

## Market consultation

### Measuring and monitoring system for the construction (rock mechanic) safety of the quarries Gemeentegroeve and Sibbergroeve in Valkenburg (the Netherlands, NL)

#### Consultation procedure

The market consultation published on TenderNed, consists of answering a number of questions and a consultation by phone or videoconference.

Based on the reactions of the market consultation by the answering of a number of questions, we make a selection of parties for a consultation by phone or videoconference. Last named can take place at Antea Group branches.

The market consultation takes place on **23 February**.

#### Principles and conditions market consultation

Whether or not to participate in the market consultation, does not affect the planned tendering procedure for the project. In the context of the principle of transparency, a report of the responses to the questions and of the market consultation (by phone or videoconference) will be published. This prevents informational disadvantage for market parties.

#### Planning Market Consultation

Stap	omschrijving	Datum
1	Closing date for submitting comments email: janny.stevens@anteagroup.com	21 februari 2018, 24.00
2	Invitation for a videoconference	22 februari 2018
3	Market consultation via videoconference at location of choice of Antea Group (location Maastricht, Oosterhout, Capelle aan den IJssel, Almere, Heerenveen) or telephone consultation	23 februari 2018

#### Background information

The assignment consists of 'setting up, installing, maintaining and expanding a digital and web-based measuring system for the purpose of monitoring the construction (rock mechanic) safety of the quarries Gemeentegroeve and the Sibbergroeve'.

The municipality of Valkenburg aan de Geul manages and maintains the Sibbergroeve and the Gemeentegroeve. The stability of the quarries in Valkenburg aan de Geul is essential for the safety of the users and the infrastructure and buildings above. The task of the municipality is monitoring and guaranteeing the stability.

As a control measure for the risks associated with the stability of the quarries, monitoring of creep processes in pillars takes place. This monitoring of the structural, rock mechanic safety is also a condition in the mining decree.

The assignment can be described as follows:

- Examining and determine the limit values in which stability is at stake;
- The monitoring plan with a design for the dashboard to be delivered that is understandably designed for 'layman';
- The design for the measuring systems according to BAT (best available technology);
- The purchase and installation of the measuring and monitoring system;

- Setting up the dashboard with as input the real time data. Output is the current status of the structural safety including the entire measurement history;
- Monitoring according to requirements;
- Reporting to the client, both solicited and unsolicited. Analysis of the measurement data, including reporting and if necessary the alarm, is part of the assignment;
- Extending and/or updating after evaluation;
- Management and maintenance of the system;
- Periodic visual inspections of both quarries.

The Dutch language is the language for project management and reporting. It is expected that for example a combination of Dutch and foreign parties can deliver 'fit for purpose'. References are requested, among other things, in the field of monitoring of construction rock mechanic safety of underground systems, preferably of marl quarries. References are also requested in the area of 'working safely' in underground systems. Renowned parties of sufficient size to ensure continuity and independence are asked to respond.

**Questionnaire**

We request you to answer ten questions. Please fill in your details and indicate whether you are willing to participate in the market consultation (by phone or videoconference). Please submit the form in Pdf format; email [janny.stevens@anteagroup.com](mailto:janny.stevens@anteagroup.com)

<b>Company information</b>		
Name	.....	
Contact	.....	
Mail address	.....	
Willingness to participate in a consultation by videoconference or telephone	Yes, date videoconference 23 February 2018	<input type="radio"/>
	Yes, date by telephone 23 February 2018	<input type="radio"/>
	No	<input type="radio"/>
Preferred location for videoconference Antea Group:	- Maastricht	<input type="radio"/>
	- Oosterhout	<input type="radio"/>
	- Capelle	<input type="radio"/>
	- Almere	<input type="radio"/>
	- Heerenveen	<input type="radio"/>

**Questions:**

(Concise answering, no conditions to layout and text length)

**Background question 1**

It is expected that the requested can be supplied by (a combination of) market parties. The following market parties are expected (not limitative):

- Suppliers of geotechnical measuring systems;
- Engineering firms; geotechnics;
- Contractors for tunnel construction/mining. These parties have expertise in working and staying in underground systems;
- Developers of geotechnical software.

Award critirion EMVI best price-quality ratio will be applied.

Question 1a

What questions should be asked in the tender documents so that the market can identify the most ideal solution for the outlined problem?

Answer 1a

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Question 1b

How can we best place the project in the market so that the right market parties sign up? Consider, for example, award criteria for demonstrating distinctive character and what should the weighting be for these criteria?

