



Environment and Spatial Planning  
*Ministry of Housing, Spatial Planning and  
the Environment*

# Criteria for the Sustainable Public Procurement of **Water Purification and Sludge Treatment Plants (including purchase of chemicals)**

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# 1 Introduction

The Dutch government wants to take concrete steps towards a sustainable society, and to set a good example. Each year, government organisations spend more than EUR 50 billion on the purchase of Supplies, Services and Public works. By purchasing sustainably, the government can significantly boost the market for Sustainable Public Products. Governmental authorities have set clear objectives to achieve this: the central government is aiming for 100% Sustainable Public Procurement in 2010, while the municipalities aspire towards 75% in 2010 and 100% in 2015. Provincial governments and water boards have set themselves the target of at least 50% in 2010. 100% Sustainable Public Procurement is understood to mean that all purchases meet the minimum requirements that have been set for the relevant product groups at the time of purchase. More information on this topic is available from the website Sustainable Procurement ([www.agentschapnl.nl/sustainableprocurement](http://www.agentschapnl.nl/sustainableprocurement)).

NL Agency supports government authorities in various ways to help reach these objectives. These include developing criteria for Supplies, Services and Public works procured by these authorities. This document focuses on the criteria for the Water Purification and Sludge Treatment Plants product group, the elaboration of the criteria in specification texts and a more detailed assessment of the criteria, as well as a number of points for attention in the pre- and post-procurement stages. Additional background information and considerations regarding the content of the criteria can be found in the criteria document on the website Sustainable Procurement [www.agentschapnl.nl/duurzaaminkopen/criteria](http://www.agentschapnl.nl/duurzaaminkopen/criteria), available in Dutch only.

## Potential

Almost all investments in the civil engineering sector are government investments. Government is thus a dominant player in this sector and has a great potential to influence the market. For the entire main group Civil Engineering (in Dutch, GWW), the annual purchasing volume is estimated at between 4.5 and 8 billion euros.

## 1.1 Definition of the product group

The product group Water Purification and Sludge Treatment Plants includes the procurement of works, services and supplies for the purposes of water purification and sludge treatment.

Table 1.1 Definition of the product group Water Purification and Sludge Treatment Plants

Main group	Subgroups
Sewage purification plants (urban waste water) and Industrial waste water treatment plants (purification of waste water within depots and establishments for dredging spoil treatment).	Subprocesses (removal of primary sludge, aerobic components, eutrophying components, suspended matter and purification sludge); Industrial buildings (mainly to house equipment).
Sludge treatment (ST).	Subprocesses (consolidation, fermentation, dewatering, transport, further treatment and final processing of purification sludge); Industrial buildings (mainly to house equipment).
Chemicals within Water purification and Sludge treatment plants.	Metallic compounds (Al and Fe salts, Fe hydroxide); Polyelectrolytes;

	Lime products (calcium compounds); Hypochlorite; Caustic; C sources.
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Water purification plants (WPPs) for urban waste water come within the responsibility of the water boards. These are generally biological purification plants, whether or not supplemented by physical chemical subprocesses. Industrial water purification plants generally come within the responsibility of private companies. Industrial WPPs are only relevant within the context of sustainable procurement if they come within the responsibility of government. This mainly concerns the physical chemical treatment of waste water (returned water) from large-scale (responsibility of the Directorate-General for Public Works and Water Management) and small-scale (responsibility of the water boards) depots and establishments for the treatment of dredging spoil.

Treatment of the sludge from plants for urban waste water takes place partly within the WPP and partly at companies. These are both private companies and companies dominated by government. The sludge from industrial waste water treatment plants is treated mainly at private companies.

For the benefit of the contracting authority, a number of CPV codes that might be of relevance to this product group have been included in this document. The selection is by no means exhaustive or complete. The contracting authority will remain responsible for compiling the correct set of CPV codes to match the relevant tender.

