Ministerie van Infrastructuur
en Waterstaat

Market consultation document

Project:

Caeli Laser

Market consultation document	
Type of Procedure	Market consultation
Client	Royal Netherlands Meteorological Institute (KNMI)
Contracting Authority	State of the Netherlands, Ministry of Infrastructure and Water Management
Version:	V1.0
Status	Final
Date	09-09-2025

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1 THE TENDER

The Contracting Authority hereby invites market participants to take part in this market consultation regarding the potential procurement of and its associated maintenance services. The purpose of this consultation is to assess the availability, capabilities, and interest of suppliers in delivering the specified product and services. This is not a call for tender, and no rights or obligations will arise from participation. The consultation is conducted electronically via the online Tender Platform TenderNed, in accordance with the principles of the Dutch Public Procurement Act of 2012. The insights gathered will support the Contracting Authority in shaping a possible future procurement strategy and ensuring alignment with market possibilities.

1.1 Contracting Authority and Client

The Contracting Authority is the State of the Netherlands, Ministry of Infrastructure and Water Management. The Tender will be carried out on behalf of Royal Netherlands Metrological Institute (KNMI).

1.2 The assignment

1.2.1 Context

The Cabauw Atmospheric Research Station requires the procurement of a laser to replace the current laser in the atmospheric Raman lidar system 'Caeli' with an external cooling system, along with the associated maintenance services.

The Caeli laser is part of a Lidar system used for the continuous and simultaneous measurement of water vapor, clouds, and aerosols, as well as temperature.

The current laser (Continuum Powerlite 9030) is now due to replacement. This concerns the acquisition of one laser, with a contract duration of 10 years. The Caeli laser requires an external cooling system to maintain the correct operating temperature. In consultation with the Ministry of Infrastructure and Water Management (IenW) and the project leader, it has been decided to tender the cooling system separately.

In addition to the laser, there is a need for a laser engineer who will provide on-site maintenance of the Caeli laser at the Cabauw Atmospheric Research Station located at **Zijdeweg 1, 3411 MH Lopik, the Netherlands**.

1.2.2 Rationale

The current laser is from 2002 and is due to replacement.

1.2.3 Objectives of the assignment

The purpose of the assignment is to procure a laser, including installation and maintenance (at the KNMI location). Given the long duration of the contract, there is a significant risk of component wear.

1.3 Desired situation after award: outline of the future situation

Following the award of the contract, the Caeli laser system, including its external cooling unit, will be successfully installed and fully operational at the Cabauw station. The laser will be integrated

into the existing Lidar system to enable continuous and simultaneous measurement of water vapor, clouds, and aerosols and temperature. A qualified laser engineer will be available to provide regular on-site maintenance, ensuring optimal performance and longevity of the system throughout the 10-year contract period.

2 MARKET CONSULTATION AND PROCEDUREL PROVISIONS

2.1 Purpose of the Market Consultation

Based on discussions with the KNMI project leader, it has become clear that there is insufficient clarity regarding which suppliers can meet the specified requirements for the laser. A market consultation will be conducted to investigate whether one or more suitable suppliers exist who can meet KNMI's needs. The results of this market consultation will determine whether a European public procurement procedure is feasible, or whether technical dependency prevents effective competition.

2.2 Procedure of the market consultation

The market consultation will be published on TenderNed, allowing even previously unknown suppliers the opportunity to respond. All interested parties will have the possibility to submit questions.

The responses will be documented in a report. Based on the number and content of these responses, insight will be gained into the number of potential suppliers that meet the requirements. This will help determine which procurement procedure is most appropriate whether a European public tender is feasible or whether technical dependencies limit competition.

All communication during this selection phase will take place via TenderNed. The contact person for this procurement is also listed in TenderNed. Only in the event of a malfunction in TenderNed may contact be made with the contact person through other means.

Name: Mr. T (Tim) van der Zande

E-mailadres: tvanderzande@sbmc.nl

In the absence of Mr. van der Zande, you may contact the following person:

Name: Ms. A. (Anouk) Suijkerbuijk

E-mailadres: suijkerbuijk.anouk@kpmg.nl

2.3 Planning

Milestone	**Deadline**
Submission of questions	16-09-2025
Answering the questions	18-09-2025
Publish NoI	18-09-2025
Deadline response	25-09-2025
Report mark consultation	29-09-2025

3 SUBSTANTIVE QUESTIONS TO THE MARKET

This section presents the questions directed to the market in order to assess the availability and feasibility of the product under consideration. The questions are designed to gather insights from potential suppliers regarding their capabilities, technical solutions, and service offerings. Responses will help determine whether the market can meet the identified needs and will inform the next steps in the procurement process. All respondents are encouraged to provide clear, detailed, and substantiated answers to support a comprehensive evaluation.

