

## Algemene informatie

**Aanbesteding:** Borehole campaign Einstein Telescope Euregio Meuse-Rhin  
**Aanbestedende Dienst:** Stichting Nederlandse Wetenschappelijk Onderzoek Instituten (NWO-I)  
**Referentie:** P2.1\_111

## Toelichting:

## Vraag en antwoord

**Ref.nr.**                      **Onderwerp:**  
1                                      Multiple questions regarding the 2 lots

### Vraag:

- a) Are the drilling reports of the previous campaign available for a correct risk assessment ?
- b) The so-called 'pressimeters' for measuring the water level should indeed be placed in the annular between borehole and PVC ? Depending on the type, they have a different diameter. Which type should we use ? After all, this determines the final drilling diameter if the probe is larger than the mandatory thickness of the gravel deposit.
- c) Can the noise legislation in force for South Limburg and Wallonia be made available ?
- d) Are the soft cover layers (sand, clay,...) also to be cored ?
- e) Reaming with airlift is not permitted. Not even in circumstances of total flushing loss ?
- f) The minimum diameter of the monitoring well to be installed is described as 70 mm and as 101.4 mm. Which is the correct requirement ?
- g) Boring ETB07 is to be deepened by 50 m. From what depth and with what minimum diameter ? Should this interval also be cored first and then reamed ? Kindly give all relevant information regarding this drill.
- h) How should boreholes ETB26 and ETB27 be drilled ? What is requested in detail? What is -100NAP? Is core drilling also planned here first with subsequent reaming, or is core drilling not requested here? To be clearly laid down so that this is the same for everyone.
- i) What are the regulations concerning water drainage in the Netherlands? Where to eject the water? In the permits?
- j) Does the discussion around the Nox plays for both Lots?
- k) As you do not have the permits yet (and thus no location is definitive) can the depth of the drills change significantly (+/-10%)?
- l) Preparation of a platform is difficult as this may be depending on the permit.
- m) Can detailed logs of all drills in the previous campaign(s) be given? For example, no (drilling)diameters are given in the current logs, no progress rates, ...

Absolute rock strength in MPA of all layers (now only relative is shown)

**Antwoord:**

- a) Apart from the information already provided, no additional documents are available.
- b) Yes outside casing, the depth will be determined while drilling, so also the amount of pressure it could handle. they can be ordered just in time. For pricing purposes, assume 2 probes (assuming a 100 mm diameter borehole and a depth of 250 m). During execution, the exact number and size should be coordinated with the Client.
- c) "South Limburg: The rules for quiet zones are listed in paragraphs 6.1 to 6.3 and can be consulted via the attached link: [https://lokaleregelgeving.overheid.nl/CVDR705183/2#chp\\_6](https://lokaleregelgeving.overheid.nl/CVDR705183/2#chp_6)  
Wallonia: <https://environnement.wallonie.be/home/gestion-environnementale/risques-continus-et-pollutions/nuisances-sonores/valeurs-limites.html>  
<https://wallex.wallonie.be/eli/arrete/2002/07/04/2002027818>
- d) No it is not needed to core those, however we require that samples are taken from the cuttings every 20cm.
- e) Airlift is not permitted.
- f) For the hydrological monitoring wells, the top part blind 101.4 mm (depending on geology), to be able to perform a pumping test later. The lower part 70mm also for the filter . The depth of the 100mm part depends on the piezometric level. For the seismic monitoring well a larger diameter as specified in the tender is required.
- g) Current depth is 379m at PQ diameter outside 122 mm. Deepening 50 m with PQ 122mm outside or HQ 96 mm outside. This part should only be cored. No reaming needed.
- h) For pricing purposes, a 400 m borehole should be assumed Coring like the other boreholes. ETB27 should be made suitable for pump testing as described in the Assignment Description.
- i) 9\*) Keur of the Water Board Limburg <https://lokaleregelgeving.overheid.nl/CVDR622680/1>.  
(\*\*) H6 of the policy rules Keur part 1 <https://lokaleregelgeving.overheid.nl/CVDR622855/2#d14425905e683>.  
(\*\*\*) H1 of the implementation rules Keur part 1 <https://lokaleregelgeving.overheid.nl/CVDR622835/2#d14544758e347>.
- j) Yes.
- k) Depth changes according to the field level can be +/- 40m. Pricing should be based on the specified depths.
- l) Additional requirements (requirements not included in the tender documents) from permits are offsettable.
- m) Apart from the information already provided, no additional documents are available.