Table 1.2 CPV codes which apply to this product group

Part	CPV codes	Description
<i>Design and consultation on new works and reconstruction</i>		
Construction of new works and reconstruction	45232410-9	Water purification works.
	45232420-2	Construction works for sewage purification plants.
	45232421-9	Sewage treatment plant.
	45232422-6	Sludge treatment plant.
	45245000-6	Dredging and pumping works for water purification plants.
	45252000-8	Construction works for sewage treatment plants, purification plants and refuse incineration plants.
	45252120-5	Water treatment plant construction work.
	45252121-2	Sedimentation installations.
	45252122-9	Sewage digesters.
	45252123-6	Screening installations.
	45252100-9	Sewage treatment plant construction work.
	45252140-1	Sludge dewatering plant construction work.
	45252210-3	Water purification plant construction work.
	45252126-7	Drinking water treatment plant construction work.
	45252127-4	Waste water treatment plant construction work.

<b>Part</b>	<b>CPV codes</b>	<b>Description</b>
	45252130-8	Sewage plant equipment.
	45252200-0	Purification plant equipment.
	45252140-1	Sludge dewatering plant construction work.
	34951200-0	Sludge treatment equipment.
<i>Design and consultancy on management and maintenance</i>		
Implementation of management and maintenance	65120000-0	Operation of a water purification plant.
	90481000-2	Operation of a waste water purification plant.
Demolition	45111100-9	Demolition activities.
<i>Purchase of chemicals, salt, polymers</i>		
	24300000-7	Basic inorganic and organic chemicals.
	24900000-3	Fine and various chemical products.

## 2 Sustainability in the procurement process

The criteria in this document have been classified in the various steps of the public procurement process. More information about these steps and how to combine them with sustainability can be found in the Sustainable Public Procurement Manual. This manual can be downloaded from the website Sustainable Procurement [www.agentschapnl.nl/sustainableprocurement](http://www.agentschapnl.nl/sustainableprocurement).

### The government as principal

Tendering takes place on the basis of lowest price or on the basis of economically most advantageous tender (in Dutch, EMVI). The possibility to submit variants (design, installations, subprocesses) is also known. Both conventional and functional specifications are used.

This document has been prepared to support the procurer in sustainable procurement. For considering decisions for specifications, design specifications and calls for tender it has been attempted to provide points for consideration and criteria for the product group Water Purification Plants and Sludge Treatment (WPP and ST). This concerns selection criteria (for a specification and/or an award) and minimum requirements. These criteria demand more detailing from the principal, particularly with regard to the project- and location-specific circumstances. The procurer is of course free to formulate the award criteria in such a way that they are included as minimum requirements in the tendering document.

### 2.1 Preparatory stage (points for consideration)

Every purchase or call for tender starts with drawing up the inventory of the needs of the internal or external customer. Sustainability can be incorporated into this stage by considering whether the purchase is truly necessary and whether a more sustainable alternative might be available. Specific points for consideration regarding procurement for the Water Purification and Sludge Treatment Plants product group are:

#### From policy to initiative

Very often a call for tender is the consequence of a – sometimes protracted – preparation from policy to initiative to call for tender. After a policy-related decision is made to tackle a problem, the choice must then be made with respect to the question of how to solve the problem. This last either in combination or not with measures at other purification plants within the area of cover. The outcome may for example be totally new building, extension or the implementation of modifications. Of course matters like the necessary capacity, the (changes to) the required purification effectiveness and new insights in technical development play important roles in this. The choices made during this early stage have a great impact on feasible sustainability. The purchaser often has no influence on these choices. While those involved in the preparation, including the designer, have all the more. The realisation of sustainable projects thus begins with the inclusion of sustainability in the preparation (the design stage) and not only when works are offered to the market.

The inclusion of sustainability in the preparation of projects is not (yet) usual practice and demands additional policy from the government bodies concerned. It may thus be necessary to formulate additional (internal) policy to provide direction to the consideration and the making of choices. By involving sustainability in an explicit way at all stages, sustainable calls for tender gain more content and a sustainable realisation at a higher level becomes possible. This is not detailed further in this document.