3.1.1 Sustainability & Social Return

- Does your organization hold any certifications or accreditations related to environmental sustainability, corporate social responsibility, or sustainable procurement? If so, please specify.

- How does your organization incorporate sustainability principles into the delivery of similar products or services (e.g., energy efficiency, circularity, low-emission logistics, sustainable materials)? Can you provide examples of how your organization applies social return practices in its operations (e.g., inclusive hiring, training programs for disadvantaged groups, local community engagement)?

- What opportunities do you see for integrating sustainability and/or social return requirements into a future tender for this product? Are there specific measures or KPIs you would recommend?

- Are there any limitations or risks we should be aware of when including sustainability and social return criteria in the procurement of this product?

4 PRECONDITIONS AND ASSUMPTIONS

This section outlines the key preconditions and assumptions that apply to the product under consideration in this market consultation. These elements serve to clarify the context and expectations regarding the technical, operational, and service-related aspects of the Caeli laser. They are intended to guide potential suppliers in assessing their ability to meet the identified needs and to ensure alignment in understanding the requirements. The subsections below address general assumptions as well as specific considerations related to emitter characteristics, operating and mounting requirements, control and communication interfaces, data processing capabilities, and service and warranty provisions.

4.1 General

- The laser shall be suitable for Atmospheric Raman lidar applications for water vapor, temperature, clouds, and aerosols profiling.
- The instruments shall be capable of 24/7 unattended operation for extended periods of time with an uptime exceeding 90%.
- The instrument lifetime shall be at least 10 years. Parts and consumables shall be available during 10 years after commissioning.
- The instrument shall be "low maintenance" i.e. the required frequency of replacement of components or consumables.
- The laser shall fit inside the existing Caeli lidar system without major redesign of the lidar emitter layout and configuration (see figure 1 and 2).

4.2 Mandatory Requirements

4.2.1 Emitter Characteristics

- The laser type shall be Nd:YAG, emitting 1064 nm, 532 nm and 355 nm simultaneously.
- The 1064 nm, 532 nm and 355 nm laser beams shall be emitted spatially separated (non-overlapping parallel beams). See diagram in Fig.1 and 2.
- The delivered energy per pulse at 355 nm shall be greater than 330 mJ when simultaneously emitting 1064 nm and 532 nm, and the pulse repetition rate shall be equal or greater than 30Hz, preferably 100 Hz. Note that the 330 mJ level shall be the sustainable level of the energy per pulse. The average power emitted at 355 nm shall therefore be 10W or better.
- The emitted light shall be linearly polarized with polarization ratio > 90%
- The beam divergence shall be < 0.5 mrad.
- Beam profile: Near field shall not have "hotspots" to avoid damage to the transmitting optics.

- Soft start/ramp-up power to avoid damage to optical components inside the laser and throughout the emitter chain.
- Injection seeded wavelength stabilisation

