to determine how many points should be applied to each tender.
	<p>Extended warranty</p> <p>(Applies to Product lifetime, spare parts and warranty)</p> <p>A maximum of X points shall be awarded to tenderers that are willing to provide initial warranties that go beyond the minimum warranty periods stated in TS2 and whose cost is already included in the bid price. Points shall be awarded in proportion to how long the warranty exceeds the minimum requirements, as follows:</p> <ul style="list-style-type: none"> • Minimum + 1 year: 0.2X points • Minimum + 2 years: 0.4X points • Minimum + 3 years: 0.6X points • Minimum + 4 years: 0.8X points • Minimum + 5 years or more: X points <p>Tenderers may also optionally provide quotations for extended warranties that are not included in the bid price, although points shall not be awarded for this. In such cases, no payment for any extended warranty will be required until the final year of the initial warranty, after which the procurer will make annual payments to the successful tenderer at the beginning of each year of the extended warranty. Furthermore, the procurer will have the option to initiate or reject the offer of an extended warranty right up until the final year of the initial warranty; the costs of the extended warranty will be those initially proposed, plus inflation.</p>	
	<p>Dimming controls</p> <p>Points shall be awarded to tenderers that specify light sources and luminaires with fully functional dimming controls that are programmable to implement dimming during periods of low night-time road use intensity</p>	
	Verification:	The tenderer shall provide documentation from the manufacturer(s) of the light sources and luminaires that are proposed for use by the tenderer, showing that they are compatible with dimming controls. The documentation shall also provide a power curve of light output versus power consumption, state the maximum dimming possible and provide instructions about how to programme and re-programme the controls.