



**Environmental criteria for sustainable public
procurement of**

Public Lighting

Version 30 March 2017

1. Scope/definition

The Public Lighting product group comprises all lighting in public space. The Public Lighting product group also encompasses different types of tender, such as “design”, “design and implementation”, etc.; one public authority will invite functional tenders, which give suppliers and installation companies the freedom to submit an optimum tender, whilst another public authority will invite tenders at component level, in order to get a better grip on the system.

In some cases, public lighting can be replaced by road markings. Criteria for replacing lighting with markings and for the type of markings are not included in this document.

The starting point for all criteria in this document is retention of functionality and quality.

The following products (and their corresponding CPV codes) form part of the product group. This list of products is not exhaustive.

Products	CPV code
Street-lighting equipment	34928500-3
Lampposts	34928510-6
Street-lighting columns	34928520-9
Street lamps	34928530-2
Road lights	34993000-4
Installation of street-lighting equipment	45316110-9
Maintenance services for public-lighting installations and traffic lights	50232000-0
Street-lighting maintenance services	50232100-1
Commissioning of public lighting installations	50232110-4

This document describes the environmental criteria. Information about the other components of sustainable public procurement, such as social conditions and social return, can be found on PIANOo's website, on the specific product group page: <https://www.pianoo.nl/document/14057/productgroep-openbare-verlichting>

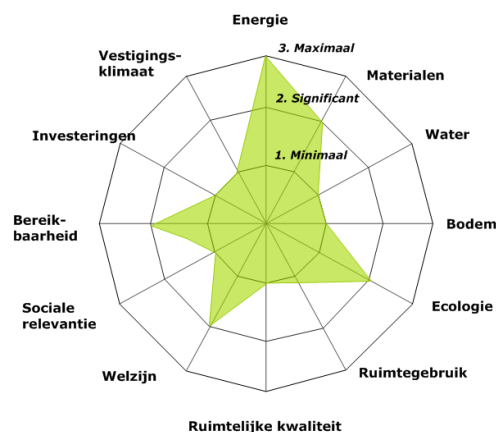
2. Criteria documents and approach to sustainable groundwork, road and hydraulic engineering

The core of the Sustainable Groundwork, Road and Hydraulic Engineering Approach is to allow sustainability aspects to be a consideration from an early planning stage on, with a focus on the whole life cycle of the infrastructure or object(s) to be built. This is the approach that facilitates the biggest gains in sustainability, and it allows a good and broad-based consideration of People, Planet and Profit to be made in every project (see also <http://duurzaamgww.nl/>).

The AmbitionWeb has a key role in the Sustainable Groundwork, Road and Hydraulic Engineering Approach. It helps clarify ambitions at an early stage of a project, so they can be maintained throughout the entire project process. For more information about the Sustainable Groundwork, Road and Hydraulic Engineering Approach and AmbitionWeb, see <http://www.duurzaamgww.nl/ambitieweb>.

The AmbitionWeb revolves around a number of sustainability themes, each with three ambition levels:

1. insight into the biggest impactors and flows for the theme in question, with the achievement of a minimum level, "state of the art";
2. drafting specific reduction targets and achieving a significant improvement on the theme in question;
3. adding value, instead of just making things "less bad". Not only is the impact on people/planet/profit zero, but a positive contribution is made.



Part of level 1 is meeting the suitability requirements, minimum requirements and contract provisions of the Sustainable Procurement criteria documents. The award criteria may be used to make a contribution to levels 2 and 3.

The following table presents the themes, based on the classification used in the criteria documents, on which the buyer can have an impact by using the requirements and criteria in this criteria document. It should be noted that a slightly different classification is used in the AmbitionWeb.

Below is a list of the requirements and criteria broken down by the individual themes. The criteria documents identify a total of five themes (the corresponding theme from the AmbitionWeb is shown in brackets):

- energy and climate (AmbitionWeb: "energy");
- supplies and raw materials (AmbitionWeb: "supplies");
- water and soil (AmbitionWeb: "water" and "soil");
- living environment (AmbitionWeb: "welfare");
- nature and space (AmbitionWeb: "ecology").

The following table presents the themes on which the buyer can actually have an impact by using the requirements and criteria in this criteria document.

Themes	Level 1 AmbitionWeb Selection criterion (SC) Technical specifications (ME) Contract provisions (CB)	Level 2 AmbitionWeb Award criteria (GC)
Energy and climate	ME1. LED lighting ME2. Service life of LED lighting	GC1. Energy-saving public lighting system

	ME3. Dimmable lighting	
<i>Supplies and raw materials</i>		GC2. Materials used to make the public lighting system
<i>Nature and space</i>	ME4. Limit light nuisance	

3. Assignment of criteria to project phases

Criterion	Scope	New construction and reconstruction/ Management and maintenance of existing systems		
		Initiative, Design	Initiative, Design and Completion	Implementation
Technical specifications				
1. LED lighting		x	x	x
2. Service life of LED lighting		x	x	x
3. Dimmable lighting		x	x	x
4. Limit light nuisance		x	x	x
Award criteria				
1. Energy-saving public lighting system		o	o	o
2. Materials used to make the public lighting system		o	o	o

The criteria in this document pertain to the initiative behind and design and completion of new construction and reconstruction of systems and to the management and maintenance of existing systems. In the following table, the criteria are assigned to the individual phases to which they apply.

x = apply in this phase

- = do not apply in this phase

o = optional

Mobile vehicles

The environmental criteria for Sustainable Public Procurement of Mobile Equipment Contracting apply to any mobile vehicles used.

4. Selection criteria

Not defined for this product group.