#### Communication with the market

In complex projects, a contracting authority may opt to enter into discussion with market parties during prequalification. The discussion may be directed at gaining more insight into the

feasibility of ambitions and solution directions. This communication, into which sustainability may be brought, may for example take the form of a market consultation or a competition-oriented dialogue.

#### Sustainability in the preparatory stage

In considering possible solutions for a problem, different alternatives may be lined up together and mutually compared on sustainability aspects. For example:

1. Under the specific circumstances of the purification plant concerned, is point aeration better or worse than bubble aeration?
2. Is it better or worse to carry out the sludge treatment wholly on the site concerned (up to and including fermentation), or only to the stage of dewatering followed by transport away for treatment elsewhere?
3. Is it better or worse, site-specifically, to use screen belt presses or centrifuges?

For making decisions about activities of greater extent it is sometimes obligatory to prepare an Environmental impact assessment. For this, a Start memorandum is prepared. Described in the Start memorandum are the environmental aspects which will be investigated in the environmental impact assessment (EIA, in Dutch MER). For the assessment of alternatives and variants it is sensible to include sustainability in the Start memorandum.

It is characteristic in process design for water purification plants and sludge treatment that a unique project is involved site-specifically. This means that it is not possible to formulate straightforward criteria, which apply to all circumstances, in terms of process steps.

A practical way to achieve sustainable consideration is to assess variants, preferably against a reference design. It is not feasible to make a reference design for every specific situation. It is also impossible to make an objective comparison in advance of the value of existing and/or new (introduced by the tenderer) variants. This means that the principal itself, during the design phase of the project, must decide which of the sustainability aspects listed in section 2.4 should be involved in the comparison of variants and how the assessment should be done.

The approach followed may be:

- Stipulate in the commission description that a justified comparison must be done in the process design of the applicability of 'state of the art' based on the sustainability aspects listed by the principal. By 'state of the art' may be understood: those measures which may be applied successfully in a modern and financially-healthy establishment within the sector. This concerns measures which are already used in establishments nationally and abroad. Or in accordance with the technological rules from other processes, or based on demonstration projects, successfully conducted on an operational scale, which can be applied. The summary given in appendix 3 can be used in this as a non-exhaustive checklist. Besides the techniques listed in the call for tender by the principal, variants suggested by the tenderer must also be permitted. In assessment based on 'expert judgement', extra recognition can be given to this own initiative;
- Stipulate in the commission description that, for the final variant selection of the process design, the sustainability aspects listed in section 2.4 will determine the outcome to an important to decisive extent (50 - 70%). This will be achieved through the choice of weighting factors in a multivariant analysis to be conducted.

In the preparatory stage it is not yet a matter of sustainable procurement. The commission description should however be formulated in such a way that the commission subsequently to be offered to the market will be assessed on sustainability. This approach demands that at an early stage, even before the formal start of the procurement phase, the sustainability aspects of the project are considered within the procuring organisation. As already discussed: it is desirable that the (sustainable) purchaser is already involved in the project at this early stage.

## 2.2 Specification stage (criteria)

During the specification stage, the needs of the internal or external customer are translated into a tender document. This stage entails the formulation of:

- Criteria for supplier qualification. These could include grounds for exclusion, suitability requirements, i.e. requirements with regard to suppliers, and, in the case of restricted procedures, any selection criteria, i.e. wishes with regard to suppliers.
- A description of the minimum requirements pertaining to supply, service or task (the Schedule of Requirements).
- Award criteria, i.e. wishes regarding Supplies, Services and Public works. These are only applicable when the tendering process is based on the principle of the Most Economically Advantageous Offer.
- The contract stipulating the contract provisions.

More information on the various types of criteria and the various tender options can be found in the Sustainable Public Procurement Manual. Innovation is also included in the award criteria, where relevant. Innovation is oriented towards the development and introduction of new ideas and products.

The criteria in this document have been formulated to support the purchaser in the Sustainable Public Procurement of Water Purification and Sludge Treatment Plants. The criteria have been subjected to legal review. However, every procurement and tender process is unique. For that reason, the drafting of a tender document remains the responsibility of the purchaser.