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P2 Boreholes Plot B

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**Onderwerp:**

Borehole depths

**Vraag:**

What is the final planned depth for borehole ETB07? 350 m? Does NAP stand for "Normaal Amsterdams Peil"? What is the effective depth of ETB26 and ETB27 in m below ground level (estimation)?

**Antwoord:**

"ETB07: 430 m  
ETB26, ETB27: 400 m"

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**Onderwerp:**

Vibrating Wire Piezometers

**Vraag:**

What cable length should we offer for vibrating wire piezometers? Should we assume borehole depth or can you give a length? Is it foreseen to collect the data from the DAS (Data Acquisition System) manually or should the DAS be equipped with cellular network for data transmission? If yes, do you need any platform for data visualization and backup? It is stated that

multiple VW piezometers may be planned. How can we separate the sensor from the data acquisition in the offer? It is not required to have a single DAS for each sensor. Is it possible to separate data acquisition and sensors in the price list?

**Antwoord:**

For the purpose of pricing, 250m can be assumed.

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**Onderwerp:**

Price sheet units and quantity

**Vraag:**

What are the units for the tests? It is not specified in the price sheet whether it is hours, test days, or number of tests? Is it possible to give an indicative quantity?

**Antwoord:**

See tender doc attachment 6.7 Quantities Logging.

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**Onderwerp:**  
Price sheet

**Vraag:**

Based on the structure of the price sheet (P2.1\_111\_Price\_sheet\_V1.0), it is impossible to indicate prices for borehole tests, as they depend on the duration of each individual test and the quantity. We therefore suggest that packer and dilatometer tests positions should be divided into sub-items. Ideally, these should be divided into three categories: subcontractor mobilization/demobilization, daily rate, and reporting based on the number of tests. For in-situ hydrofrac stress tests, this breakdown is not necessary, as the number of tests per borehole is defined by the ISRM standard (2003)

**Antwoord:**

See tender doc attachment 6.7 Quantities Logging. Packer and dilatometer tests positions should be divided into three categories: subcontractor mobilization/demobilization, daily rate, and reporting based on the number of tests.

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**Onderwerp:**  
Multiple questions regarding the 2 lots

**Vraag:**

We understand that you do not have the permits for all locations yet. Will this effect shedule? In which way?  
Will permit have effect on preparation of drill location ? Maybe gravel layer will not be allowed?  
If we due to geology have to leave the rods inside the hole for testing, not all tests will be possible. How to tackle this problem?

Glass fibre pipes can be cemented through inside or must be done through outside (with closure at the bottom of the pipe)?

**Antwoord:**

Only after the specific location identities are known, a permit request can be submitted. The client is not responsible for unforeseen postponed permit decisions.

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**Onderwerp:**

General

**Vraag:**

Please can you advise whether any site specific training, qualifications and /or site security clearance would be required for staff before attending site to carry out field work?

**Antwoord:**

Procurement guide 4.1 includes an eligibility requirement for the company to have a company-level safety certificate. Assignemnet Description 3.2.3 contains additional safety requirements. There are no further site-specific requirements for personnel to access drilling sites.

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**Onderwerp:**

P2.1\_111\_Assignment description Borehole Campaign ET-EMR\_V2.0  
Section 3.3.5

**Vraag:**

Do you require combined deliverables of depth matched core photographs with Acoustic and Optical Televiewer logging data? It is very beneficial to interpret discontinuities when wireline logs are depth matched and combined also with core photographs.

**Antwoord:**

Yes

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**Onderwerp:**

P2.1\_111\_Assignment description Borehole Campaign ET-EMR\_V2.0  
Section 3.4.1.5

**Vraag:**

It is stated in the specification that a 16-arm caliper is preferred. Please can you advise whether Client would accept an oriented four-arm caliper (X1, Y1, X2, Y2 Radii) with independent caliper arms each instead of a 16-arm caliper? In combination with the ATV and OTV logs, a 4-arm caliper would provide the necessary information. If 16-arm caliper would be a definite requirement would those 16 caliper arms then need to be oriented?

**Antwoord:**

A tool with 16 or 8 caliber arm is preferred. The tool should to be orientated.

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**Onderwerp:**

P2.1\_111\_Assignment description Borehole Campaign ET-EMR\_V2.0  
Section 3.4.1.5

**Vraag:**

Please can you provide clarification what would be the specific objective of running a 16-arm caliper? It is stated in the specification that a 16-arm caliper is preferred.