5. Technical specifications

No.	Technical specifications (ME)
ME1	<p>LED lighting</p> <p>The use of LED lighting is the starting point in new situations and in the case of replacements or refurbishments in existing situations.</p> <p><i>Explanatory note</i></p> <p>—</p> <p><i>Verification</i></p> <p>—</p>

ME2	<p>Service life of LED lighting</p> <p>The following requirements apply to LED lighting:</p> <ul style="list-style-type: none"> • LED systems used must meet the following specifications: L80F10 (Lx Fy value), Tq 25⁰C with a service life greater than or equal to 80,000 hours. • The maximum current flow through the LEDs may not exceed 500 mA in order to ensure light output in the longer term. <p><i>Explanatory note</i></p> <p>The light output of the LED system relative to the new value must be greater than 80% (L value) at the end of its service life, in line with the IEC/PAS 62722-2-1 standard. The maximum failure rate is 10% (F value).</p> <p>The Tq value of the LED system (the maximum operating temperature specified by the manufacturer) has a reference temperature of 25 degrees Celsius. The greater the current flowing through the LED, the higher its temperature will be. This will also make it age faster and will result in a reduction of light output.</p> <p>To ensure the service life and functioning of the LED system, the device is designed to guarantee a heat balance. The use of dynamic aids such as, for example, built-in ventilators is not permitted.</p> <p>With LED systems, it is possible to start the initial current at 80% and to allow the current to increase throughout the service life in order to keep the light output at a constant level (Constant Light Output, CLO). As a result, the energy consumption of the luminaire will increase during the useful life. Owing to the increase in energy consumption, it is preferable to avoid use of what are known as CLO systems.</p> <p><i>Verification</i></p> <p>The tenderer may be asked to submit documentation demonstrating compliance with the above requirements.</p> <p>The driver is often the weakest link in a light system. In addition to the foregoing, the tenderer may be asked to supply documentation predicting the driver's service life. This documentation may be based on HALT testing (Highly Accelerated Life Testing) or comparable methods.</p> <p>The conditions under which the HALT test is carried out must, as a minimum, include the following:</p> <ul style="list-style-type: none"> • Tc temperature measured under the stated Ta or Tq temperature of at least 25 °C; • expected service life in h; • at least 15,000 instances where the light is switched on and switched off throughout the service life.
ME3	<p>Dimmable lighting</p> <p>A. Where new public lighting systems are installed and lamps and luminaires of existing public lighting systems on thoroughfares are replaced in their entirety: The public lighting system must be dimmable.</p> <p>B. Where new public lighting systems are installed and lamps and luminaires of public lighting systems in residential areas are replaced in their entirety: The public lighting system must be designed in a way that allows lights to be dimmed. The purchaser may depart from this requirement if dimmable lighting is undesirable for cost considerations.</p> <p><i>Explanatory note</i></p> <p>Controlled lighting meets this requirement as well.</p> <p><i>Verification</i></p> <p>The tenderer may be asked to submit documentation demonstrating compliance with the above requirements.</p>
ME4	<p>Limit light nuisance</p> <p>The light emitted by the public lighting system must fall within the limit values set out in the 2015 Light Nuisance Guideline of the NSVV, the Dutch foundation for illumination.</p> <p><i>Explanatory note</i></p> <p>The light nuisance guideline provides limit values for light emission. Light nuisance concerns the nuisance caused to humans, plants or animals as a result of the light emitted by public lighting</p>

	<p>systems. The 2015 Light Nuisance Guideline may be found on the NSVV website: http://www.nsvv.nl/publicaties/richtlijn-lichthinder/.</p> <p><i>Verification</i> The tenderer may be asked to submit documents demonstrating how it determined the light nuisance level. The light nuisance level must be determined on the basis of the NSVV's 2015 Light Nuisance Guideline.</p>
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6. Award criteria

No.	Award criteria (GC)
GC1	<p>Energy-saving public lighting system</p> <p>The more the energy-saving level [<i>specify the target of the invitation here; for example, a public lighting system or a light source plus luminaire, etc.</i>] exceeds [X], the higher the tender will be rated.</p> <p>The assessment will be based on the energy consumption in the use phase, expressed in kWh/year.</p> <p><i>Explanatory note</i> The contracting authority will itself specify the reference value [X]. For example, in the case of replacements in an existing situation, a 20% decrease in energy consumption for the replacement part or the entire system can be used as a reference.</p> <p><i>Verification</i> The tenderer may be asked to submit documentation demonstrating how the abovementioned criterion is met.</p>
GC2	<p>Materials used to make the public lighting system</p> <p>The tenders will be assessed on the basis of the following:</p> <ul style="list-style-type: none"> • Tenders will be rated higher if more of the public lighting system is made of recycled or renewable materials. This will be determined based on percentage by weight. • The easier it is to dismantle the parts of the public lighting system and to recycle any plastic parts, the higher this component of the tender will be rated: <ul style="list-style-type: none"> ○ The connections are easy to find, accessible using commonly used tools and, where possible, standardised. ○ Plastic parts with a weight greater than or equal to 25 g and a surface available for marking of at least 2 cm² are visibly marked for the purposes of identification, as described in ISO 11469:2016, ISO 1043 or an equivalent standard. ○ Plastic parts consist of a single polymer or compatible polymers. <p><i>Explanatory note</i> Materials that are inexhaustible and can be regenerated repeatedly are considered renewable. Renewable materials may be bio-based materials, such as bioplastics obtained from sources such as sugar or corn flour.</p> <p>Recycled materials refers to waste materials that, after processing, are again made suitable for useful applications, such as products, materials or substances, whether for the original purpose or for another purpose.</p> <p>It must be possible to disassemble the system without damaging the parts.</p> <p><i>Verification</i> The tenderer may be asked to specify and supply such data. The tenderer may be asked to submit a test report containing details of how to disassemble the public lighting system.</p>

7. Contract provisions

Not defined for this product group.