### Overview of criteria

The table below gives an overview of the points for consideration and criteria formulated for sustainable procurement in the product group Water Purification and Sludge Treatment Plants.

Table 3.1 Overview of points for consideration, minimum requirements, award criteria and contract provisions

<i>Criterion</i>	<i>Design stage</i>	<i>Construction</i>	<i>Utilisation stage</i>	<i>Maintenance and replacement</i>	<i>Demolition</i>
<b><i>WPP &amp; ST minimum requirements</i></b>					
1 Ecotoxicity of chemicals			X		
2 Processing/removal of stony substances				X	X
<b><i>Award criteria</i></b>					
1 Energy usage	O	O	O	O	
2 Priority substances in chemicals			O		
3 Recovery of phosphate	O	O	O	O	
<b><i>Contract provision</i></b>					
1 Management and maintenance plan		X		X	

O = optional

X = mandatory

Design services are often subcontracted, but are also frequently carried out within the own organisation, whether or not in collaboration with external parties. If a design is (partly) prepared within the service itself, then the requirements and desires included in this document may be used as guidelines in order to realise sustainable works internally, also without external procurement.

## 2.2.1 Supplier qualifications

No criteria have been formulated for this specific product group with regard to supplier qualification. More information on the possibilities of incorporating sustainability at this stage of nevertheless incorporating sustainability at this stage can be found in the Sustainable Public Procurement Manual.

## 2.2.2 Schedule of requirements

### Minimum requirements

<p>Minimum requirement no. 1</p>	<p><b>Ecotoxicity of chemicals</b> <i>(for purchase during the utilisation stage)</i></p> <p>The chemicals to be used to which the GAM (general assessment method) classification is applicable, must comply with GAM class B or C.</p> <p><u>Means of proof:</u></p> <ol style="list-style-type: none"> <li>1. Declaration from the tenderer that he complies with this requirement.</li> <li>2. List of the chemicals to be used according to the GAM system [Assessment of substances and preparations within the context of the implementation of the water discharge policy, CIW-4, 2000-05].</li> </ol>
<p>Notes for purchaser</p>	<p>In order to use sustainable chemicals, the contracting authority must, during the preparatory stage, take account of the suitability of the plant. No separate criterion is included for this.</p> <p>A 'desirable clean-up effort' (A, B or C) is linked to each GAM class:</p> <p>The clean-up effort indicates the level of effort which must be expended to reduce the discharge of the substance. According to the national water quality policy, three levels are distinguished for clean-up efforts:</p> <ol style="list-style-type: none"> <li>A. Substances labelled problematic to water, linked with clean-up effort: terminate contamination.</li> <li>B. Substances labelled problematic to water, linked with clean-up effort: prevent discharge as far as possible.</li> <li>C. Limited number of other relatively innocuous substances (such as sulphate, carbonate and chloride): prevent as far as possible waste ending up in waste water (good</li> </ol>