**Antwoord:**

The tool is intended to supplement strain/stress measurements, linked to the anisotropy of the velocity field.

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**Onderwerp:**

P2.1\_111\_Assignment description Borehole Campaign ET-EMR\_V2.0

## Section 3.4.1.6

**Vraag:**

In the additional geophysical logging section, NMR and also Neutron and gamma-gamma density logs are also listed as required methods, but only in boreholes to be drilled in Wallonia. Neutron and gamma-gamma density methods require the use of strong radioactive sources and it is needless to say that a lodged or lost radioactive source downhole would have serious consequences to the environment and the project. To mitigate that environmental and project risk please can you confirm whether it would be acceptable to fully replace the neutron and gamma-gamma density methods with the NMR method, which is already firm part of the scope of works anyway? By logging the NMR method, porosity and water content of the strata can already be measured as well as the formation density, which can also be estimated from the NMR data (case studies available to support this).

**Antwoord:**

If it can be demonstrated (in the offer) that the selected tools can fully replace the NMR neutron and gamma-gamma ray logging it could be acceptable.

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**Onderwerp:**

P2.1\_111\_Assignment description Borehole Campaign ET-EMR\_V2.0  
Section 3.4.1.3

**Vraag:**

We note that Full wave sonic log is also required as part of the wireline geophysical logging scope of works. Please note that it may not be possible to obtain S-wave velocity by running FWS logs and that is by measurement principle, S-wave arrivals may not be recorded by the FWS method depending upon velocity contrast and local conditions in lithology. As a common practise in the geotechnical industry, P- & S-Wave Suspension

Logger (PSSL) in combination with Full wave sonic is used to make sure S-wave arrivals and velocity can be obtained to support project design. Please clarify objective of running FWS and that whether PSSL would also be required to support this particular objective.

**Antwoord:**

The preferred tool is a full dipol-sonic log with a sufficient penetration into the formation to measure the azimuthally varying pressure and shear velocities velocities and deduce strain/stress field information. If such a tool is not available PSSI in addition to a waveform logging tool can be applied. It is understood that the so called "Full-Waveform-Image" (FWI) logging tools do not log the full waveform.

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**Onderwerp:**

P2.1\_111\_Assignment description Borehole Campaign ET-EMR\_V2.0  
Section 3.4.2.1

**Vraag:**

It is stated in the specification document that the contractor describes in its tender the type of equipment that he proposes to use: either spinner flow meter, or electromagnetic borehole flowmeter (EBF). Depends upon the threshold velocity, certain flow rates if those would very low velocity may not be picked up by spinner (impeller) flowmeter or EBF. To be able to record very low velocity flow in static (no flow) mode a Heat Pulse Flowmeter might be required. Please confirm additional requirement for Heat Pulse Flowmeter logging (HPFL), which is a stationary only (no dynamic flow with with pumping) method.

**Antwoord:**

We need ro record in both modes, static and dynamic. It is up to the contractor to present a solution for this.

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**Onderwerp:**

Subcontractor

**Vraag:**

Can a subcontractor quote together with different drilling companies?

**Antwoord:**

Yes, a subcontractor can quote with different drilling companies.

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**Onderwerp:**

3.3.8. Permits and administrative requirements

**Vraag:**

Please clarify whether all the permits and authorizations (alongside the related expenses) including access to private and public land properties, environmental, municipal, provincial, regional constraints, duties and

prescriptions will be managed by the Client.

**Antwoord:**

The client will provide the permits and authorisations. Only after confirmation of the client activities that are submitted to permits or authorisations are allowed.

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**Onderwerp:**

P2.1\_111 Price sheet V1.0

**Vraag:**

In order to properly evaluate the costs and the related rates in our tender offer , is it possible to receive a detailed list of the environmental constraints with respect to each specific borehole ?

**Antwoord:**

Apart from the constraints mentioned in the procurement guide and assignment description, there are currently no known constraints. Additional constraints based on a permit are at the Client's expense.

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**Onderwerp:**

Site preparation / utility provision / site restoration

**Vraag:**

With respect to the mandatory hydrants, when in remote areas, is there the possibility to connect to the local water supply network (at a reasonable distance) or is it anyway allowed to provide (in terms of volume and according to the calculated the wildfire/fire risk) adequate water tanks ?

**Antwoord:**

The contractor is responsible for his water supply. The project office will support with the permissions to connect to the public water supply. If no connection is nearby, the supply of water will be paid by OG on a post-calculation basis.

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