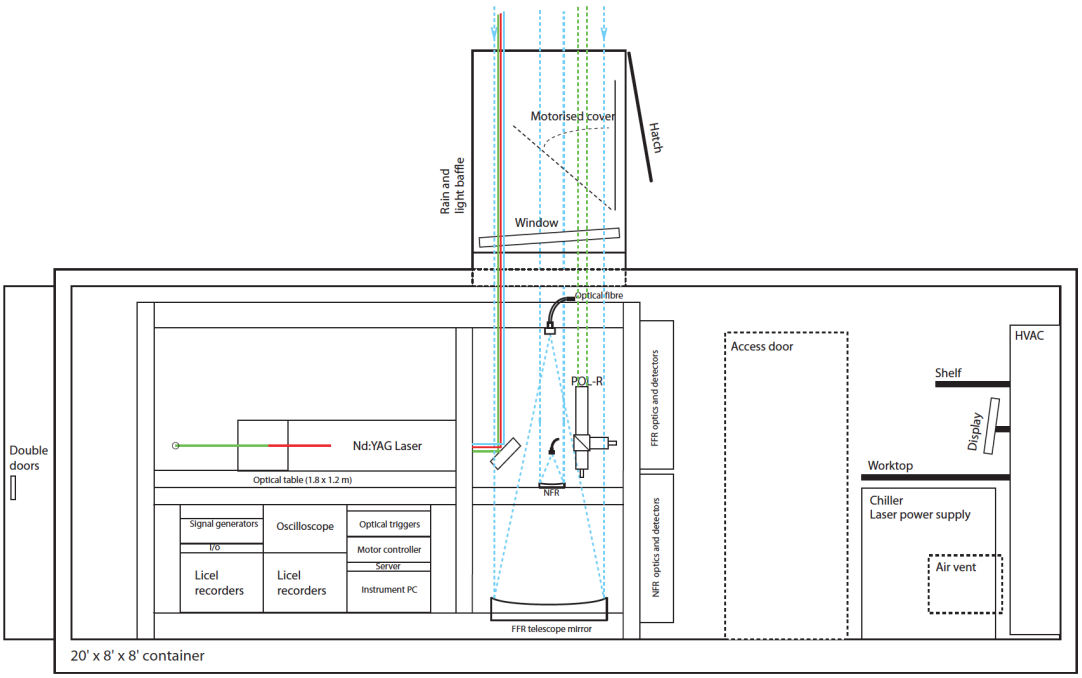

***Figure 1**: Schematic view of the lidar and housekeeping equipment mounted in the housing container.*

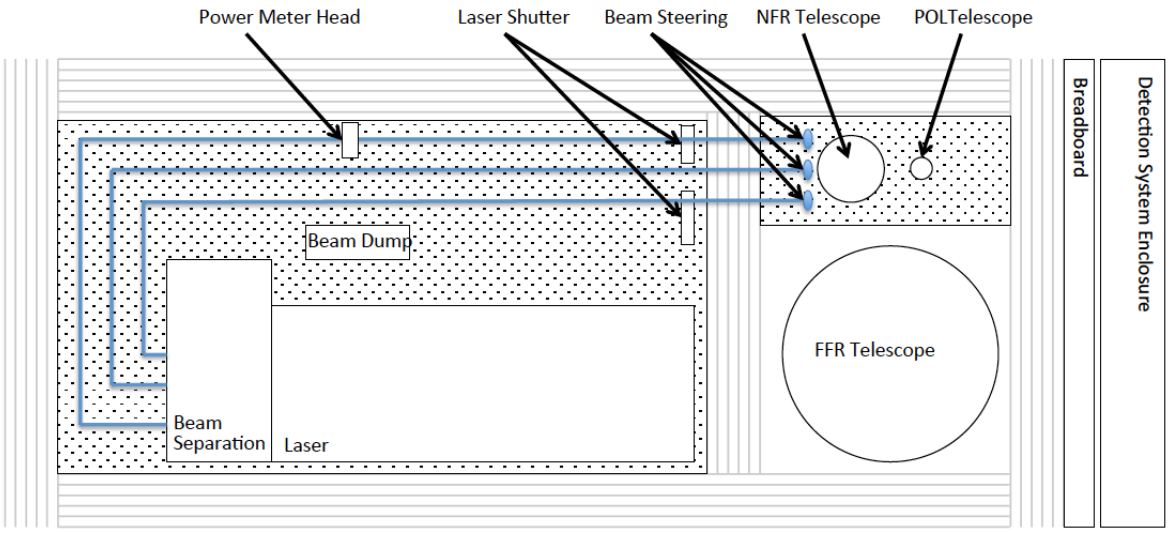

Figure 2: *Current positioning of instruments in the instrument frame in top view. Optical table: 1.8 m x 1.2 m*

4.2.2 Operating Mounting Requirements

- The laser head (i.e. laser excluding the power supply) shall be smaller than, or similar to 150 cm (length) by 65 cm (width) by 65 cm (height).
- The laser head shall be detachable from the power supply and cooling system (cable and hose connectors). The connecting cables and hoses shall be at least 4 m. Applicable connectors shall be in accessible places close to the laser head and close to the power supply.
- Built-in pulse energy and pulse profile monitoring system.
- Power supply size: should be equal or smaller than the current cabinet (i.e. less than 92 cm high).
- Shall be capable of connecting to a water to a third party water to air chiller system.

4.2.3 Control, Communications, and data processing

- Control software must allow for remote and unattended continuous operation. the laser should also be controllable from an external, third-party software (python or LabVIEW).
- An appropriate interlock loop system shall be in place for inclusion of kill switches and auxilliary interlocks.

4.2.4 Services and Warranty

- Maintenance plan and/or requirements to keep pulse energy > 80% of nominal value during the minimum lifetime of the equipment (10 years).
- Regular preventive maintenance service visits shall be offered.
- During the entire period of support of the instrument, the Tenderer shall supply spare parts and bug fixes so that adequate maintenance can be carried out by trained personnel.
- Service engineers should be able to reach the laser in an acceptable amount of travel time (approximately one day).
- Response time to make an appointment in case of down time should be within three days.
- The system shall be up and running within a month in case of downtime.
- In case an intensive observation period is planned, a stricter requirement of one week shall be applied

4.2.5 Optional

A diode-pumped laser system is preferred. Flash lamp pumped systems can be considered and will be traded off against cost of ownership and performance.