	<p>housekeeping).</p> <p>The GAM employs the exotoxicity parameters and criteria in European legislation regarding the classification of substances and preparations (Substances directive 67/548/EEC). The procedure is also linked to European legislation.</p> <p>The contracting authority must inventory in advance the chemicals for which there are alternatives available and the chemicals to which the GAM classification is applicable, such as is the case for poly-electrolyte for example. More information about the GAM classification may be found in the report 'Assessment of substances and preparations within the context of the implementation of the water discharge policy' from the Integrated Water Management Committee ('CIW'):  <a href="http://www.helpdeskwater.nl/asp/download.aspx?File=/publish/pages/575/ciw42000-05beoordeling_stoffen_en_preparaten.pdf">www.helpdeskwater.nl/asp/download.aspx?File=/publish/pages/575/ciw42000-05beoordeling_stoffen_en_preparaten.pdf</a></p> <p>It is not yet clear at this moment whether this requirement can be enforced for metallic salts (separate from any contamination with heavy metals) and for a comparison between Al and Fe salts, between chlorides and sulphates, and whether for secondary Al, Fe or C sources, analyses according to the GAM system are available. It is not desirable that the criterion raises a threshold against the use of secondary sources. At the time of the call for tender, the contracting authority must itself determine for which chemicals the requirement can be stipulated.</p> <p><u>Verification of means of proof:</u></p> <ol style="list-style-type: none"> <li>1. The provision of the supporting document with the tender.</li> <li>2. No further verification.</li> </ol>
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<p>Minimum requirement no. 2</p>	<p><b>Processing/removal of stony substances</b>  <i>(for maintenance and replacement and demolition)</i></p> <p>If stony substances are broken up, the breaking must take place according to BRL 2506.</p> <p><u>Means of proof:</u></p> <ol style="list-style-type: none"> <li>1. Declaration from the tenderer that he complies with this technical minimum requirement.</li> <li>2. A description of the means by which the tenderer complies with this requirement. If the tenderer or subcontractor possesses a KOMO product certificate 'BRL 2506 <i>beton en/of menggranulaat</i>' (concrete and/or mixed granulate) in the name of the tenderer or subcontractor, this requirement is fulfilled.</li> </ol>
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Notes for purchaser	<p><u>Verification of means of proof:</u></p> <ol style="list-style-type: none"> <li>1. A description of the way in which the granulate is processed, from which can be deduced whether this conforms to BRL 2506 concrete and/or mixed granulate.</li> <li>2. A statement from the entity processing the granulate. And check of the certificate on <a href="http://www.bouwkwaliteit.nl">www.bouwkwaliteit.nl</a>.</li> </ol>
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### 2.2.3 Award criteria

#### Award criteria

Award criterion no.1	<p><b>Energy usage</b></p> <p><i>(for design stage, realisation, utilisation stage, maintenance and replacement)</i></p> <p>The lower the energy usage (kWh per inhabitant-equivalent (i.e.) served) of the system or component, the higher the tender will be evaluated.</p> <p><i>(for replacement or if a reference is available)</i> The further the energy usage (kWh per i.e. served) is lower than that of the system or component to be replaced, the higher the tender will be evaluated.</p> <p>By system or component should be understood:</p> <ul style="list-style-type: none"> <li>- ....</li> <li>- ....</li> </ul> <p>The tender will be evaluated as follows: &lt;to be completed further by the contracting authority&gt;.</p> <p><u>Means of proof:</u></p> <ol style="list-style-type: none"> <li>1. Statement of the technologies used and the energy calculations by the tenderer, based on calculations, model research and/or experience.</li> </ol>
Notes for purchaser	<p>The contracting authority must fill in here what components of the water purification and/or sludge treatment plant are included in this tender, such as the aeration or the dewatering.</p> <p>The contracting authority may use the energy usage of the system to be replaced as reference for the assessment of this criterion. The best available technology applies as starting point for the energy usage of a new system or component. By 'best available technology' is meant here: 'the best available energy-saving technology and best energy-saving design solutions which can be used within current risk and reliability parameters'. A list is available for this (see Appendix 3) which has been drafted in the context of the Multi-Year Energy Efficiency Agreements ('MJA-3') as best available technology.</p>