Answer 1b

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Question 1c

What do you think about the described combination formation (consortium)?

Answer 1c

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Question 1d

Does your company wishes to participate in the tender procedure?

Answer 1d

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**Background question 2**

The following measuring systems are already installed in the grooves (in the period before 2000):

- Distometer system; the distance between two fixed points is measured manually;
- Electronic extensometers; between two fixed points an invar bar is permanently mounted which can move within an invar tube;
- Electronic barometer extensometers in combination with a telemetric system; the system is connected to a telephone network.

Question 2

What type of measurement methods (best available techniques (BAT), proven technology, robust) and possibilities for a web-based interface (24/7 real-time data and registration / storage of all measuring points in graph form) are suitable for the assignment in addition to the methods mentioned above? What could be a suitable measuring frequency and why? Which measuring accuracy is guaranteed? How does testing and calibration take place?

Answer 2

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**Background question 3**

The municipality insists on maintaining the atmosphere in the caves and therefore prefers to minimize the destructive and minimize the sight of the installed measuring and monitoring system (including cabling and data loggers etc.).

Question 3:

Can you describe the possibilities for minimizing the destructive elements of a measuring and monitoring system?

Answer 3

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**Background question 4**

The municipality expects, on the basis of estimates for a contract term of 10 years, that a European tender is required for described deliveries with associated services.

Question 4

What price-boosting factors are seen? Is 10 years a logical period? Are there risks to be named? Which control measures can be addressed?

Answer 4

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**Background question 5**

In addition to the measuring and monitoring system for determining the creep deformation of the pillars, the visual inspections are also required. A quote from an existing report:

Although visual inspection of pillar damage is important, this method is unsuitable to quantify the development of the creep deformation. In time warning for an approaching large-scale pillar collapse is needed. A monitoring system is recommended for those sections of underground galleries with low load rating of pillars and arching effect. Creep speed and acceleration can be determined. This is why instrumental monitoring by using a measuring system is required. This means that action can be taken in time, for example by applying reinforcements.

Question 5

What are the characteristics of a measurement and monitoring system that is consistent with the description above? Can such a measurement and monitoring system be designed and implemented (realism, feasible, available)?

Answer 5

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**Background question 6**

The municipality wishes for a flexible measurement and monitoring system. For examples:

- It may be that – as time passes by - other pillars require measurements;
- other possible parameters such as temperature, CO2 and relative humidity may be measured.
- Motion detection for signaling bats or (unwanted) visitors can be useful.
- In case of increasing deformations, it may be necessary to monitor more frequently.
- Perhaps it is necessary to monitor deformations other than vertical deformations.
- In addition to the pillars, monitoring of the roof (bottom of overlying rocks) may also be required.
- The annual updating of the dashboard may be necessary.
- Cooperation with KNMI (The Royal Netherlands Meteorological Institute) or the design of a dashboard may be useful.

Question 6

Is it possible to design the measurement and monitoring system in a flexible way, in order to make the above mentioned aspects possible?

Answer 6

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**Background question 7**

The quarries already have a measuring and monitoring system. See background ‘question 2’ for the various measuring systems.

Perhaps it is possible to fix and update the current systems (year of construction 1970 – 2000).

Question 7

Is it expectable that updating and fixing the current measurement system, leads to added value?

Answer 7

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**Background question 8**

On the 1<sup>st</sup> of October 2018, the measurement and monitoring system must function. Various sub-areas must also be visually inspected. After that, a test phase takes place during 1 month. The test phase must be successfully completed.

Question 8

What risks are seen? Consider the planning, availability of the system, compliance with permit requirements, budget overruns etc.?

Answer 8

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**Background question 9**

'Work Safely' is required of the contractor.

Question 9

In what way is 'Work Safely' guaranteed for your organization? And specifically for working in underground systems?

Answer 9

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**Background question 10**

The municipality does not know whether it will be the owner of the measurement and monitoring system. Maybe the system is owned by the contractor during contract period. The municipality will certainly become the owner of the data generated by the measurement and monitoring system.

At the end of the contract period, the municipality may want to decide for itself whether or not to adopt the measuring and monitoring system.

Question 10

What opportunities and obstacles are seen when the contractor is the owner of the measurement and monitoring system during the contract? What opportunities and obstacles are seen when the municipality is the owner of the measurement and monitoring system during the contract

Is it possible to give an indication of the remaining value after 10 years, as percentage of the initial costs of the measurement and monitoring system?

Answer 10

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