	<p><u>Verification of means of proof:</u></p> <ol style="list-style-type: none"> <li>1. Check of the calculations for completeness, trustworthiness and reality content.</li> </ol>
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Award criterion no.2	<p><b>Priority substances in chemicals</b> <i>(for purchase during the utilisation stage)</i></p> <p>The lower the content of priority substances in the chemicals to be used, the higher the tender will be evaluated.</p> <p>The tender will be evaluated as follows &lt;...&gt;</p> <p><u>Means of proof:</u></p> <ol style="list-style-type: none"> <li>1. A list of the chemicals to be used and the associated analysis certificates. The analysis certificates must be issued by a laboratory which is certified to carry out the analyses concerned, accredited by a member of the European Accreditation cooperative (EA).</li> </ol>
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Notes for purchaser	<p>If upper limits are known (which is sometimes the case in a licence), the values may be related to the upper limits in the licence.</p> <p>Cumulative (normalised) contents of priority substances <i>or</i> values for certain selected substances may also be used in the evaluation.</p> <p>For supply over a longer period and/or as multiple consignments, a bonus/penalty clause may be included in the contract based on the check analyses carried out during the contract. A priority list is available in the context of the WFD, see for example: <a href="http://www.vrom.nl/pagina.html?id=2706&amp;sp=2&amp;dn=7093">http://www.vrom.nl/pagina.html?id=2706&amp;sp=2&amp;dn=7093</a> and <a href="http://www.vrom.nl/pagina.html?id=2706&amp;sp=2&amp;dn=w884">http://www.vrom.nl/pagina.html?id=2706&amp;sp=2&amp;dn=w884</a></p> <p>It is recommended to request an analysis only for the most critical priority substances, such as Cu, Ni, Pb, Cd, Cr, Zn and Hg.</p> <p><u>Verification of means of proof:</u></p> <ol style="list-style-type: none"> <li>1. Check analysis before the award, check analyses during the contract.</li> </ol>
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Award criterion no.3	<p><b>Recovery of phosphate</b> <i>(for design stage, realisation, utilisation stage, maintenance and replacement)</i></p> <p>The more phosphate (kg) is recovered in the waste water purification and/or sludge treatment, the higher the tender will be evaluated.</p> <p>The tender will be evaluated as follows &lt;...&gt;</p>
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	<p><u>Means of proof:</u></p> <ol style="list-style-type: none"> <li>1. Declaration from the tenderer that he complies with this criterion</li> </ol>
Notes for purchaser	<p>There are different methods of recovering phosphate, in which the ultimate objective is to recover as much of this substance as possible:</p> <ol style="list-style-type: none"> <li>1) after the final processing, ash residue and purification sludge may be used as replacement for phosphate ore.</li> <li>2) there are possibilities to produce phosphate-containing salts (for example struvite) in a sewage works. These salts may be used as fertiliser under certain conditions.</li> </ol> <p><u>Verification of means of proof:</u></p> <ol style="list-style-type: none"> <li>1. No further verification.</li> </ol>

## 2.2.4 Contract

### Contract provisions

Contract provision No.1	<p><b>Management and maintenance plan</b></p> <p>On handover of the project, a management and maintenance plan must be provided, in which the extent of the maintenance measures to be implemented and an estimate of the associated costs during &lt;X&gt; years are shown.</p> <p>The management and maintenance plan should consist in any case of the following sections:</p> <ul style="list-style-type: none"> <li>• description of the materials used.</li> <li>• description of the inspection intervals to be observed during &lt;X&gt; years of the project, with associated instructions (at least a description of inspection points, methods).</li> <li>• description of the maintenance intervals to be observed during &lt;X&gt; years of the project, with associated instructions (at least a description of maintenance activities and description of necessary materials).</li> </ul>
Notes for purchaser	<p>The underlying objective of the management and maintenance plan is to achieve efficient and sustainable maintenance and management of the project and to obtain sufficient information about the materials finally used, so that this too is usable for reconstruction or demolition and the associated temporary functional loss and maintenance costs. Depending on the contract (a part of) this plan may also be completed by the contracting authority itself. The plan is also ultimately intended to allow the planning of activities to be better harmonised with each other.</p> <p>The contracting authority must itself assess to what extent this condition is applicable to all projects and when this is disproportionate with respect to the size of the commission.</p>

	<p>If a change takes place during the [X] years such that a new management and maintenance plan is necessary, separate agreements must be made with the tenderer for this. Provisions for this may also be laid down in the contract.</p> <p>It is recommended to have a maintenance interval form part of the contract.</p>
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## 2.3 Utilisation stage (points for consideration)

Once the procurement stage has been concluded and a product or service has been purchased, there are opportunities for using the product in a sustainable manner.

No specific points for consideration have been formulated for the utilisation stage for this product group.